GEOGRAPHICAL TRENDS OF CONTENT IN HISTORICAL NEWSPAPERS
GEOGRAPHICAL TRENDS OF CONTENT IN HISTORICAL NEWSPAPERS

by
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A Research Paper
Submitted to the School of Graduate Studies
in Partial Fulfilment of the Requirements
for the Degree
Master of Arts

McMaster University
September 1977
TITLE: Geographical Trends of Content in Historical Newspapers

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NUMBER OF PAGES: vii; 71
ACKNOWLEDGEMENTS

I would like to thank Dr. R.L. Gentilcore and Dr. D.A. Norris for their guidance in the preparation of this research paper.

Thank-you to my parents for the support and encouragement they gave me while I was attending McMaster University (which must have seemed like an eternity to them).

I would like to express a warm and heartfelt thank-you to Cheryl Carr for her encouragement and invaluable assistance along the way.
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INTRODUCTION

Sources such as assessment rolls, directories, personal accounts and newspapers may be utilized in a variety of applications for which their creators had not intended. Within these past records, there are often interesting and informative trends which are not initially apparent. It is the task of the historical geographer to sift through and systematically examine such historical documents in order to gain insight into patterns or processes of the past. One such systematic technique is content analysis. Numerous historical geographers have utilized content analysis to organize past materials and to understand the complexities of past events.

This research paper will focus on a single primary source, the newspaper. As the name indicates, the newspaper is primarily produced as an information source reporting news events that occur in places both local or distant. At the same time, the newspaper, through advertisements, expounds upon the products and services provided by a variety of merchants in a number of locations.

This study primarily concerns the news article content found in a newspaper and the pattern of centres from which news emanates. Another portion of this paper will examine the advertisement content that appears
in newspapers. Of special interest will be the identification of the changing patterns of centres from which either news or advertisements are recorded. The third segment of this study will be devoted to the time-lag involved in the reporting of news events as they appear in the same newspaper.

PREVIOUS STUDIES

The analysis of recorded material concerning past events is certainly not new. Researchers in a variety of fields, such as history and psychology, have been analysing material in order to gain understanding of individuals or groups of people (Stephenson, 1963, p.158). Content analysis has been used in communication research and psychoanalytical applications as evidenced by such papers as Boder (1939), Baldwin (1942) and Dollard and Mowrer (1947). It has been indicated that content analysis has "attained some maturity in fields ranging from cultural anthropology to psychiatry" (Paisley, 1969, p.283).

Basically, content analysis "seeks to"get inside" content and understand or disclose otherwise hidden characteristics (Stephenson, 1963, p.155).

In order to discuss content analysis and the use which has been made of it in historical geography, this author offers a definition as put forth by Holsti.

"Content analysis is a phase of information-processing in which communication content is transformed, through objective and systematic application of categorization rules, into data that can be summarized and compared" (Holsti, 1969, p.3).
Holsti continues and discusses the merits of content analysis indicating two important factors.

"Content analysis as a method, has no magical qualities - you rarely get out of it more than you put in, and sometimes you get less. In the last analysis, there is no substitute for a good idea" (Holsti, 1969, p.194).

Garraty (1959), gives support for developing content analysis as an investigative technique.

"Content analysis offers history and biography a fruitful field for research. Careful, imaginative use of the method ought to reduce the historians dependence upon subjective judgements, enable him to resolve doubts rising from conflicting evidence, and, in general, add confidence to his conclusions by reducing them to measurable reproducible limits" (Garraty, 1959, p.187).

Paisley (1969), states that:

"content analysis has flourished wherever two conditions are met: (1) verbal text provides abundant data, and (2) there is a preexisting theory of the relationships of text indicators" (p.283).

Admittedly, Paisley refers to content analysis with respect to investigations involving written or verbal personal communications. However, taken in its simplest meaning Paisley's first criterion for successful application of content analysis can easily be fulfilled in historical geography based on the plethora of available primary source material. Historical geography fulfills the second criterion concerning a pre-existing theory as it has both borrowed concepts from other disciplines
and developed its own theories based on speculation and empirical findings.

A valuable asset of content analysis is that it "allows retrieval of data from qualitative sources in a methodical and objective fashion" (Moodie, 1971, p.148). The application of content analysis is most beneficial while investigating past patterns and trends because all too "often the only surviving artifacts that may be used to study human activity are to be found in documents" (Holsti, 1968, p.1).

Although content analysis has a non-theoretical basis, it remains as a very handy instrument for the extraction of information in research (Stephenson, 1963, p.161). This information or data may be categorized and then placed into a quantitative form for investigation. The content must be reformulated into categories requiring the analyst's understanding and his partially subjective application of rules and guidelines to the data. This method of investigation may, if the data requires it, be analysed by computer techniques thus facilitating extensive but speedy analysis.

Osborne and Reimer (1973), indicate that there are three different types of content analysis available to the historical geographer. The most widely used approach of content analysis is that of the frequency count, which measures the number of times that a word, phrase or idea recurs in the material. Frequency counts do not, however, indicate the intensity or meanings of the words, phrases or ideas that are extracted from the material. Contingency analysis attempts to demonstrate trends by examining the relationships between words that are used in the material under study. The evaluative assertion analysis involves the reduction of statements to a series of words without losing their intended meaning.
This method of content analysis, developed by Osgoode, Sapporata and
Nunally (1956), allows for the measuring of the intensity and direction
of meaning of certain statements rather than merely yielding frequency
counts of certain words.

Within historical geography content analysis has been utilized
in a number of instances. In their paper concerning freeze and ice break
up in the Canadian north, Catchpole, Moodie and Kaye (1970), utilized
descriptive accounts from Hudson Bay Company trading posts to determine
the dates of these environmental activities.

In a similar manner, Harris, Roulston and de Freitas (1975), incorpo­rated
descriptive accounts from diaries and letters to determine
the attitudes and ideals of the pioneering community. Their content
analysis yielded information that depicted the way of life of a settler
in Mono Township during the mid-nineteenth century.

By restricting their investigation to newspapers of 1846, 1847
and 1848 Hayward and Osborne (1973), were able to analyse and determine,
from simple frequency counts, an urban community's assessment of the 1847
immigration of British colonists to Toronto.

Bowden, La Rose and Mishara (1970), investigated newspapers in
order to describe the developing pattern of competition between central
places in the Vermont frontier between the years 1790 and 1830. By studying
the newspaper advertisements, they were able to determine the evolution
of a central place system. The hinterlands could be traced through time
and spatial changes of the hinterlands could be noted. Bowden, La Rose
and Mishara inferred a three order Christaller landscape in Vermont.

Bulthuis (1973), established the spatial changes of what he termed
'town orientation' or 'town allegiance' in part of Central Ontario by examining the advertising of business firms in newspapers.

Another application of content analysis as applied to newspapers is an effort by Park (1929), in which he measures the dominating effects of urbanization based on the circulation patterns of newspapers in the Chicago area.

The purpose of this research paper is to test a set of hypotheses concerning the changing trends and characteristics of the news articles and advertisements as presented in a newspaper. Specifically, the major focus is on the changing spatial patterns of the centres that send either advertisements or news items to the selected newspaper the Brantford Expositor.

Content analysis, although utilized in descriptive and to a lesser extent, analytical applications, has been neglected as a tool geared towards modelling. The research will be extended in an effort to formulate a predictive model which may demonstrate a further application of content analysis in the field of historical geography.
RESEARCH HYPOTHESES

In a study involving newspapers, it is necessary to consider a variety of related concepts such as hinterland, scope and link. The term hinterland is used in a strict sense. Here hinterland has been adopted to mean the cluster of centres within a twenty mile radius surrounding Brantford. The degree or strength of Brantford's hinterland is measured in relative terms based on the number of centres contributing news as well as the amount of news contributed by each centre during a year.

The second concept, the scope of news reporting, refers to the number of centres and the amount of news originating outside the boundary of the hinterland. Scope in this sense maybe used when referring to either the Southern Ontario region or the world. Scope is not used to delineate a fixed boundary as is the case with hinterland.

The term link is employed solely with respect to the centres that send advertisements to Brantford. Each non-Brantford merchant sending an advertisement does so with the intent of drawing people to his business firm. In effect, the merchant wishes to establish a link between people and his firm.

The most obvious hinterland is that area which encompasses the subscribers of the newspaper. This hinterland is very difficult to reconstruct in an historical context because very few subscription
lists survive from old newspapers. Because of the unavailability of these lists the subscriber hinterland will not be considered. The second hinterland comprises the area from which news is generated on the local level and reported in a newspaper. Of course, important news will be reported from both near and far, but it may be possible to delineate a specific boundary within which the largest proportion of news originates.

Bulthuis indicates that newspaper advertisements allow one to discover the orientation of towns within a region provided all the newspapers from all the neighbouring towns are examined. If a single newspaper is studied it is not possible to establish various town orientations, but only the fact that some towns advertised in a newspaper. If enough local towns advertise in a newspaper a hinterland may be determined from which advertisements originate. It would be foolish to attempt to establish any boundaries of this nature based on a single newspaper and the few towns that advertise in it. At best, one may conclude that a potential link exists between towns based on the advertisements. It is not possible to establish "functional links" contrary to what Bulthuis (1973, p.12) indicates. An advertisement sent to another town represents an assessment by a merchant of the market potential. The act of sending an advertisement to another town can hardly be considered as fulfilling a function.

By studying the news articles in a newspaper it is proposed that news hinterlands may be established. By selecting different years it may be possible to monitor the changes that occur with respect to these hinterlands. At the same time, an expanding scope of reporting may be determined for the newspaper, noting the patterns and rates of expansion.
Lastly, changing advertisement links may be determined by studying the advertisements in different time periods.

It seems logical that a newspaper published on a weekly basis will have different characteristics with respect to its content of news coverage than a newspaper published on a day to day basis. A newspaper that is released on an infrequent but regular schedule as in the case of a weekly publication will report on locally generated news. Following the volume of news coverage on the local level, the remaining available newspaper space will be devoted to news emanating from distant origins. It is probable that people would first wish to be informed of local news whether it be politics, sports or general news. A weekly newspaper would be first a local paper and secondly a newspaper geared towards informing the local citizenry of events thousands of miles away.

This point is expressed in a journal by Robert Mathison, the owner of the Brantford Expositor between 1867 and 1872, the last years that the Brantford Expositor was a weekly publication. Mathison writes that:

"As a means of increasing our circulation, items from various points in the country were a distinct feature; the mention of people's names seemed to have a talismanic influence, and their appreciation of the paper was in ratio to the number of times their names appeared."\(^1\)

This illustrates the importance of catering to the local interests in order to sell newspapers. When the amount of newsprint available is

limited then the best use must be made of the available space. In this case, the best interest was to include a large volume of locally generated news.

To illustrate his point, Mathison includes an anecdote in which the simple inclusion of the news item "The Harley House has a new sign ..." was directly responsible for nine "cash-in-advance subscribers ... counted $22.50 besides having made many friends."²

On the other hand, a newspaper released on a daily basis will soon exhaust its limit of noteworthy news generated from the local area. As a result, the newspaper will be more likely to draw upon news stories from distant locations regardless of the age of the news.

The first hypothesis involves this notion of hinterlands and the changes that occur when a newspaper changes from a weekly to a daily publication. Essentially, it is expected that: 1) the content in 1871 will be primarily generated on the local level while that of 1881 will come with greater frequency from non-local centres.

The second hypothesis deals with the hinterland and scope of newspaper reporting. It is expected that: 2) the hinterland and scope of news reporting will increase through time.

Following the establishment of a newspaper it will, in accordance to the needs of its local population, increase its scope of reporting. Hence in later years it is expected that the frequency of news articles of a non-local nature will multiply as the communication networks increase and improve.

² Ibid.
As both the number of subscribers and the area of subscription increase the potential market area covered by any single copy of the newspaper also increases. With the passage of time, the advent of more efficient modes of transportation such as private buggies, more frequent train or stage coach service and the improvements to roads allow people to travel further in order to shop. As a result, it is expected that merchants from many centres will submit advertisements to the Expositor in order to take advantage of an increased mobility.

The third hypothesis which involves the concept of advertisement links states that: 3) the links between Brantford and other centres based on the advertisements will increase through time.

Relative to the news articles it is expected that the advertisement links will expand only minimally. Advertisements require an investment by a merchant. In effect, the merchant is investing time and risking capital when he gambles that his financial outlay for advertising will be rewarded by a return greater than his expenses. Intuitively, a merchant located a great distance from the newspaper centre is less likely to submit an advertisement than a merchant located at the newspaper centre due to the added risk of obtaining a return; a risk which is induced by a distance barrier.

The following set of hypotheses involve the time-lag between the occurrence of a particular news event and its subsequent report in a newspaper. A time-lag is usually apparent between the occurrence of a news item and the time that the news item appears in a newspaper. This time-lag which is easily calculated from newspapers, though not always available, is a direct function of a number of factors. It is
assumed that the time-lag or delay in reporting the news is in part a function of the distance between the news' place of origin and the centre that receives the news, the length of the news article and the population of the news origin centre. For this study the news receiving centre was Brantford, Ontario.

The time-lag hypotheses are as follows: 4) that as the distance between the news sending and the news receiving centre increases, the time-lag between occurrence and report of the event in a newspaper also increases; 5) that as the interaction measure increases the time-lag will decrease.

The two hypotheses include the basic variables distance (hypothesis 4) and population (hypothesis 5). These two variables are included in the gravity model and their relationship may be written in the interaction equation form as

\[ I_{ij} = k \frac{P_i P_j}{d_{ij}^\beta} \]

where \( I_{ij} \) is the measure of interaction between two given centres based on their respective populations and the distance separating the centres. \( P_i \) and \( P_j \) are the populations of the centres involved in the interaction. The variable \( d_{ij} \) represents the distance between the two centres. The
k value is an empirical constant and \( \beta \) is an exponent on the distance value.\(^3\)

The interaction equation may be further reduced since \( P_j \) is the population of Brantford and is therefore, a constant. The shortened equation reads as follows:

\[
I_{ij} = \frac{p_i p_j}{d_{ij}^\beta},
\]

which indicates that as the population of the sending centre increases the interaction should also increase. As the distance increases between the centres, the interaction should decrease.

The relationship between population and distance is well known

\(^3\) In most version of the interaction equation a \( k \) constant and \( \beta \) value are included with the equation as follows:

\[
I_{ij} = k \frac{p_i p_j}{d_{ij}^\beta}.
\]

Due to the uncertainty of determining either the \( k \) or \( \beta \) values both were excluded from the calculations. The following form of the equation was adopted

\[
I_{ij} = \frac{p_i p_j}{d_{ij}^\beta}.
\]
and is shown to hold true in numerous examples.\textsuperscript{4} The author of this paper felt it reasonable to expect it to apply in this study.

The sixth hypothesis is as follows: \textit{6}) that the type of news (based on a partially subjective ordinal ranking of the relative impacts of news types\textsuperscript{5}) will have an effect on time-lag such that as the relative impact of the news type increases, the time-lag will decrease. This hypothesis seems reasonable on the basis that certain types of news may be deemed important and therefore should receive more attention more quickly than less important types of news.

The last hypotheses of this study are: \textit{7}) that the importance of the factors explaining time-lag will decrease through time; and \textit{8}) that as time goes by the mean and maximum time-lag values will decrease. The justification for these two hypotheses is that distance should become less of a hindrance to communication as communication methods improve, diversify and diffuse.

\textsuperscript{4} Gunner Olsson discusses several studies that utilize versions of the interaction model. His literature review is comprehensive and complete. The reader is directed to Olsson's book if an in depth treatment of the model is desired.

\textsuperscript{5} Each news article has certain characteristics of topic and intensity of subject which form the basis of its classification. In most cases an article may be easily allocated to a certain category based on these characteristics. In some cases, when the classification of an article is not clear, it then relies on an element of subjective interpretation in order to be classified. The ranking of news classes is a subjective process based on the relative importance and specialization of each news category.
SUMMARY OF THE HYPOTHESES

1. The content of a weekly newspaper will be generated on a local level; whereas the content of a daily publication will originate with greater frequency from non-local centres.

2. The hinterland and scope of the news articles will increase through time.

3. The advertisement links between centres will increase through time.

4. As distance increases the time-lag of a news article also increases.

5. As the interaction between centres increases the time-lag will decrease.

6. As the ranking of the news type increases, the time-lag of the news type will decrease.

7. The importance of the variables that explain time-lag will decrease through time.

8. The mean and maximum values of time-lag will decrease through time.

RESEARCH DESIGN

Newspaper Selection

The selection of a newspaper as a data source received special attention for several reasons. The newspaper selected should serve a local community as well as a captured hinterland that is removed from the overshadowing influence of a large urban centre. One cannot be absolutely certain that the selected paper, the Brantford Expositor, is
isolated with respect to urban influence. However, its location away from Hamilton, London and Toronto may ensure that only a limited urban influence will be felt in comparison to other possible newspapers located closer to large urban centres.

The closest urban centre to Brantford is Hamilton, a distance of twenty-six miles. Within a twenty-six mile radius of Brantford the largest town is Paris, Ontario. During the period under study, at no time did Paris have a population larger than one-third that of Brantford. Practically all of the other centres within the same radius had populations under 1000. Effectively, the Brantford Expositor served a hinterland spotted with small centres that were the crossroads of communication and activity for an agricultural region. Just as Brantford was an assembly and distribution centre for agricultural produce and goods, so was it also a centre for assembling the news and distributing it in a newspaper form to this same hinterland.

The Brantford Expositor, formerly the Conservative Expositor initiated publication as a weekly newspaper on October 12, 1852. Weekly publication was maintained until the 3rd of April, 1873 when "the firm styled and known as W.C. Trimble and Co., ... publishers and proprietors" (Brant County Atlas, 1875, p.XII) elected to publish the Brantford Expositor on a daily basis excluding Sundays.

The Brantford Expositor had certain advantages as a data source. For the purposes of this study it was necessary to have a paper that was initially a weekly changing later to a daily publication. The Brantford Expositor changed its publication from weekly to daily only after it had become the leading newspaper in the Brantford area. As a result it is
possible to study the differences in content between a daily and a weekly newspaper. The Brantford Expositor has maintained daily publication for 104 years. For the purposes of this study a daily publication eliminates the problems of a built in time-lag of reporting news events which is inherent in a newspaper that publishes as a bi-weekly or weekly basis. Again, since the Brantford Expositor published steadily since 1852, it easily provided a single data source covering the study period of 1871 to 1901. Many other small newspapers that published during the 1800's had either very short life spans or published on a non-daily basis. More importantly, the twenty year period between 1881 and 1901 witnessed the emergence and rapid adoption of such inventions as the telephone and telegraph, both of which reduced the barrier effect that distance imposed on communication.

Lastly, the Brantford Expositor reported news not only from its hinterland but also reported news on a national and international scale which allowed for a more complete testing of the hypotheses concerning distance, time-lag and interaction.

**Data Collection**

Data were collected for the four selected time periods: 1871, 1881, 1891 and 1901. Since these years coincided with census years, population values were accurately obtained. Initially, it was determined that for the purposes of this study six issues per year would provide a satisfactory data base in order to demonstrate trends and relationships apparent within the newspaper content. Six issues per year were sufficient for 1871. However, during this year the Brantford Expositor
was a weekly publication and for reasons of a built-in time-lag this year was excluded from any portion of the study concerning the time-lag of news events.

For 1881, 1891 and 1901, it was necessary to increase the number of issues from six to twelve since approximately one-half of the articles recorded did not have a determinable time-lag. All items of news and all advertisements (excluding classifieds, nationally advertised products and mail order advertisements) were extracted from the newspaper. The news articles were recorded according to the date they appeared in the newspaper, their time-lag (the difference in days between occurrence and report of the news event in a newspaper), the number of column inches per article, the origin of the news article and the type of news. The news articles were divided into seven categories (TABLE 1). The population figures of each centre from which news articles were reported in the Brantford Expositor were obtained from a variety of gazetteers and census listings.

The information collected for each advertisement included the year in which it appeared in the newspaper, town or city from which the advertisement was sent and the classification of each type of advertisement. The advertisements were placed into one of eight categories.

Table 2 lists the numbers of news articles and advertisements collected from each of the study years.

**Advertisement Classifications**

The list of advertisement classifications was adopted from Bulthuis' (1973, p.30) categorization of goods and services. His original list of...
TABLE 1
NEWS CATEGORIES AND ORDINAL RANKING
BASED ON EXPECTED RELATIVE IMPACT

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<th>RANK</th>
<th>NEWS ARTICLE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Social News</td>
</tr>
<tr>
<td>2</td>
<td>General News</td>
</tr>
<tr>
<td>3</td>
<td>Reports - Financial - Agricultural - Sports</td>
</tr>
<tr>
<td>4</td>
<td>Minor Crime</td>
</tr>
<tr>
<td>5</td>
<td>Local Politics</td>
</tr>
<tr>
<td>6</td>
<td>Major Crime</td>
</tr>
<tr>
<td>7</td>
<td>National or International Politics, Sensational or Tragic News</td>
</tr>
<tr>
<td>YEAR</td>
<td>NUMBER OF ISSUES</td>
</tr>
<tr>
<td>------</td>
<td>------------------</td>
</tr>
<tr>
<td>1871</td>
<td>6</td>
</tr>
<tr>
<td>1881</td>
<td>12</td>
</tr>
<tr>
<td>1891</td>
<td>12</td>
</tr>
<tr>
<td>1901</td>
<td>12</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
</tr>
</tbody>
</table>
fifteen classifications was reduced to eight.

INDUSTRY - implements, carriage, sleigh, wagon maker, livery, foundry, blacksmith, tin smith, silver smith, planing mill, sawmill, grist mill.

FOODSTUFF - baker, butcher, grocer, distiller, brewer

MERCHANT - books, binder, publisher, hardware, general goods merchant

CONSTRUCTION AND FURNISHINGS - bricklayer, contractor, painter, carpenter, wallpaper, furniture

FINANCIAL AND LEGAL - bank, loan company, insurance, lawyer

PERSONAL SERVICES - restaurant, saloon, hotel, architect, photographer, surveyor

MEDICAL - doctor, surgeon, chemist, pharmacist, dentist, mortician, optician

APPAREL - clothier, tailor, jeweller, hatter, shoes.
ANALYSIS AND RESULTS

First Hypothesis

The first hypothesis deals with the Brantford Expositor's content during two dissimilar periods. In 1871, the Expositor was a weekly paper while in 1881 it was an established daily publication. In review, the initial hypothesis states that the content of a weekly newspaper will be generated on a local level while a daily newspaper will record more content from non-local centres.

In order to test the hypothesis content was divided into two groupings, comprising advertisements and news articles respectively. Essentially, these are two distinct types of content. The advertisements which have a single goal require motivation, time and a capital expenditure on the part of at least one person. However, news articles require only that an event be recorded by an individual who then passes the news onward to be recorded in print. As an outcome, advertisements are controlled by the business community who submit the advertisements for financial acquisition while items of news may originate from any location and be reported by any individual.

Chi-square ($\chi^2$) was selected to test the first hypothesis since the analysis performed by $\chi^2$ is capable of determining within a required
level of significance whether there is a statistical relationship between two or more nominally scaled variables. For comparison reasons, it was imperative to recode the data. The cities from which either advertisements or news articles emanated were grouped according to their distance from Brantford coupled with their location with respect to political boundaries. Figure 1 indicates the assemblage of centres utilized in the testing of the initial hypothesis.

FIGURE 1

ORIGIN TYPES

Brantford
Local Centres
Other Canadian Cities
U.S. Cities
Overseas Cities

Brantford was a logical selection for the first grouping. Because the distance is essentially zero, the Expositor has a ready access to the advertisements and news articles that originate in Brantford. The city limits form the first boundary. Local Centres comprise a group assembled from all the centres within a twenty mile radius of Brantford. The small towns form a unique group of centres which provided the essential businesses and services to their respective populations. The twenty mile limit was selected partially as a convenience figure but more importantly this distance excludes all cities with populations greater than 30% of the population of Brantford during any year of the study. The eastern limit of the twenty mile radius is six miles from the nearest metropolitan centre, Hamilton, Ontario.
The third group comprises all other cities within the modern territorial limits of Canada. As a group Other Canadian Cities may be misleading based on the various years that the provinces joined Confederation. However, it is felt that a tie or an element of camaraderie may have been present within British North American based on a common heritage.

The fourth and fifth categories, U.S. Cities and Overseas Cities, are self-explanatory groups.

It was then possible to compare the numbers of advertisements received from each origin group for the two years (TABLE 3). A $\chi^2$ value of 3.18 was obtained for the advertisements of 1871 and 1881. With eight cells there are 3 degrees of freedom which indicates that at the 0.05 level of significance the critical chi-square value ($\chi^2_C$) is 7.82. Since the empirical $\chi^2$ value was not greater than the $\chi^2_C$ it suggests that there is no significant change in the advertisement content (based on the origin of the advertisement) when the Brantford Expositor changed from a weekly to a daily publication. Consequently, the hypothesis is not supported by this portion of the data.

A similar $\chi^2$ test was administered to the news articles collected for the same years. The results in this case were supportive of the first hypothesis. The $\chi^2$ test produced a $\chi^2$ value of 79.92 (TABLE 4). At the 0.05 level of significance the $\chi^2_C$ value with four degrees of

---

6 Confederation in 1867, included Nova Scotia, New Brunswick, Ontario and Quebec. The remaining provinces joined the Dominion of Canada in various years: Manitoba in 1870; British Columbia in 1871; Prince Edward Island in 1873; Saskatchewan and Alberta in 1905 and Newfoundland 1949 (Walz and Kalz, 1970, p.7 and 8).
### TABLE 3

**NUMBER OF ADVERTISEMENTS FROM EACH ORIGIN TYPE**

**DURING 1871 AND 1881**

<table>
<thead>
<tr>
<th>ORIGIN</th>
<th>1871</th>
<th>1881</th>
<th>ROW TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brantford</td>
<td>384</td>
<td>535</td>
<td>919</td>
</tr>
<tr>
<td>Local Centres</td>
<td>6</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Other Canadian Cities</td>
<td>15</td>
<td>29</td>
<td>44</td>
</tr>
<tr>
<td>U.S. Cities</td>
<td>2</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>407</td>
<td>576</td>
<td>983</td>
</tr>
</tbody>
</table>

*\chi^2 = 3.18, \chi^2 at 0.05 significance level with 3 degrees of freedom = 7.82*

**NOTE:** During 1871 and 1881 no advertisements were sent to Brantford from Overseas Cities. This group was omitted from this portion of the analysis.

### TABLE 4

**NUMBER OF NEWS ARTICLES FROM EACH ORIGIN TYPE**

**DURING 1871 AND 1881**

<table>
<thead>
<tr>
<th>ORIGIN</th>
<th>1871</th>
<th>1881</th>
<th>ROW TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brantford</td>
<td>102</td>
<td>128</td>
<td>230</td>
</tr>
<tr>
<td>Local Centres</td>
<td>62</td>
<td>85</td>
<td>147</td>
</tr>
<tr>
<td>Other Canadian Cities</td>
<td>10</td>
<td>87</td>
<td>97</td>
</tr>
<tr>
<td>U.S. Cities</td>
<td>1</td>
<td>64</td>
<td>65</td>
</tr>
<tr>
<td>Overseas Cities</td>
<td>0</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>175</td>
<td>380</td>
<td>555</td>
</tr>
</tbody>
</table>

*\chi^2 = 79.92, \chi^2 at 0.05 significance level with 4 degrees of freedom = 9.49*
freedom is 9.49. Since the empirical \( \chi^2 \) value is greater than the \( \chi_c^2 \) value the null hypothesis is rejected. The evidence revealed by the \( \chi^2 \) value plus observation of the data allows acceptance of the research hypothesis that the content of a daily newspaper originates from non-local centres with greater frequency than a weekly publication.

Although the results clearly indicate partial support for the hypothesis they are not surprising. In addition, several interesting considerations may be inferred. A merchant located in the newspaper centre has a definite locational advantage over a merchant located at a distance from Brantford. The merchant located outside Brantford can only hope that advertising will attract customers from a limited distance beyond the newspaper centre. Distance is an obstruction to people's purchasing habits. Probably the two greatest considerations in the case of people travelling from one centre to another centre are the distance between the centres and the number of intervening opportunities. Stouffer (1940), expressed this concept of intervening-opportunity. He commented that there was not necessarily a relationship between the interaction of centres and distance which had been the basis for the gravity and other models of interaction. Stouffer indicated with the example of people moving, that the number of people moving a given distance is directly proportional to the number of opportunities at that distance and inversely proportional to the number of intervening opportunities.

It is suggested that intervening opportunities may account for the apparent lack of change in the advertisement content in the Brantford Expositor. Merchants will not waste funds on advertising. They will recognize the limitations on the returns from their advertisements based on the distance
and the number of intervening opportunities between their businesses and the newspaper centre. Advertisements requiring a capital expenditure readily fall victim to the barrier effect of distance.

It is conceivable that the people of Brantford had no need to journey to smaller towns, as Brantford was a relatively large town in comparison to other towns in the region and had the needed services and goods as well as many specialized functions. For the same reason people of small towns lacking a sufficient population to support a complete array of goods and services would travel to Brantford. As a consequence, the Brantford Expositor reflects a cross-section of merchants who provide goods and services in Brantford. Brantford attracted consumers due to its completeness with respect to goods and services. Bulthuis argues that "advertisements were sent to the newspapers of such towns as would yield the greatest return for the merchants" (Bulthuis, 1973, p.4). If a merchant of a small town realizes the profitability of his efforts are minimized due to the size of the centre in which his business is located, coupled with the distance between his firm and the newspaper centre then the merchant may elect not to wager his money on advertising. Consequently, this accounts for the very small number of non-Brantford advertisements. Brantford merchants located at the centre of the highest density of subscribers are likely to take advantage of the immediate market. This trend is reflected by the data (TABLE 3).

Editorial practices, although not usually discernable from the news content, may be a consideration when confronted by so few non-Brantford advertisements. Editorial practices may be administered in order to aid city growth. Immediate revenue from non-local advertising
is foregone and instead only local businesses from within the city are promoted.

Support for the first hypothesis does however, arise from the $\chi^2$ analysis of the news articles for 1871 and 1881 (TABLE 4). It is to the advantage of the editor to maintain a large portion of locally generated news, but in order to present a progressive image for his newspaper it is imperative to report fresh news without becoming repetitious or overly trite. As a daily publication, a newspaper would soon exhaust the supply of local news whereby it becomes essential to report news from places further away.

Further support for hypothesis 1 is indicated in Table 5. During 1871, Brantford produced 58.3% of the news articles while Local Centres accounted for 35.4% for a combined total of 93.7%. In 1881, this combined total of news articles originating from the immediate area fell to 56.5%. The percentage of news content from Other Canadian Cities and U.S. Cities increased significantly in 1881. No news originated from Overseas Cities in 1871. However, in 1881, 4.3% of the total news article content of the Brantford Expositor came from Overseas. The figures clearly depict a sharp change between 1871 and 1881. Although the emphasis of reporting news remains directed to Brantford and its hinterland there is an increasing importance placed on news originating in distant places as evidenced by the latter three categories.

The analysis lends partial support for the first hypothesis. Clearly, the advertisements and news articles are two distinct types of content and as such produce differing results. The advertisements do not support the hypothesis while the $\chi^2$ results obtained from the news
TABLE 5
PER CENT NEWS ARTICLES FOR EACH ORIGIN TYPE

<table>
<thead>
<tr>
<th>ORIGIN TYPE</th>
<th>1871</th>
<th>1881</th>
<th>1891</th>
<th>1901</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brantford</td>
<td>58.3</td>
<td>33.7</td>
<td>20.2</td>
<td>22.9</td>
</tr>
<tr>
<td>Local Cities</td>
<td>35.4</td>
<td>22.8</td>
<td>45.1</td>
<td>28.2</td>
</tr>
<tr>
<td>Other Canadian Cities</td>
<td>5.7</td>
<td>22.5</td>
<td>13.9</td>
<td>22.1</td>
</tr>
<tr>
<td>U.S. Cities</td>
<td>0.6</td>
<td>16.7</td>
<td>8.6</td>
<td>10.2</td>
</tr>
<tr>
<td>Overseas Cities</td>
<td>0.0</td>
<td>4.3</td>
<td>12.2</td>
<td>16.6</td>
</tr>
</tbody>
</table>

articles indicate that there is an increase in the number of news articles coming from further away after the newspaper switches to a daily production.

Second Hypothesis

The second hypothesis states that the hinterland and scope of the news articles will increase through time. In order to test the hypothesis frequencies were required according to the number of news articles per year and the origin of the news. A visual representation of the spatial characteristics of the news articles is provided by Figures 2 to 13.

The first portion of the analysis will deal with the delineation of the hinterland immediately surrounding Brantford and the scope of news reporting for Southern Ontario during each year of the study (Figures 2 to 5). Secondly, the analysis will focus on the expanding scope of news reporting for each year on a global scale (Figures 6 to 9).

The trends are quite explicit as indicated by the maps. In 1871, there is clearly a nucleus of nineteen centres surrounding Brantford all of which contribute at least 0.4% of the total news content of the
% OF NEWS ARTICLES EMANATING FROM SOUTHERN ONTARIO CENTRES - 1871

FIGURE 2.
SCALE 1" = 42 MI.
year. Interestingly, all of the nineteen centres are located within a twenty mile radius of Brantford. There is a defined hinterland produced by the local centres from which news articles originate and are subsequently recorded in the Brantford Expositor. The centres surrounding Brantford have an interesting configuration. There is an eccentricity tending towards the south and west of Brantford away from the urban influence of Hamilton. Brantford can easily be identified on all maps since it is the only centre that accounts for greater than 7.0% of the news article content during any year of the study.

Although Hamilton and London, Ontario, send no news articles to Brantford during 1871 their urban influence is apparent. All centres of the Brantford hinterland that contribute greater than 0.7% of the news articles are located to the south and west of Brantford. Of these centres, the majority are located to the south of Brantford. London is 57 miles from Brantford while the distance between Hamilton and Brantford is only 26 miles. Consequently, the urban influence exhibited by London is somewhat weaker than that of Hamilton. The result is that the majority of local centres contributing news articles to the Brantford Expositor are located on the London side of Brantford.

One of the considerations in selecting Brantford as the study site was that it was assumed to be located a sufficient distance from the urban shadows of the major centres. The pattern of the local news centres reveals this not to be the case (Figure 2).

Based on the results of Figure 2, it may be inferred that the Brantford Expositor is a newspaper catering to the local interests as only three centres in Southern Ontario located outside the local hinterland
sent news to the Expositor. Two of the centres contribute only 0.1 to 0.3% of the years total news article content while the third centre, Toronto, accounts for 1.0 to 3.9% of the 1871 article content. During 1871, the Brantford Expositor was a weekly news publication geared towards local needs and interests but was clearly influenced in its pattern of reporting news by the three major Southern Ontario cities: London, Hamilton and Toronto.

In contrast, Figure 3, illustrating the percentage of news articles emanating from Southern Ontario centres during 1881, depicts a decentralization of centres sending news. However, the clustering pattern of centres about Brantford is apparent in the same manner as in 1871. In 1881, the hinterland is composed of eighteen centres within the twenty mile radius while the scope of news reporting has increased to seventeen centres. As before, the urban influence of Hamilton and London causes the hinterland surrounding Brantford to demonstrate the same basic tendency of eccentricity as in 1871. The majority of towns tend to be to the south and west of Brantford away from the urban influence of Hamilton and London.

Figure 4 further illustrates an increasing news hinterland surrounding Brantford. In 1891, thirty-one centres compose this hinterland. The map illustrates that the urban influence of Hamilton is strengthened. The eccentricity is exaggerated away from Hamilton with the majority of centres in the hinterland located to the southwest of Brantford. The scope of news reporting has expanded to twenty-seven centres in Southern Ontario. Of these centres, only four contribute greater than 0.3% of the years total amount of news. Each of these four centres is a large Ontario
FIGURE 3.

% OF NEWS ARTICLES EMANATING FROM SOUTHERN ONTARIO CENTRES - 1881

LEGEND

0.1 - 0.3
0.4 - 0.6
0.7 - 0.9
1.0 - 3.9
4.0 - 6.9
7.0 - 100.0

SCALE 1" = 42 Mi.
city; Windsor 0.4-0.6% and Ottawa, Hamilton, Toronto contributing 1.0-3.9% of the news articles in the Brantford Expositor.

In 1901, the pattern is very well developed (Figure 5). The hinterland is well established with thirty-seven centres surrounding Brantford. Not only do these centres demonstrate the urban influence of Hamilton and London by illustrating an eccentric pattern but special characteristics have become clearly visible. The only centre located within the hinterland that contributes between 4.0 to 6.9% of the 1901 news content is located on the leeward side of Brantford with respect to Hamilton. On the Hamilton side of Brantford although there are eight centres only two account for more than 0.7%. Both of these centres are located within four miles of Brantford. The other six centres located on the Hamilton side of Brantford supply the minimum news content between 0.1 and 0.3%. On the south and west sides of Brantford twelve centres contribute between 1.0 and 3.9% of the year's news content. Four centres account for 0.7 to 0.9% while five centres contribute 0.4 to 0.6% with each of the four remaining centres located to the south and west of Brantford accounting for 0.1 to 0.3% of the news.

There is a clear pattern indicated. As the centres increase in distance from Brantford the amount of news contributed by each centre decreases. On the eastern side of Brantford, the number of centres and the amount of news contributed by each centre is reduced as a direct result of Hamilton's urban influence. The pattern of the hinterland is eccentric as a result of the distance decay factor being altered by the overwhelming urban influence exhibited by Hamilton.

Urban influences are further demonstrated by the results of Figure 5.
% OF NEWS ARTICLES EMANATING FROM SOUTHERN ONTARIO CENTRES-1891

FIGURE 4.
SCALE 1"= 42 Mi.

LEGEND

○ 0.1 - 0.3
○ 0.4 - 0.6
○ 0.7 - 0.9
○ 1.0 - 3.9
○ 4.0 - 6.9
○ 7.0 - 100.0.
% of News Articles Emanating from Southern Ontario Centres - 1901

Legend:
- ○ 0.1 - 0.3
- ◦ 0.4 - 0.6
- · 0.7 - 0.9
- ● 1.0 - 3.9
- ▽ 4.0 - 6.9
- ◎ 7.0 - 100.0

Figure 5.
Scale 1" = 42 Mi.
Thirty-one centres comprise the scope of news reporting in Ontario during 1901. Only three major centres account for any significant portions of news. Toronto falls within the 4.0 to 6.9% grouping presumably because of its importance as the provincial capital and financial centre of Ontario. Ottawa and Hamilton each account for 1.0 to 3.9%. Figures 6 to 9 illustrate the percent of news articles emanating from non-Southern Ontario centres.

Between 1871 and 1901, the scope of news reporting steadily increases on a world scale. Figure 6 indicates that only two non-Southern Ontario centres (Montreal and New York) contribute news to the Brantford Expositor. The scope of reporting is limited in both numbers of centres and their distances from Brantford.

Figure 7 records a total of twenty-six centres in North America and five Overseas centres from which news is recorded in the Brantford Expositor. The Centres in North America that contributed greater than 0.4% of the news content are all major eastern cities. The major centres of overseas news were located in Europe.

Figure 8 exemplifies the increasing scope of reporting on a global scale. In 1891, the Brantford Expositor recorded news from thirty-five North American centres, the majority of which were located in the Industrial Northeast and along the eastern seaboard of the United States. The number of centres that sent news from Europe increased to ten with cities such as London, Paris and Dublin contributing news with greater regularity. By 1891, news from Central and South America, Africa, Asia and Australia was slowly coming into print.

Figure 9 indicates that by 1901, the scope of news reporting increased in every portion of the globe. North America harboured forty-five
% OF NEWS ARTICLES EMANATING FROM NON-SOUTHERN ONTARIO CENTRES - 1871

FIGURE 6.
SCALE 1"=2050 MI.

LEGEND
- 0.1 - 0.3
- 0.4 - 0.6
- 0.7 - 0.9
- 1.0 - 3.9
- 4.0 - 6.9
- 7.0 - 100.0
% OF NEWS ARTICLES EMANATING FROM NON-SOUTHERN ONTARIO CENTRES - 1881

LEGEND
- 0.1 - 0.3
- 0.4 - 0.6
- 0.7 - 0.9
- 1.0 - 3.9
- 4.0 - 6.9
- 7.0 - 100.0

FIGURE 7.
SCALE 1" = 2050 MI.
% of news articles emanating from non-Southern Ontario centres - 1891

Legend:
- ○: 0.1 - 0.3
- ◯: 0.4 - 0.6
- ◊: 0.7 - 0.9
- ■: 1.0 - 3.9
- ■: 4.0 - 6.9
- ●: 7.0 - 100.0

Figure 8.
Scale 1" = 2050 mi.
centres, six of which accounted for at least 1% of the reported news content for the year. An additional six centres each accounted for 0.4 to 0.6% of the news while the remaining centres of North America each contributed below 0.3%. During 1901, London, England was the only non-Southern Ontario city to contribute more than 4.0% of the reported news in the Expositor. However, this is easily explained. London is the home of the Monarchy and for many years was the seat of Colonial rule. During 1901, England was in a political upheaval with the death of Queen Victoria and continuing political problems in South Africa.

There are substantial grounds to support the second hypothesis. Figures 2 to 5 illustrate the hinterland surrounding Brantford and the yearly strengthening of this pattern according to the number of centres and the amount of news originating from within the hinterland. The scope of news reporting is expanded yearly in Southern Ontario (Figures 2 to 5). Figures 6 to 9 demonstrate the progression of the expanding scope of reporting news on a world wide scale.

These trends are the direct result of important considerations. The volume of news content increasing through time coupled with the increase in the number of centres from which news originates depended greatly on the communication links. With time, the techniques of communication improved in quality as well as becoming increasingly numerous. This partially accounted for the increase of news content originating from greater distances and contributed to the increasing number of reported news events (Table 2).

However, only certain types of news are able to overcome the
barrier of distance. To illustrate this point, news content was divided into two groups based on relative impacts. Low impact news included Social News, General News, Reports - Financial, Sports and Agriculture and Minor Crime. The second group, high impact news, comprised Politics, Major Crime, International Politics and Sensational or Tragic News Events. News type based on impact ranking was tabulated according to type of origin (Table 6).

Table 6 clearly demonstrates three points. The first is that of distance decay coupled with the barrier effects of political boundaries. In each year, the percentage of news recorded at Brantford and local centres is always higher than the amount of news that originates in either of the other three origin classes. Likewise, the third group, Other Canadian Cities is always a larger news contributor than the U.S. Cities. The U.S. Cities contribute larger percentages (0.6 and 16.7) of the total news events than the Overseas Cities (0.0 and 4.3) for only 1871 and 1881. This difference is reversed in 1891 and 1901 likely due to the further development of communication methods between Europe and North America.

For each year of the study, the Low Impact news formed a greater portion of the total news content originating in Brantford or the Local Centres. However, the reverse is true for the remaining three origin categories except for Other Canadian Cities during the years 1881 and 1901 and Overseas Cities in 1871 when no news was recorded.

During each year of the study, the percentage of high impact news was always larger than the corresponding percentage of low impact news for both U.S. and Overseas Cities. This demonstrates that the low impact news is less resistant to the effect of distance than is high impact news. People are more interested in major political events, bizarre,
<table>
<thead>
<tr>
<th>ORIGIN</th>
<th>1871</th>
<th>1881</th>
<th>1891</th>
<th>1901</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LOW</td>
<td>HIGH</td>
<td>TOTAL</td>
<td>LOW</td>
</tr>
<tr>
<td>Brantford</td>
<td>47.5</td>
<td>10.8</td>
<td>58.3</td>
<td>30.1</td>
</tr>
<tr>
<td>Local Cities</td>
<td>24.0</td>
<td>11.4</td>
<td>35.4</td>
<td>19.9</td>
</tr>
<tr>
<td>Other Canadian Cities</td>
<td>2.3</td>
<td>3.4</td>
<td>5.7</td>
<td>13.0</td>
</tr>
<tr>
<td>U.S. Cities</td>
<td>0.0</td>
<td>0.6</td>
<td>0.6</td>
<td>6.0</td>
</tr>
<tr>
<td>Overseas Cities</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>TOTAL</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
sensational or tragic stories that occur in distant places than the incidental events that occur in these same distant places.

The newspaper content is directly dependent upon the news articles that come across the editor's desk which are partially a function of the capabilities of the wire service and the type of news. However, once the news is made available, the editor selects the news items that will eventually reach print. Due to his personal bias, policies or editorial practices that are exercised, the newspaper can appear or be portrayed in a number of manners. Logically, a news editor wishing to promote a progressive or efficient image of his paper will select news from local and distant locations provided print space is available for the distant news articles. The subscribers demand to know the news of their neighbours, local businesses, politics and special events. At the same time, if news is reported from many distant places it allows people to be in touch with the world. A combination of local and non-local news items produces informative and interesting reading; interesting, informative reading sells newspapers.

**Third Hypothesis**

The third hypothesis states that the advertisement links between Brantford and other centres will increase through time. Brantford is said to be linked to a city if that city submits an advertisement to the Brantford Expositor. Table 7 illustrates the percentages of advertisements that emanated from each type of origin. Figures 10 to 13 visually display the pattern of centres sending advertisements during each year.

In 1871, advertisements emanated from six Ontario centres and
only one U.S. centre. Clearly, Brantford produced the majority of the advertisements with very few advertisements originating from the local centres. With so few advertisements from the local area it may be possible

<table>
<thead>
<tr>
<th>ORIGIN</th>
<th>1871</th>
<th>1881</th>
<th>1891</th>
<th>1901</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brantford</td>
<td>94.3</td>
<td>92.9</td>
<td>96.3</td>
<td>87.2</td>
</tr>
<tr>
<td>Local Centres</td>
<td>1.5</td>
<td>0.9</td>
<td>3.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Other Canadian Centres</td>
<td>3.7</td>
<td>5.0</td>
<td>0.7</td>
<td>12.2</td>
</tr>
<tr>
<td>U.S. Centres</td>
<td>0.5</td>
<td>1.2</td>
<td>0.0</td>
<td>0.4</td>
</tr>
</tbody>
</table>

that either merchants felt they were unable to compete with the large merchants located in Brantford or perhaps an editorial practice limited the number of local town advertisements placed in the paper. The advertisements that originated in Other Canadian and U.S. Cities were generated exclusively from large centres such as Hamilton, London, Toronto and Chicago (Figure 10). The advertisements from these cities concerned only specialized products in every case. Toronto, Hamilton and Chicago advertised heavy machinery and boilers. London advertised special types of cut and stained glass. Presumably, certain advertisements may withstand distance if they are of a specialized nature.

During 1881, advertisements recorded in the Brantford Expositor emanated from one local Ontario centre, eight non-local Ontario centres, five U.S. centres and one centre from Quebec (Figure 11). As in 1871, Brantford commanded the largest portion of the advertisements (92.9%). Oddly enough, only Toronto and Montreal advertised in the Brantford Expositor during 1881 with any regularity. Every other centre that
% OF ADVERTISEMENTS EMANATING FROM CENTRES IN 1871

LEGEND
○ 0.1 0.3
○ 0.4 0.6
● 0.7 0.9
○ 1.0 3.9
○ 4.0 6.9
● 7.0 100.0

FIGURE 10.
SCALE 1"=120 MI.
% OF ADVERTISEMENTS EMANATING
FROM CENTRES IN 1881

LEGEND

0.1 0.3
0.4 0.6
0.7 0.9
1.0 3.9
4.0 6.9
7.0 100.0

FIGURE 11.
SCALE 1"=120 MI.
advertised in the Brantford Expositor during 1881 whether located in Ontario or the United States submitted only one advertisement. Why this pattern of advertisement submission should evolve is left to speculation. However, the advertisements that were sent over a distance were for particular services such as fine hotels, restaurants or special civic attractions or as was the case in 1871, for specialized goods such as heavy machinery.

Figure 12 and Table 7 present a curious situation. Virtually all advertisements (99.3% originated from Brantford and three local centres. Only two other centres within the sample, Hamilton and Grimsby, submitted advertisements during the year. It seems unusual that the links are limited to five in number. There was a change in the ownership and editorship\(^7\) in 1890. It is a possibility that this change may have brought with it a new advertising policy which excluded nearly all non-Brantford and local area advertising. In 1891, the only major centre that advertised in the Brantford Expositor was Hamilton, Ontario which was limited to approximately 0.5% of the total number of advertisements in the newspaper during that year.

Figure 13 and Table 7 illustrate a unique pattern. Brantford accounts for only 87.2% of the advertisements for 1901 and only one local centre submitted an advertisement. In 1901, Other Canadian Cities submitted 12.2% of the advertisements while Local Centres accounted for a surprisingly low proportion of the advertisement content (0.2%). Toronto and Hamilton are the only centres which advertised with any regularity and infact account for a combined total of 10.2% of the total number of

---

\(^7\) In 1890, the Brantford Expositor was sold to the Preston family (Brantford Expositor, October 11, 1952, p.7).
% OF ADVERTISEMENTS EMANATING FROM CENTRES IN 1891

FIGURE 12.
SCALE 1"=120 MI.

LEGEND
○ 0.1 0.3
○ 0.4 0.6
○ 0.7 0.9
● 1.0 3.9
● 4.0 6.9
● 7.0 100.0
advertisements recorded.

After viewing the results a clear trend is not apparent. Various anomalies arising from the data confound the relationships and lend no support for hypothesis 3. Through time it is interesting to note that weak and strong links are both formed and broken between centres (e.g. Toronto is linked to Brantford during 1871, 1881 and 1901). Perhaps the most important aspect is that advertisements sent a greater distance than twenty miles emanate from centres that are larger than Brantford in all but one case, Grimsby, during 1881 and 1891. Hamilton is the only centre that advertises each year which is indicative of the urban influence exhibited by Hamilton.

Lastly, although it is a simple matter to trace the changes in editor and ownership, it is exceedingly difficult to detect any changes in the newspaper policy with regards to the advertisements.

**Time-lag Hypotheses**

A major focus of this study concerned the time-lag factor of reporting news events in a newspaper. In this section hypotheses 4 to 8 will be discussed. The purpose was to determine the factors affecting time-lag and to note the changes in the influence of these factors on time-lag in three different years: 1881, 1891 and 1901. These three years were selected since the Brantford Expositor was a daily paper and when available, the time-lag for each news article was easily determined.

In order to test the fourth, fifth, sixth and seventh hypotheses, it was necessary to run a stepwise multiple regression with time-lag as the dependent variable. The independent variables were distance, inter-
% OF ADVERTISEMENTS EMANATING FROM CENTRES IN 1901

FIGURE 13.
SCALE 1"=120 MI.

LEGEND
○ 0.1 0.3
○ 0.4 0.6
○ 0.7 0.9
○ 1.0 3.9
○ 4.0 6.9
○ 7.0 100.0
action, number of column inches per article and the type of article.

\[
\text{Time-lag} = f (\text{Distance} + \text{Interaction} + \text{Number of Column inches} + \text{Type of Article})
\]

Of the 380 original cases collected for 1881, only 221 cases or 58\% were valid for the time-lag analysis. Invalid cases are those articles in which a time-lag value cannot be determined. For 1891, the valid cases numbered 427 or 51\% of the original sample of this year. The valid cases numbered 599 or 49\% of the original sample for 1901. Of the total sample of 2438 news articles for the three selected years only 51\% or 1247 cases were valid.

Upon initial investigation a very strong multicollinearity (r = .71751) was indicated between distance and interaction. As a result of this collinearity the variable interaction was separated from further analysis with the distance variable. Thus, subsequent regression analysis implemented either interaction or distance as one of the independent variables as well as the remaining independent variables. The results listed in Table 8 were obtained from a regression using distance, type of article (based on an ordinal ranking) and the number of column inches per article. The changes in the \(R^2\) values illustrate the increase in explanation attributed to each independent variable as it is added to the regression.

Support for the fourth hypothesis is evident in Table 8. The hypothesis stated that as distance between the news sending and the news receiving centre increases, the time-lag between occurrence and report of the event in a newspaper also increases. Of the independent variables, distance is the most important variable in explaining the time-lag values.
TABLE 8

CHANGES IN $R^2$ VALUES FOR THE INDEPENDENT VARIABLES ENTERED INTO THE REGRESSION

<table>
<thead>
<tr>
<th>INDEPENDENT VARIABLE</th>
<th>1881</th>
<th>1891</th>
<th>1901</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance</td>
<td>.19788</td>
<td>.19713</td>
<td>.04049</td>
</tr>
<tr>
<td>Type of Article</td>
<td>.02775</td>
<td>.02960</td>
<td>.07567</td>
</tr>
<tr>
<td>Number of Column Inches</td>
<td>.00443</td>
<td>.00034</td>
<td>.00392</td>
</tr>
<tr>
<td>TOTAL $R^2$</td>
<td>.23005</td>
<td>.22707</td>
<td>.12008</td>
</tr>
</tbody>
</table>

In 1881 and 1891, the $R^2$ value was approximately 0.197 for the variable distance while the other variables contributed little to the total $R^2$ values for these same years. Obviously, there are other factors in control of the determination of the time-lag values as the total level of explanation is low ($R^2 = .23$). However, the selected independent variables listed in the table are statistically significant. For all regressions computed in this study, the significance level of the $F$ statistic was .000. This indicates that there is little possibility that the results were due to chance which is partially a function of the large sample size.

The trend that is evident in the $R^2$ values is both interesting and pertinent to the seventh hypothesis. The seventh hypothesis stated that as time progresses the importance of the variables in explaining time-lag will decrease. The total $R^2$ values for the three years are in effect decreasing through time. Although the total $R^2$ value decreases by a marginal amount of 0.003 between the years 1881 and 1891 a downward trend is apparent. This trend is extended and exemplified between the years 1891 and 1901 where a significant decrease in the $R^2$ value of 0.107
is displayed. The trend is evident and is in support of the seventh hypothesis. The variables listed have become increasingly less important in determining time-lag as time goes by.

The regression also yielded coefficients which indicate the direction of the relationship between the dependent variable and each independent variable (Table 9). As the importance or impact of the article increases the time-lag decreases. This is not surprising. An important news item concerning national or international politics will command more attention than general news, and hence will have a shorter time-lag. Hypothesis six stating that the type of news will have an impact on the time-lag is given support by the regression coefficients (Table 9).

\[
\begin{array}{|c|c|c|c|}
\hline
\text{INDEPENDENT VARIABLE} & \text{PREDICTED SIGN OF REGRESSION COEFFICIENT RELATIVE TO TIME-LAG} & 1881 & 1891 & 1901 \\
\hline
\text{Distance} & + & +.0013 & +.0068 & +.0003 \\
\text{Type of Article} & - & +.3298 & -.2219 & -.3122 \\
\text{Number of Column Inches} & - & +.0537 & -.0117 & -.0235 \\
\hline
\end{array}
\]

The number of column inches being negatively related with time-lag should indicate that as the length of an article increases the time-lag decreases. This fourth hypothesis is merely reflective of the idea that a long story indicates an important article and as previously indicated, an important article demands a shorter time-lag.
Table 9 indicates some interesting results. The predicted relationships based on the hypotheses are presented in the first column. It is expected that as distance increases, time-lag increases; as the index of the news type increases, time-lag decreases; and as the length of an article increases, time-lag decreases. In 1881, distance, as predicted, was positively related to time-lag. However, neither the type of article nor column inches had the predicted relationships to time-lag. One possible explanation of this is that in 1881, distance was the major influence in determining time-lag, overshadowing the other variables' effects. The results for 1891 and 1901 appear to support this as distance remained positively related to time-lag. However, in these same years both type of article and number of column inches had the predicted negative relationship to time-lag. Apparently, as distance declines in importance it allows the other two variables to influence time-lag, as was initially expected.

The interaction measure between centres was a very poor variable in explaining time-lag. When entered into the regression in place of distance, the interaction variable produced $R^2$ values as listed in Table 10.

From the low $R^2$ values of the interaction variable and the higher $R^2$ values of distance it may be concluded that regardless of the potential interaction between centres it is the absolute distance that is a more important variable in determining the time-lag of a news article. As a result, hypothesis five is not supported by the data. The interaction variable was not important in explaining the time-lag factor. However, even though interaction was not as significant as distance, in all three years interaction was entered into the regression prior to the type of
article and the number of column inches just as distance had been.

Support for hypothesis eight can be clearly seen in Figure 14. The graph indicates that the maximum time-lag decreased through time. The longest time-lag was 40 days in 1881 and was reduced to 30 days by 1891. By 1901, the longest time-lag was only 22 days. The mean time-lag was also reduced through time as indicated by the chart in Figure 14. The decrease in the mean and range of time-lag may be attributed to the advances in technology. The telegraph would greatly reduce the effect of distance as a barrier on communication. Of course, as the network of telegraph lines increases not only is the length of time reduced in communication between centres but also the amount of information being sent between centres will increase.

TABLE 10
CHANGES IN $R^2$ VALUES WITH INTERACTION IN PLACE OF DISTANCE

<table>
<thead>
<tr>
<th>INDEPENDENT VARIABLE</th>
<th>1881</th>
<th>1891</th>
<th>1901</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction</td>
<td>.07562</td>
<td>.00936</td>
<td>.02785</td>
</tr>
<tr>
<td>Type of Article</td>
<td>.00296</td>
<td>.00437</td>
<td>.01329</td>
</tr>
<tr>
<td>Number of Column Inches</td>
<td>.00049</td>
<td>.00422</td>
<td>.00800</td>
</tr>
<tr>
<td><strong>TOTAL $R^2$</strong></td>
<td><strong>.07907</strong></td>
<td><strong>.01796</strong></td>
<td><strong>.04915</strong></td>
</tr>
</tbody>
</table>

After having considered the relationship between the various time-lag factors several hypotheses have been supported by the data (hypotheses 4, 6, 7 and 8) whereas hypothesis 5 was not supported by the data.
FIGURE 14
MEAN, RANGE AND FREQUENCY CHARACTERISTICS FOR TIME-LAG

<table>
<thead>
<tr>
<th></th>
<th>1881</th>
<th>1891</th>
<th>1901</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>40</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>Mean</td>
<td>2.326</td>
<td>1.913</td>
<td>1.678</td>
</tr>
<tr>
<td>Number of Articles with Determinable Time-lag</td>
<td>221</td>
<td>427</td>
<td>599</td>
</tr>
<tr>
<td>Total number of Articles</td>
<td>380</td>
<td>839</td>
<td>1219</td>
</tr>
</tbody>
</table>

FREQUENCY

TIME-LAG (days)
PROPOSED MODEL

Content analysis is the tool with which the newspaper data were extracted and formulated into the study. As with any technique, there is room for expansion and expression of new ideas provided that the data lends itself to a particular application. The following model makes innovative use of the data collected from the newspaper source.

For each news article there is a time-lag (if given) and an origin of the news (hence a distance). As indicated by the previous hypotheses, for each type of article it is expected that there will be a certain relationship between the variables time-lag and distance and that this relationship will vary through time.

If the time-lag and distance for each type of article for each year were regressed, each regression would yield a slope. Over time it would be expected that the slope would decrease for each type of article in the manner indicated in Figure 15. Due to the varying impacts or importance of different news types it would be expected that each different type of news would have different slope values for each year and that these slopes would decrease at varying rates through time.

FIGURE 15
TRAVEL VELOCITIES FOR A SPECIFIC NEWS TYPE

A decreasing slope indicates that at a given distance, through time, the time-lag is reduced for each type of article.
By obtaining the slopes for each article type in each year a further regression may be constructed placing the initial slope (now considered a velocity since $\dot{v} = \frac{\text{time}}{\text{distance}}$) against different years as indicated by Figure 16.

**FIGURE 16**

ACCELERATION RATES FOR A SPECIFIC NEWS TYPE

Each news type will have its own characteristic acceleration rate.

The velocity plotted against time yields acceleration ($a = \ddot{v}$). Therefore, a third graph may be constructed which plots the acceleration rates (the slope values obtained from Figure 16) against the type of news. The type of news is ranked according to the relative importance of news in each category. On the lower axis, the origin indicates the news type with the least importance (Figure 17).

This is a predictive model. If the input is the type of news, then the acceleration rate through time of a particular type of news may be determined by using Figure 17. If time is the input, then by using Figure 16 the velocity of a particular type of news may be determined. Lastly, if the input is distance from the news receiving centre for a
For the purpose of demonstrating the model, three types of news will be worked through the first portion of the model. These three types are easily distinguishable and should indicate some support for the model. The slope values of the news types Social News, Minor and Major Crime are listed in Table 11. As expected, the slope values for 1881 and 1891 decrease as the news' importance increases. Higher impact news types have higher velocities and hence, shorter time-lags than low impact news. The slope values, although not following the expected decrease through time, do fluctuate consistently for each article type. The 1891 slope values increase marginally for the three selected news types and then sharply decrease in 1901. These figures specify the relative effects of distance on time-lag for a specific type of news.
The model illustrates several concepts when viewing news type, distance and time-lag. First, the velocity with which news travels increases with time. Secondly, the distance between the news sending and the news receiving centre alters the time-lag for different types of articles at different rates.

**TABLE 11**

TYPES OF NEWS ARTICLES AND SLOPE VALUES

<table>
<thead>
<tr>
<th>Types of News</th>
<th>1881</th>
<th>1891</th>
<th>1901</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social News</td>
<td>.01035</td>
<td>.01409</td>
<td>-.00077</td>
</tr>
<tr>
<td>General News*</td>
<td>.00069</td>
<td>.00016</td>
<td>.00007</td>
</tr>
<tr>
<td>Reports</td>
<td>.00167</td>
<td>.00021</td>
<td>.00045</td>
</tr>
<tr>
<td>Minor Crime</td>
<td>.00766</td>
<td>.00886</td>
<td>.00414</td>
</tr>
<tr>
<td>Local Politics</td>
<td>.00044</td>
<td>.00051</td>
<td>.00017</td>
</tr>
<tr>
<td>Major Crime</td>
<td>.00143</td>
<td>.00175</td>
<td>.00007</td>
</tr>
<tr>
<td>National or International Politics, Sensational or Tragic News</td>
<td>.00146</td>
<td>.00020</td>
<td>.00040</td>
</tr>
</tbody>
</table>

* Indicates desired decrease in slope values.

Although the initial results did not fully support the proposed model, they were promising and indicative of a trend. Of the seven different types of articles, only one type, General News, had the desired step decrease of slope values as designed in the model (Table 11).

Over the three year period, two of the news types (Reports and National or International Politics, Sensational or Tragic News) record their highest slope values in 1881 with the lowest values in 1891 followed by a slight upward trend in the slope values in 1901. In the remaining four news types, the moderate slope values of 1881 peaked in 1891 dropping rapidly to the lowest values in 1901.

Little attempt was made to apply the data further than the first
step of the model. The major problem was in attempting to construct valid regression lines for a time period of twenty-one years when only three of the possible twenty-one points were available for the second regression. It is believed that if the values for the intervening years were obtained then perhaps the trends would be more evident and supportive of the model.
The analysis conducted on the newspaper content generated some interesting results. The two types of content, advertisements and news articles, responded in different manners when the Brantford Expositor changed its publication schedule; weekly to daily. The results obtained from the $x^2$ analysis of the news articles clearly displayed support for the first hypothesis. The news content was in fact generated on a local level when the newspaper was a weekly. When the newspaper changed to a daily publication the news emanated with greater frequency from non-local centres. The advertisement content did not display a change in origin when the paper became a daily as indicated by the $x^2$ analysis.

Effectively, the different results obtained in the first hypothesis are attributable to the varying reasons involved in the motivation and subsequent inclusion of each type of content in the newspaper. Considerations by the merchants and the editor of the paper are directly responsible for the advertisements that appear in print. News articles, on the otherhand, are not subject to financial or locational considerations. News as it appears in the newspaper may emanate from any location and be reported by any person.

The data clearly lent support to the second hypothesis. Through time, there was an increase in the number of centres that comprised
Brantford's hinterland. During the same time, the scope of news reporting from both Southern Ontario and Non-Southern Ontario centres expanded significantly. A number of reasons including improvements in communication services and the desire of either the owner or editor to portray a particular image for his newspaper may have been responsible for the expansion of the hinterland and scope of news reporting.

There was no support for the third hypothesis concerning the expansion of advertisement links through time between Brantford and neighbouring centres. The results obtained confound the expected relationship. However, advertisements are easily affected by editorial practices, the distance between centres, competition factors as well as a number of monetary considerations. These factors are probable causes that suppress any expansion in the number of advertisement links between centres.

Although the results concerning the time-lag of news events are not highly significant, several trends have been indicated by the data. Distance was found to be the most important variable in determining the time-lag of an article in the years 1881 and 1891. This supports the fourth hypothesis. In 1901, as the $R^2$ value indicates, the overall effect of the independent variables diminish (supporting hypothesis seven) to a point where distance, although remaining significant, is no longer the most important variable. The type of the article becomes the most important variable in determining the time-lag.

The interaction measure for each news sending centre was found to be an unimportant variable in determining the time-lag. There was no support for hypothesis five concerning the interaction between centres as indicated by the data. However, the calculations did not account for a
k constant or an exponent on the distance value but dealt with population and distance in absolute terms. The effect of distance as a barrier increases but at a decreasing rate.

The sixth hypothesis concerning the ranking of the news types was supported by the regressions for each year. In all cases, the type of article was found to be significant with its impact being inversely related to its time-lag during two of the study years.

The data indicated changes which supported hypothesis eight. As expected, the mean and maximum values of time-lag decreased through time. These results are probably due to the improvement and spread of technological innovations such as the telegraph.

There are some considerations that must be viewed. One consideration is that the study selected and isolated four years from an ongoing time continuum involving interrelated factors within a dynamic process of change. The assignment of news items to categories is partially subjective and could lead to misallocation of certain articles. It is felt, however, that the large sample size collected eliminates the effect of misallocation of articles to categories.

Hidden deep within the source material there maybe certain variables or factors that affect the available data. Editorial practices or policies of the newspaper influence the news content. The type of news, special news events and the allowed time-lag may be factors that were considered when preparing a paper for publication. A news editor receiving old news items across his desk may disregard them in favour of fresh breaking news in order to maintain an up to date efficient image for his newspaper. Selection and exclusion of various types of news may also
result according to the topics of news that are most important or relevant during the time. "Any given event may get reported or not - if it is, it may be reported in a variety of ways" (Budd, Thorp and Donohew, 1967, p.7) with some editors reporting certain aspects while eliminating other aspects. The same story may be reported in a short concise manner by one paper while another paper reports the same story in a very long form on the front page (Budd, Thorp and Donohew, 1967, p.8).

On the local level there were certain problems of communication that affected the time-lag of events. Small centres near Brantford may have telephoned news to the newspaper. However, it is more likely they would have mailed correspondence or a copy of a small local newspaper to Brantford. Brantford was able to assemble news in this manner by establishing a network of correspondents who unfortunately might have reported news at irregular intervals, to convey news items to Brantford. Inherent time-lags will result in Brantford's newspapers if the centre sending news to Brantford publishes a weekly paper or if the mail service is very slow.

This study indicated that a simple measure of interaction between centres was not as important as the absolute distance dividing these centres. If this is the case, then there would be no reason to collect population figures which is a tedious, frustrating and time consuming process. If population figures are not required, then the omitted years may be investigated and incorporated into the study by collecting data from the newspaper sources. This eliminates or at least reduces the problem of isolating time slices from a dynamic continuum for analytical purposes.
The predictive model presented in Chapter 3 displayed the changes in factors that affect time-lag. As the type of news and the distance between centres changes the time-lag of news reporting also changes. The concepts of changing rates of velocity through time for different types of news indicate the types of information that may be gained from various applications of content analysis to primary source material.

This paper demonstrated a further use of content analysis. Several trends and relationships initially hidden within the newspaper were revealed as previously described. Future studies utilizing content analysis in historical geography may explore the similarities and dissimilarities in the changes through time as evidenced by a number of different newspapers. With an element of imaginative experimentation, similar types of analysis as presented here may be conducted on other types of available primary source material.

In conclusion, content analysis will by no means answer all questions raised in historical geography. However, it may be deemed a viable and valuable instrument by which information may be extracted from numerous sources.
REFERENCES

Primary Source Material

Brantford Expositor

<table>
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<tr>
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<th>1871</th>
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<td>Jan. 3</td>
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<td>Mar.</td>
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<td>Mar. 19</td>
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<td></td>
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<td>Dec. 28</td>
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</table>


Secondary Source Material


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