Stories: Applications of Narrative Discourse Analysis to Issues in Information Storage and Retrieval[1]

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Beghtol, Clare (1997). **Stories: Applications of Narrative Discourse Analysis to Issues in Information Storage and Retrieval**. *Knowledge Organization*, 24(2), 64-71.

ABSTRACT: The arts, humanities, and social sciences commonly borrow concepts and methods from the sciences, but interdisciplinary borrowing seldom occurs in the opposite direction. Research on narrative discourse is relevant to problems of documentary storage and retrieval, for the arts and humanities in particular, but also for other broad areas of knowledge. This paper views the potential application of narrative discourse analysis to information storage and retrieval problems from two perspectives: 1) analysis and comparison of narrative documents in all disciplines may be simplified if fundamental categories that occur in narrative documents can be isolated; and 2) the possibility of subdividing the world of knowledge initially into narrative and non-narrative documents is explored with particular attention to Werlich's work on text types.

1. Introduction

Throughout history, primary works of literature (including prose and poetry) and the other fine arts (e.g., painting, music, and dance) have used narrative techniques. Recently, scholars from other areas of knowledge have borrowed theories of narrative from the humanities, especially from literature, for exploration and exploitation in a variety of social, natural, and technical science contexts.[2] In general, however, information storage and retrieval (ISAR) systems, theories and research have neglected problems of analysis and retrieval for primary documents in the arts and humanities. Presumably, theories and techniques of narrative analysis are applicable in many fields regardless of the medium in which a narrative document appears (e.g., print, electronic, aural or visual recording). It is helpful to examine how narrative discourse research could contribute to solving a variety of problems in the design of knowledge organization systems and theories for some, although not all, primary documents in the arts and humanities. Potentially, too, narrative research could be extended to the organization of documents in other broad areas of knowledge. The contribution of narrative discourse analysis serves to highlight the importance of the arts and humanities to the whole world of knowledge.

This paper addresses the application of narrative research to ISAR problems from two complementary directions: 1) discussion of potential fundamental categories for the internal content analysis of narrative documents from any discipline; and 2) discussion of the potential usefulness and potential problems of a broad macro-analysis of the world of knowledge by means of a narrative/non-narrative distinction rather than by means of the more common fiction/non-fiction (or literary/non-literary) distinction.

2. Micro-Analysis: Elements of Narrative Works

There's plenty of stories
That they could tell.
Some are born of true detail,
And some are purely fiction.

From "Mull River Shuffle", *North Country*, The Rankin Family, 1994.

People have always told "plenty of stories", sometimes based on "true detail" and sometimes "purely fiction". Narrative has been studied since Plato and Aristotle, and the history of the study of narrative is

itself, of course, a narrative.[3] In general, the history of any abstract or concrete entity (e.g., "justice" or "clothing") may be seen to be a narrative. In addition, situations that we may not habitually think of as narrative occurrences may be helpfully regarded as "stories". Two examples may be given. First, a jury's verdict may be seen as a judgement that one, rather than another, narrative account of a series of events is more probable, when certain events are given, but more than one version of peoples' motives and involvement is scrutinized for plausibility (Bennett, 1992). Second, theories of human evolution in paleoanthropology incorporate different narratives to analyze the fossil record depending upon what is considered the primary evolutionary agent (Landau, 1991).

The disparate interpretations that have been given to the relatively abstract idea of "narrative" mean that a broad definition of the term is useful for our purposes. We may consider a narrative to be a telling or re-telling of a series of events related to each other in some definite way. This operational definition includes the basic elements most often incorporated in definitions of "narrative". It does not imply that the narrative must proceed in chronological order, that the telling must use language as a medium of expression[4], that any particular type of work (e.g., fiction) is necessarily or definitively a narrative, or that other discourse elements (e.g., argument) cannot be combined with narratives.

One approach to studying ISAR problems for narrative documents is to isolate the constituent elements of narrative, initially at a high level of abstraction, with the expectation that each constituent element could itself be analyzed in some detail. The objective of identifying large-scale constituents is to bypass views of narrative specific to particular fields in order to obtain, as far as possible, a consensus about what all narrative structures have in common.[5] This procedure mirrors that of Bliss in developing his *Bibliographic Classification* (1940-53) on the basis of the consensus of scientists and educators. If fundamental categories for the internal analysis of narratives can be determined and if we use the same units of analysis for the internal content of a number of documents, an ISAR system based on this analysis will be able to retrieve more-or-less related documents that match on more-or-fewer dimensions.

This orientation reflects the fundamental assumptions of present print-based indexing and classification systems. It does not imply, however, that the narratives retrieved will be "the same" either in any ways that are not reflected in the units of analysis chosen or in the actual content of these fundamental categories. It also does not imply that an internal component analysis of a narrative will yield a summary or abstract of the narrative. Thus, this method constitutes an analytic, rather than a holistic, approach to narrative documents. In this, it reflects the general bottom-up approach to analyzing documents common to thesaural and hypertext systems, but not the summarizing approach usually assumed in general subject heading and classification systems.

The usefulness of deriving fundamental elements of narrative may be demonstrated by contrasting two narrative analysis techniques that have been used to compare documents. Herschbach (1995) studied the work of Dr. S. Weir Mitchell, head contract-surgeon at Turner's Lane Hospital, a large Union Army hospital devoted to neurological research in Philadelphia during the U.S. Civil War (1860-1865). Mitchell wrote two distinct kinds of works, non-fiction scientific medical case histories and fictional realist novels and short stories. Both kinds of works dealt mainly with the patients and injuries Mitchell treated in the course of his job. Herschbach compared three of Mitchell's works: his short story "The Case of George Dedlow" (1866), his novel *In War Time* (1884) and his neurological text *Injuries of Nerves and their Consequences* (1872).[6] Paying particular attention to the differing narrative structures of these works, Herschbach discussed them mainly on a thematic level and on the different authorial stance Mitchell took in each kind of work. She did not, however, attempt to analyze narrative itself into its component parts and then to compare Mitchell's fiction and non-fiction works on these various dimensions. As a result, Herschbach's conclusions about Mitchell's works cannot be compared directly to other similar narratives either by Mitchell or by other authors, and her methodology cannot therefore be easily generalized to any other fiction or non-fiction narratives. For the purposes of ISAR systems, then, Herschbach's approach does not seem serviceable.

In contrast, Clark compared the narrative structures of four histories of science in an attempt to "mobilize literary criticism as an aspect of science studies" (1995, p. 1). The histories were *The Edge of Objectivity* (by Gillispie, 1960); *Leviathan and the Air Pump* (by Sharpin and Schaffer, 1985); *The Great Devonian Controversy* (by Rudwick, 1985); and *Primate Visions* (by Harraway, 1989).[7] Clark examined each history as a representative of a literary genre (i.e., Gillispie as epic romance; Sharpin and Schaffer as tragedy; Rudwick as comedy; and Harraway as satire) by using six constituent elements of narrative (i.e., voice, scene, agents, plot, end, and audience) to analyze each of the four works. The identification of these elements allowed Clark to compare and contrast the histories systematically. In contrast to Herschbach's mode of analysis, Clark's procedure facilitated identification of similarities and differences among various

works, and his method of comparative narratology thus seems more appropriate for ISAR theories and systems than Herschbach's.[8]

Table 1: Narrative Elements from Non-ISAR Fields

Ruthrof, 1981	Personae	Events (non human)	Acts (human)		Space	Time			
Brewer, 1985	Personae	Events			Setting (location)	Setting (time)	Narrator	Resolution	
Halász, 1987	Existents (characters)	Events		Existents (setting)					
Polking-horne, 1988	People	Events	Actions (human)						Voice
Lamarque, 1990	Characters	Structure (plot, including events)				Time		Voice	
Rigney, 1990	Actors (individual and/or collective)	Events			Place	Time			
Clark, 1995	Agents	Plot		Scene			Narrator	End	Voice

It would thus be helpful to discover to what extent a consensus exists among different disciplines about the fundamental elements of narratives. Table 1 tabulates a number of narrative elements identified by seven non-ISAR authors, and has been developed to show broad areas of agreement.[9] These authors were chosen for Table 1 because all devoted some attention to the fundamental elements of narrative or explicitly define the term.[10] Obviously, the authors in Table 1 do not necessarily agree on the terms chosen to express the same concept. For example, in the first column of Table 1, six terms are used to signify the same idea (i.e., "Personae", "Existents", "People", "Characters", "Agents" and "Actors"). Rigney (1990) breaks "Actors" down further into individual actors and collective actors, and Halász (1987) breaks "Existents" down into "Characters" and "Setting". In addition, the authors do not necessarily agree on the definition of each term. For example, Clark (1995) used "Plot", which includes events, Lamarque (1990) used "Structure", which includes a plot made up of events, Polkinghorne (1988) distinguished between "Events" (non-human) and "Actions" (human) and Ruthrof (1981) distinguished between "Events" (non-human) and "Acts" (human).

Nevertheless, since our goal is to discover whether a broad consensus on narrative elements exists among various authors in various disciplines, Table 1 is heuristically useful for discovering probable fundamental elements within narrative documents. From Table 1 we may extrapolate that a narrative is generally considered to be a structured discourse that contains (under whatever terminology) at least the following basic elements:

a. non-random characters (including narrator(s));
b. events (human and/or non-human);
c. settings (i.e., places, times);
d. completion (i.e., resolution, end); and
e. perspective (i.e., voice, point of view).

As Martin pointed out, the assumptions and priorities of a particular analysis of narrative influence one's view of the text as a structural whole. This view means that "we cannot escape the fate of reading [i.e., of interpreting a text on the basis of some theory], but we can at least try to remain aware of it and to understand the process and purpose involved" (1986, p. 111-112). The method of identifying the five elements in Table 1 is therefore influenced by the needs of ISAR systems and will be further influenced in application by the characteristics of particular systems. Bliss' dependence on the consensus of educators and scholars required that he include optional placements of classes in his *Bibliographic Classification System* (1940-53). Similarly, meaningful incorporation of the basic elements in Table 1 in ISAR systems will depend on the purposes and priorities of the system.

Further research remains to be done on the micro-analysis of narrative documents. For example, it will be necessary to discuss how the five elements can be identified in different kinds of narrative documents, and each element may need redefinition in different situations. In some cases, (e.g., biography; fiction; history) each element may be relatively easy to identify, but in some cases we may need to operate with analogies (e.g., in a technical report of research in chemistry, the chemicals used may need to be identified as "characters"). Further, some ambiguity may be present. For example, in accounts of studies of database searching, the database itself may be seen as both a "character" (i.e., a participant in a "dialogue") and the "place" where the study is being conducted. These and similar ambiguities need resolution.

3. Macro-Analysis: The Narrative/Non-Narrative Distinction

The fiction/non-fiction distinction that we habitually use for ISAR purposes probably arose for modern bibliographic systems from Cutter's third objec-

tive of the catalogue: "To assist in the choice of a book...as to its character (literary or topical)" (Cutter, 1904, p. 12). The implication of the third objective is that the phrase "literary or topical" represents a dichotomy in which literary character precludes topicality (and vice versa). The major bibliographic classification systems extended Cutter's distinction by basing their main classes on the academic disciplines. This procedure created one main class for literature (e.g., the 800s in the *Dewey Decimal Classification* and PN-PZ in the *Library of Congress Classification)* and a larger number of other main classes for the chiefly "topical" disciplines.

This point of view, which is still conventional in ISAR systems, is less compelling than it was during Cutter's time. For example, Bruner (1995) maintained that the genre of autobiography is an extension of fiction writing, partially because, in his view, art influences, rather than imitates, life. Sager, *et al.* recommended "treating the texts of physicians like the myths of native peoples" (1995, p. 142). Similarly, the kinds of approaches exemplified by, for example, Herschbach (1995) and Clark (1995) as discussed above show that the "literary or topical" dichotomy has become less meaningful and less acceptable to scholars. It is thus interesting to address the question: What would happen if we collapsed the fiction/nonfiction categories in ISAR systems and replaced them with a category for all narrative, whether fictional or factual?

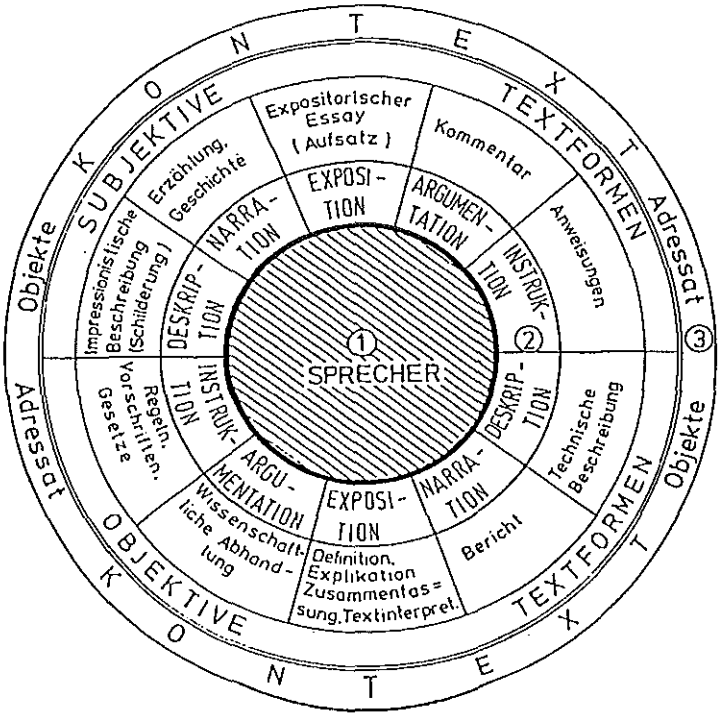
To "bracket out the distinction between fiction and non-fiction" (Clark, 1995, p. 7) is a technique that researchers in other disciplines have used to bring narrative discourse analysis into their specialized fields. This possibility may be valuable in information retrieval as well. For example, the Classification Research Group (CRG) was unsuccessful in its attempts to generate the main classes for a general classification system using universal units of analysis from general systems theory and to base the citation order for such a system on the biological theory of integrative levels. One of the problems the CRG faced was the distinction between "artifacts" and "mentefacts" and the resulting "Chinese plate syndrome", i.e., the inherent differences between classifying actual Chinese plates and classifying documents about Chinese plates (Classification Research Group, 1978, p. 23). This problem is particularly relevant to the arts and humanities, in which, for example, a novel or a symphony or a philosophical treatise, and also documents about them, are arguably both artifacts and mentefacts. Both Chinese plates and documents about Chinese plates, however, can contain narratives. Narrative elements might be used to analyze either the plates themselves or documents about the plates. Thus, the CRG's difficulty in finding viable main classes for a general classification system may be mitigated and the artifact/mentefact distinction made less significant by collapsing the narrative/non-narrative distinction.

Some degree of broad interdisciplinary consensus existed that enabled us to delineate certain fundamental narrative elements in Table 1. Unfortunately, much less consensus exists on what kinds of documents the negative category "non-narrative" might encompass. In addition, a problem arises that is common in grouping systems that depend on binary opposition to create classes. For example, the Tree of Porphyry is often shown as subdivided on the basis of binary yes/no oppositions (e.g., "organic/not organic", Phillips, 1961, p. 14). But the non-organic category lacks distinctive content because the many kinds of non-organic things (e.g., stars, books, airplanes, volcanoes) would be indiscriminately bundled together. Thus, explicit types of documents that fall into the non-narrative category must be ascertained, and, except for the ISAR dependence on the literary or topical distinction, little consensus exists on the identification of these document types.

The study of types of documents (i.e., text types) has a history as long as that of the study of narrative as one text type.[11] Many typologies for different purposes exist. For example, de Beaugrande (1980) proposed eight general text types: descriptive; narrative; argumentative; literary; poetic; scientific; didactic; and conversational. In addition, document typologies for specific fields are relatively frequent. For example, generally accepted text types for testing reading skills in a foreign language are: enumerative; orientational; instructive; evaluative; and projective (e.g., Lee and Musumeci (1988)). To bring some degree of order to this situation, Suter distinguished between two ultimately overlapping techniques for deriving a text typology: "everyday usage" and "theoretical re-definition" (1993, p. 31ff). The "everyday usage" technique derives text types from recognized, accepted, and conventional formats for communication in some sociolinguistic context. The literary or topical distinction appears to be an example of this technique. The "theoretical re-definition" technique derives text types on the basis of explicit features, employs specific definitions and results in homogeneous, theoretically mutually exclusive, classes. The development of general classification systems on the basis of the academic disciplines appears to conform relatively well to this technique. We may conclude that both of techniques identified by Suter have precedents in developing ISAR systems.

In Suter's view, the everyday usage approach suffers from a "certain amount of vagueness, as it must cover very different textual phenomena" (1993, p. 32),

Figure 1: Werlich's Diagram of Text Types



and the theoretical re-definition approach suffers because "its postulated text classes only have a theoretical status with regard to actual language use" (1993, p. 32). Both these drawbacks are illustrated by our discussion of the narrative/non-narrative distinction and by discussions in the literature about the inadequacy of the academic disciplines as the foundation for a general system. For our purposes, it seems useful to consider models that combine the everyday usage with the theoretical re-definition approaches in order to reduce the drawbacks of each. Such a model was proposed by Werlich (1975), and is discussed below. Ultimately, other text typologies will need to be studied and compared to each other in order to find one (or a combination of several) that seems most productive for categorizing non-narrative documents.

Werlich's view of text types is summed up in Figure 1 (1975, p. 71, Fig. 5). He proposed five text types: description; narration; exposition; argumentation; and instruction.[12] In Werlich's view, these text types corresponded to innate cognitive knowledge of text analogous to the deep structure of language. This view is reminiscent of Bliss' belief that the ideal classification system would mirror the order of nature. In Werlich's system, each text type has a dominant contextual focus, a cognitive process, and a thematic text base. For example, the contextual focus of description is phenomena in space, its cognitive process is perception in space, and its thematic text base is the simple phenomenon-registering sentence.[13] In addition, each text type has an objective and a subjective variant. For descriptive texts, for example, the objective variant is a technical description and the subjective variant is an impressionistic description.

Werlich's view of text types may be appropriate for ISAR systems because it defines text types on the basis of features that occur in the texts themselves and that presumably can be identified.[14] Further, Werlich expected that individual texts could be categorized according to the five text types, and he included one example illustrating how this categorization could be accomplished. Using the example of narrative texts, he created a hierarchical arrangement of decreasing abstraction by which one can purportedly assign specific narrative texts to the appropriate category. As Figure

Figure 2: Typological Classification of Text

7. Idiosyncratic variant	6. Temporal-spatial variant	5. Compositional type	4. Text form variant	3. Text form	2. Text type	1. Text	Text-typological Classification / Text examples
-	-	-	-	-	-	+	1. Text-typical sequence of sentences
-	-	-	-	-	+	+	2. Text in narrative idiom
-	-	-	-	+	+	+	3. Story
-	-	-	+	+	+	+	4. Joke
-	-	+	+	+	+	+	5. Ethnic joke
-	+	+	+	+	+	+	6. "Irish" Joke
+	+	+	+	+	+	+	7. Individual variant

2^{15} shows, characteristics of increasing refinement can be used to assign each narrative text to appropriate categories (e.g., "story", "joke") within the narrative text type. Werlich did not, however, work out these narrower categories for all narrative texts, or for the other general text types (i.e., description, exposition, argumentation, and instruction). Thus, it would not be possible to use Werlich's work in ISAR without considerable expansion of the details of his theory of text types, but the theoretical framework is strong and intuitively attractive.

Problems that would arise in assigning documents to broad categories such as Werlich's five text types are considerable. As Emery pointed out, "an instruction manual may be expository and descriptive as well as instructional" (1991, p. 567-568). This objection would apply to the internal structures of many texts, and, in addition, opinions differ greatly not only about individual documents, but about large groups of texts. For example, the statement that "effacement of scene is a device by which some writing, such as philosophy, dispels narrativity" (Clark, 1995, p. 10) contrasts sharply with the statement "some philosophical works, but not all, are in narrative form: Descartes's *Discourse* is, Spinoza's *Ethics* is not" (Lamarque, 1990, p. 132). Further study is needed before we can conclude that the narrative/non-narrative distinction might serve as a basis for ISAR systems.

A diachronic study of knowledge organization systems such as bibliographic classification systems can provide us with a narrative history of the documentary productions of certain times and places and reveal the cultural warrant of the age (e.g., Hulme, 1923). Similarly, the bases for general classification systems reflect the assumptions and priorities of a certain culture. The late nineteenth century dependence on the academic disciplines has been attacked repeatedly during this century, and the literary or topical dichotomy seems likely to undergo similar critical appraisal.

4. Conclusion

One objective of this paper has been to suggest areas in which narrative discourse analysis might prove valuable to ISAR research, theories and systems. In particular, further effort is needed to discover the specific content each constituent element of narrative might contain and to develop our knowledge of those text types that most fruitfully comprise the non-narrative category. In this situation, the traditional interdisciplinarity of library and information science is an advantage because the breadth of our knowledge of other disciplines means that we can see trends throughout the world of knowledge creation. This ability, if we value and cultivate it, will enable us to create ISAR systems that respond in depth to the needs of the users of the systems.

Notes:

1. This paper also appears in the *Proceedings* of Research Seminar on *Fiction · OPACS · Networks: Research and Development in Electronic Access to Fiction, Multicultural knowledge Transfer and Cultural Mediation Via Networks,* Nov. 11-13, 1996, Copenhagen, Denmark, edited by H. Albrechtsen and C. Beghtol.

2. For example, Interface design: Laurel and Bates (1991). Economics: McCloskey (1990). Policy sciences: Roe (1994). Sociology of medicine: Rorty (1995). Historical medical sociology: Herschbach (1995). History of science: Clark (1995). Social psychology of institutions: Saris (1995). Doctor/patient communication: Borges and Waitzkin (1995). Political theory: Abbott, Philip (1991). Research methods: Abbott, Andrew (1990). Information science: Dervin (1994). Medical language processing: Sager, *et al.* (1995). These authors, of course, proceed from different assumptions and move toward different goals in their discussions of narrative. Mishler produced a typology of different models of narrative analysis in an attempt to bring some order to "the current state of near-anarchy in the field" (1995, p. 88) of narrative studies.

3. A succinct bibliographic essay and overview of narrative theories in literature appears in Tölölyan, 1990.

4. This paper is concerned with written, not with oral, narrative, which has particular conventions (e.g., Watson, 1973; Brewer, 1985). The relationships of oral culture to written communications on the internet, however, may eventually require broadening the study of narrative for ISAR to include oral narrative conventions. In addition, this paper is not directly concerned with narratives that do not use language (e.g., ballet), although the analysis may plausibly be extended to those narratives.

5. Mishler (1995) proposed a three-part typology of models of narrative analysis: 1) Reference and temporal order: the "telling" and the "told"; 2) Textual coherence and structure: narrative strategies; and 3) Narrative functions: contexts and consequences. The orientation of this paper conforms to Mishler's second type by focusing on the construction of narrative.

6. These works have not been examined and do not appear in the references.

7. These works have not been examined and do not appear in the references.

8. The need to develop methodologies for comparing narratives has also been noted in other fields. For example, in sociology the lack of a controlled method for biographical interviews has meant that the interviews cannot be compared and that therefore the "résultats cumulent pas" (Peneff, 1995, p. 59).

9. Elements that seem to be present in only one analysis are omitted from Figure 1 (for example: Polkinghorne (1988) "unified happening"; Clark (1995) "audience"; Ruthrof (1981) "tonal aspects", "atmospheric aspects", "ideological patterns"; Lamarque (1990), "perspective"). In some cases,

the elements omitted in Table 1 are implied by elements discussed by other authors. For example, for Clark "audience...abides in the text" (1995, p. 53) and is distinguished from the "reader" outside the text, while for the others an audience outside the text is a given.

10. Other authors were excluded because they did not turn their attention to fundamental elements. For example, Roe "starts with the conventional definition of *stories* and identifies those policy narratives...that conform to this definition." This conventional definition is later identified as "scenarios and arguments" (1994, p. 3, original italics), but these terms are not explicitly defined.

11. Overviews of twentieth-century studies appear in, for example, Suter (1993), Emery (1991), Petitjean (1989), Raumolin-Brunberg (1988).

12. English translations of Werlich's German terms have been taken from discussions in John (1988) and Raumolin-Brunberg (1988).

13. The thematic text base does not appear in Figure 1. It is a sentence type that shows the surface structure corresponding to the deep structure of the text type. For example, the thematic text base for description is "Thousands of glasses were on the table" (Raumolin-Brunberg, 1988, p. 149).

14. This orientation conforms to Jeng's view that ISAR descriptions of documentary "information objects" such as books need to begin with the features of the objects themselves (Jeng, 1993, p. 113).

15. Figure 2 is from John (1988, p. 2), who translated and adapted it from Werlich (1975, p. 77).

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Acknowledgements: Research for this paper was partially supported by the Social Sciences and Humanities Research Council of Canada.

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