

## MAPPING NARRATIVES: A CYBERCARTOGRAPHIC APPLICATION

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### INTRODUCTION

Movies and places are deeply connected. Places contribute to the shaping of a movie, just as movies contribute to the production of spatial identities. As emphasized by Jacques Van Waerbeke (1999, 1), “A movie in which the narration refers to the real serves as a witness of a relationship to an experienced or perceived space, and reciprocally contributes to the construction of the meaning of that same place” (translation mine). This paper proposes to further explore the relationships between films and places, through the mapping of cinematographic narratives. Mapping cinematographic narratives requires overcoming two major challenges. First, it calls for the transformation of audiovisual material into geographic data, which is a recurrent issue in geography. As emphasized by Sophie Clairet (2003, 3) geographers are still inquiring on the questions of “how to treat image and sound? How to transform them into sources that could then be transformed in series?” (Translation mine). Secondly, mapping narratives calls for the development of new forms of visualization. While it may be easy to map narratives as points, lines and areas, these representations are rarely appropriate to capture and characterize the complex spatio-temporal dimensions of stories.

In this paper we present a cybercartographic application that has been designed in order to alleviate these issues and to provide solutions to help properly map the many different dimensions of narratives. The first part of this paper describes a methodology developed in order to extract geographic data from films that can then be mapped. The second section presents an online cartographic application developed to map these narratives. This tool has been used to map the narratives of four contemporary Canadian films, as illustrated in the third section. This application is envisioned as a way in which a multitude of narratives, including vernacular knowledge, can be mapped and studied.

### 1. TRANSFORMING AUDIOVISUAL MATERIAL INTO GEOGRAPHIC DATA

The use of films by geographers as a source of information to study places has grown since the 1990s (Rose 1994). Nevertheless, very few attempts have been made in geography or cartography to map films spatial sequences, or narratives. Other disciplines such as literary studies have emphasized the potential of mapping to better understand narrative structures. As argued by literary scholar Franco Moretti, in modern European novels, “what happens depends a lot on where it happens” (Moretti 1999, 70, author’s emphasis). This interest in the spatial dimension of narratives has led to the development of a wide variety of literary maps. These maps are envisioned as a way to give “the readers something that novels do not: an image, a structure, a way to visualize form and narrative design” (Bulson 2007, 3), and as a way to help reveal secret structures (Moretti 2005). This interest in mapping literary narratives has led to the development of specific methodologies used to capture the narrative territories within novels.

Barbara Piatti and her colleagues have developed a specific methodology that transforms narrative places in 19th century European novels into geographic objects (Piatti et al. 2009). This methodology is based on a reading grid applied to systematically capture the different places structuring the narrative of these novels. Inspired by this methodology, we have developed an analytical grid dedicated to capturing the geographical elements of narratives in films, such as the location of the scene, the duration of the scene, the type of environment (e.g. public, private), the importance of the place in the narration, and the way the place is materialised (e.g. through image or/and sound). This grid has been used to study the geography of 46 contemporary Canadian films in order to determine the geographic trends and patterns in contemporary Canadian cinema (the methodology as well as the results will be presented in more details in an upcoming paper).

Once the narrative is broken down into geographic pieces, these pieces need to be mapped properly. The development of specific cartographic forms was then necessary in order to overcome the different challenges faced by narrative cartography. To begin, a narrative map must represent simultaneously places and relationships between places. In literary cartography there is a distinction between geography (location) and geometry (connection). As emphasized by Moretti (2005), a map is associated to geography and places, while a diagram is related to the geometry of the relationships between elements of the story (e.g. characters, places). In literary cartography, the geometry is at least as important as the geography since it demonstrates that there was a process involved in the production of the structure (Moretti 2005). In other

words, mapping narratives requires representing simultaneously the geometry and the geography of the narrative in order to capture the richness and the intrinsic structure of the story, as well as their relationships to real places.

Secondly, mapping narratives also requires taking into account the spatio-temporal dimensions inherent to storytelling. As Doreen Massey (2005, 130) points out (in the context of mapping personal stories), stories cannot be represented “as points or areas on maps, but as integrations of space and time; as spatio-temporal events.” (Emphasis in the original). The process of mapping narratives calls for the development of particular forms of maps. Although it is easy to locate places of narratives by adding points to a Google map mash-up for instance (see <http://www.themoviemap.com>), it is much more complex to capture simultaneously the spatio-temporal dimension of the narrative, as well as both its geometry and geography. These challenges provide the framework for developing a specific application for mapping narratives.

## 2. THE CARTOGRAPHIC APPLICATION

This application has been designed by pulling together different tools available in different open source JavaScript libraries. More specifically, this application combines tools from Nunamiit, an open source software developed at Carleton university (Ottawa, Canada) that renders geospatial narratives in cybercartographic atlases (<http://nunamiit.org/>), as well as from OpenLayers (<http://openlayers.org/>) and JQuery (<http://jquery.com/>). The data that drives the map is fetched from a spreadsheet saved in Google Docs. The map is viewed by using a web browser and the background map is provided via a Google API. This application is then a hybrid tool combining open source libraries with Google tools.

In the spreadsheet the data is organised in 4 fields, or columns, (see figure 1): (1) action defines the location of the action; (2) duration defines the duration of each scene in minutes; (3) type defines the way different places are connected to each other in the narration (e.g. explicit (the location of the action is explicitly mentioned in the narrative), implicit (the location of the narration must be derived from personal knowledge or from the unfolding of the narration), and evocated (a specific place (e.g. a city) is simply mentioned in the narration)); (4) connection defines the places that are connected to the action (e.g. a character mention a place during a discussion).

	A	B	C	D
1	action	duration	type	connection
2	Montreal	4	Implicit	
3	Montreal	0	Evocated	Toronto
4	Montreal	0	Evocated	Houston
5	Montreal	0	Evocated	Edmonton
6	Montreal	0	Evocated	Toronto
7	Montreal	0	Evocated	Montreal
8	Montreal	0	Evocated	Calgary
9	Montreal	0	Evocated	Toronto
10	Montreal	0	Evocated	Montreal
11	Montreal	0	Implicit	Toronto
12	Toronto	3	Explicit	
13	Toronto	0	Implicit	Montreal
14	Montreal	5	Explicit	
15	Montreal	0	Explicit	Ontario/Quebec border
16	Ontario/Quebec border	4	Explicit	

Figure 1. Screen capture of the Google spreadsheet used to structure the data that are fetched in the cartographic application.

Places (geography) are represented by proportional symbols and connections between places (geometry) by different types of lines. The size of the symbols (places) is defined by the amount of time associated to each of these places/connections in the narration, for example, if 40 minutes of a film takes place in Montreal and 20 minutes in Toronto, the circle representing Montreal will appear twice bigger than the circle representing Toronto. For connections, the thickness of the line is defined by the number of times two places are connected in the movie; the more often two places are connected the thicker the line between them will be. Colours serve to differentiate the way places are materialized in the movie (e.g. red

for places mentioned explicitly, and orange for places appearing implicitly). Different types of lines are used to represent different types of connections (e.g. plain lines represent the displacement of the action between two places, while dashed lines represent the connection between the place of the action and a place simply mentioned by a character).

A sheet in the spreadsheet (“types”) is used to define the map symbology, including the size, outline, colour, and opacity of the different objects. Another sheet named “city” includes all the XY coordinates of the different places mentioned in the narrative, while a sheet named “options” defines the bounding box of the narration as well as the name of the film mapped. This structure allows the content developer(s) to have full control over the choices of categories as well as of their representation. This mapping application could then be used to map all sorts of narratives beyond cinematographic ones.

The results are mapped on a Google background map. The data are rendered through time using a double slider control. This temporal representation follows the temporal structure of the narration: points and lines appear and grow while the story unfolds. The double slider allows the visualization of selected moments of the narration (e.g. a user may want to map only the narrative territories of the second half of a movie). The user also has access to conventional navigation tools such as pan and zoom. She can decide to visualize either the places of the narration (geography), the connection between these places (geometry), or both simultaneously.

### **3. MAPPING THE NARRATIVE OF 4 CONTEMPORARY CANADIAN FILMS**

Four contemporary Canadian films characterizing contemporary cinema and society have been mapped with this cartographic application. *Bon Cop Bad Cop* (dir. Erik Canuel 2006) characterizes the historical duality of Anglophone / Francophone in Canadian society and film production (Melnik 2004). In essence *Bon Cop Bad Cop* stands as a testament to the polemical debate between English and French Canadian cinema and society. The plot is set around a body found hanging on the border sign of Ontario (Anglophone) and Quebec (Francophone). This historical dichotomy in Canadian society and cinema has been recently challenged by the emergence of a post-national Canadian identity illustrating the multiculturalism of Canadian society (MacKenzie 1999). This emergence is translated in cinema by the surfacing of voices from communities talking about their own communities. The most compelling example of these new voices coming from Inuit communities is *Atanarjuat: The Fast Runner* (dir. Zacharias Kunuk 2001). *Atanarjuat* is the first Inuit feature-length fictional film and it provides an Inuit perspective on Inuit issues. Alternately, the work of Canadian director Mina Shum provides a different view on multiculturalism by giving voices to the Chinese community in Vancouver. Her film *Long Life, Happiness & Prosperity* (dir. Mina Shum 2002), is set in Vancouver’s Chinatown and proposes a reflection on Canadian-Chinese culture in contemporary Canada. Finally, immigration in Canada is also the outcome of transnationality, diaspora and memory as illustrated by Atom Egoyan film *Ararat* (2002). *Ararat* deals explicitly with the subject of the Armenian Genocide of 1915 and the repercussions of a traumatic past, cultural massacre, the loss of home, and the effect of exile on both the individual and the culture. These four films provide very different perspectives on contemporary Canadian society, as illustrated by their different narrative territories.

*Bon Cop Bad Cop* takes mainly place in Montréal and in Toronto, with some important scenes at the border between Ontario and Quebec as well as in Saint-Hubert, a city located outside of Montreal (see figure 2). The geographic spine of the narrative is then provided by the back and forth of the narration between Montreal and Toronto, which represents the historical spine of Canadian economy as well as the line of rivalries between Francophone and Anglophone Canada. *Bon Cop Bad Cop*’s geographic structure is completed by multiple references to different places in North America and Europe (materialised by the numerous dash lines). These references illustrate the fact that the action takes place in the world of hockey with multiple references to hockey teams across Canada and the US. The few other places mentioned in the movie are Paris, Nice and London, reframing the contemporary tensions between Anglophones and Francophones in Canada within its historical European roots. Overall, the geography of *Bon Cop Bad Cop* synthesizes the traits of the historical duality of Canadian geography.

The narrative structure of *Atanarjuat* is quite different from that of *Bon Cop Bad Cop*. In terms of location, the story unfolds in Nunavut (Northern Canada) between Igloolik, North Igloolik and the Northern Passages. The green on the map illustrates scenes taking place in the past in comparison to the time of the narrative. The structure is totally confined to this area since no places are mentioned in the narrative beside Igloolik. The narrative space of *Atanarjuat* is confined geographically, illustrating the existence of this historical community totally dissociated from the nation-state and from Western references. The situation is somehow similar for *Long Life, Happiness and Prosperity*, since the action takes also place in a confined environment (Chinatown in Vancouver), with very few references to the outer world beyond the

community. In fact, only two places are mentioned throughout the movie (China and Honk-Hong), while Vancouver is never mentioned. *Long Life, Happiness and Prosperity* is deeply rooted in immigrant Chinese community without being attached to a specific place: it could have taken place in any Chinatown in North America.

Finally, *Ararat* unveils a completely different geography. The action unfolds between Toronto, Armenia and New-York city; between the present and the past. The main characteristic of the geography of this narrative is the strength of the connections between Toronto and Armenia, as illustrated by the size of the line linking these places. The action keeps moving back and forth between these two major narrative poles, illustrating simultaneously the complexity of the narrative structure developed by Atom Egoyan, as well as the complexity of dealing with traumatic past, and distant memories.

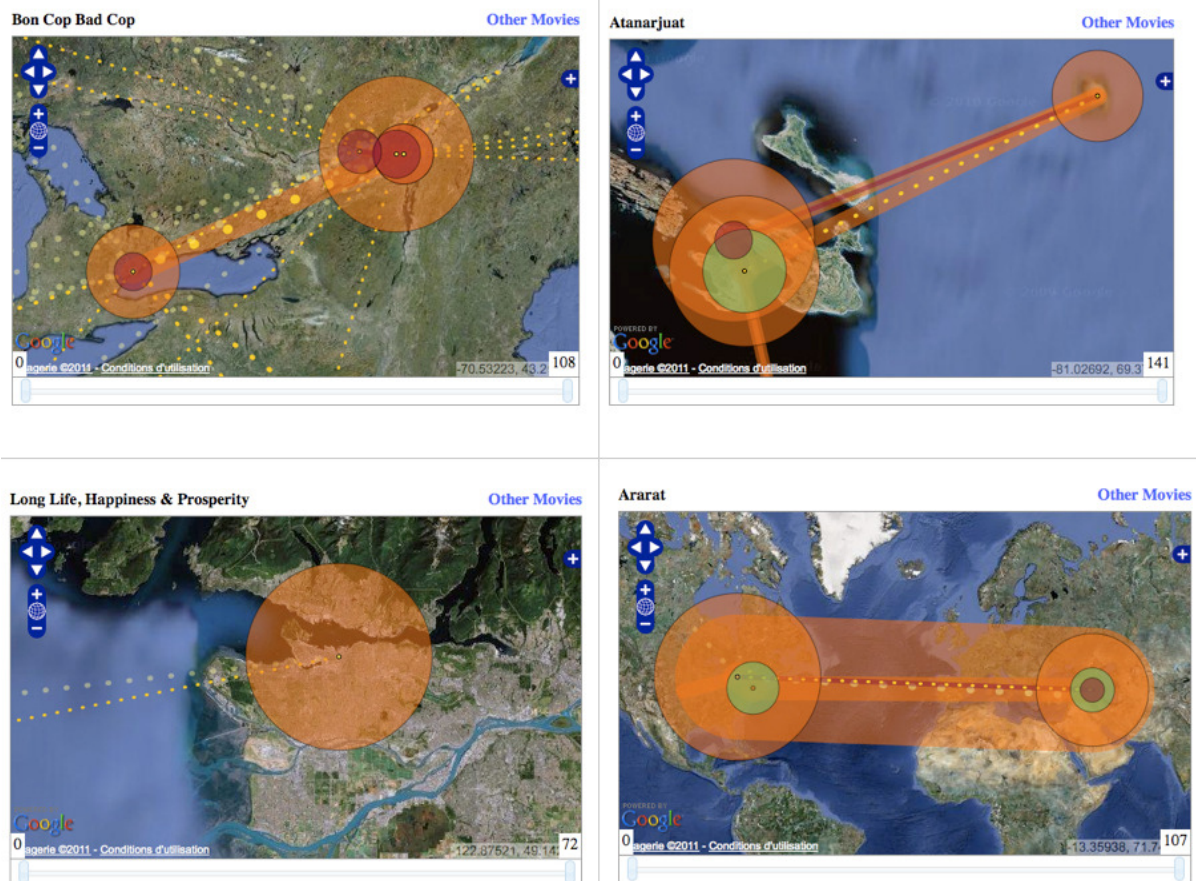


Figure 2. Screen capture of the narrative territories of each of the four films selected.

## CONCLUSION AND PERSPECTIVES

In metaphorical terms, these narrative maps resonate with the mechanistic structure of the narrative: the points and lines resembling pulleys and belts. The stories then unfold between anchoring points and movements are provided by the connections between them. This first attempt to map narratives can have multiple applications to help map and characterize a wide variety of stories. It can be used in different domains such as literary maps, as well as to convey personal stories, including to the mapping of vernacular knowledge.

In order to adapt the prototype presented in this paper to broader narratives, certain technical elements of this application will have to be improved. For instance, at the moment places have been aggregated spatially at the scale of towns and cities, while the original data is often available at a finer scale (e.g. neighbourhood). It would be meaningful to keep the original scale and to aggregate points and lines visually depending on the scale of visualisation in order to better represent the original level of detail.

Finally, it will be important to improve the capacity to capture and represent the complexity of narrative elements. Narratives provide a much richer perspective on place than what has been portrayed here, as they involve multifaceted elements that can be associated with places such as emotions and memories. At the moment we don't really know how best to transform these highly subjective elements into meaningful data and then into appropriate maps. This process will require more in depth study on the different dimensions that are associated with places through narratives. The development of an ontology of fictional

places could serve as a base to further explore spatial narratives. This approach could serve to provide more sophisticated categories of spatial objects that will then require much more complex forms of representation. The cartographic application presented in this paper is only the first step in this direction.

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