Maps and Networks

Experiments in Computational Folkloristics

Timothy R. Tangherlini

UCLA

Mapping Folklore

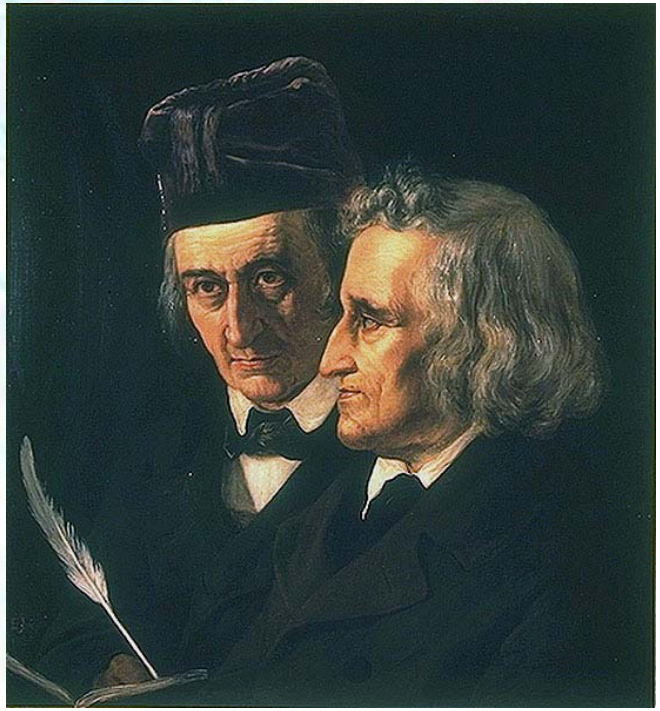
- An atlas of the novel. Behind these words lies a very simple idea: that geography is not an inert container, is not a box where cultural history "happens," but an active force, that pervades the literary field and shapes its depth. Making the connection between geography and literature explicit... will allow us to see some significant relationships that have so far escaped us (Moretti 1998, 3).

Extending Moretti

- Mobility
  - Henrik Ibsen’s literary productivity
- Production
  - Sites of saga manuscript production

Folkloristics

- Early history of the discipline:
  - Philological
  - Search for original or *ur*-forms
  - National Romanticism
  - Wilhelm and Jacob Grimm



Mapping Folklore

- Historic-geographic method
  - Kaarle and Julius Krohn (1906-1924)
  - Walter Anderson *Kaiser und Abt* (1923)
  - Waldemar Liungman *En traditions-studio över sagan om prinsessan i jordkulan* (1925)
  - Reidar Christiansen *The Tale of Two Travellers, or the Blinded Man. A Comparative Study* (1916)

Toward a new Historic-Geographic Method

- Historic GIS (hGIS)
- Map interactions between:
  - People (Tradition participants, Collectors)
  - Environment (Places, Landscape features)
  - Folk Repertoires (Traditional expression)
    - Genres
    - Motifs
    - “Folklore as performance”

Theoretical Premise

- Folklore emerges from the dialectic tension between individuals and tradition
- Recognition that
  - Traditions and cultural expressive forms are dynamic
  - Are closely tied to individuals
  - And are part of a feedback mechanism that comments on and in turn are shaped by the local environments, both natural and man-made

A brief aside on networks

- Networks
  - Folklore networks
    - Social networks of tradition participants
    - Networks of scholars and collectors
    - Networks of stories
  - External networks
    - Communications networks
    - Transportation networks
    - Affiliation networks
  - Internal networks
    - Linguistic networks

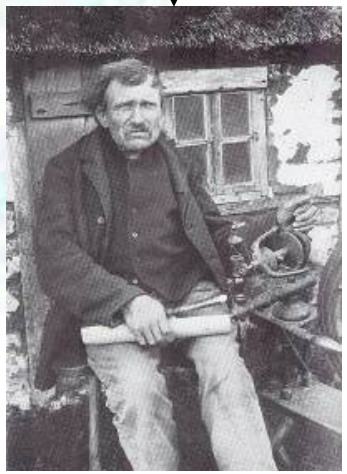
Lecture overview:

Preliminary experiments and tentative conclusions

- Part 1: Mapping folkore
- Part 2: Networks and folklore
- Part 3: Mapping Networks

Study Corpus

- Evald Tang Kristensen (1843-1929)
  - Actively collected from 1865-1923
- 6500+ named informants
- 24,000 manuscript pages
- 200,000 published stories



Experiments in mapping

- Mapping collecting routes
  - Challenge question: Did Tang Kristensen's published statements about his collecting accurately reflect his collecting work?
- Mapping individual repertoire distribution
  - CQ: Does individual mobility influence the range of places mentioned in stories?
  - CQ: Do other informant features, such as gender, influence range of places mentioned?
- Mapping by story features against individual repertoire
  - CQ: Are there patterns, ala Moretti, that become apparent in the visualization of stories by genre and/or by story topic?

Mapping Collecting Routes

- Tang Kristensen presents himself as a West Jutlander
  - Political motivations
    - Aftermath of Napoleonic wars and Danish bankruptcy (1814)
    - Loss of Schleswig to Bismarck (1865)
    - Urbanization
  - Search for “authentic” Danish culture
  - What do the collecting routes reveal?

Mapping Repertoire

- Emphasis on the individual and the tension between individual participant's aspirations and the conservative pressures of the tradition group
- Connect the individual to the tradition
- Theory: Individual biography influences repertoire and its features
- Hypothesis: Classes of individuals have different degrees of physical mobility, and this is reflected in their storytelling
- Maps reveal interesting patterns of places-mentioned
  - Caveat: My main interest, and the vast majority of the collection, are based on legends, stories that refract the lived environments and social organization(s) of the tradition participants

Patterns and Point Data

- GIS allows for pattern discovery in event/point data
- Three Experiments
  - Storytellers and their Stories
  - Repertoire clusters (based on machine learning)
  - Story Motifs: Ghosts, Witches and Satan

Experiment 1

- Storytellers and their Stories:
  - Aggregate layers (eg biographical places and story places)
    - Use buffers (AMJ life event buffer)
    - Calculate average distance from individual to all stories/stories by topic/stories by genre
    - Calculate distribution patterns for storyteller repertoires

Experiment 2: Repertoire clusters

- Target: repertoires of 5 storytellers
- Limit: only stories that mention places
- Cluster: ECM by storyteller / eliminate small clusters
- Project results into GIS
- Calculate distribution ellipses for each cluster in each person's repertoire
- Propose possible analyses of the map

Mapping Genre / Topics

- Unlike original historic-geographic method, keep the stories linked to individuals
- View patterns in places mentioned in relation to individuals
- Do the maps, based on genre or topics or other keywords, reveal patterns of interest?
- Example: Ghost stories and places mentioned

Experiment 3:
Ghosts, Witches and Satan

- Target: Stories of ghosts, witches and Satan in Danish folklore corpus
- $Limit_1$: Stories that include place names
- $Limit_2$: Stories appearing in test corpus
- Cluster: ECM
- Project results into GIS
- Run analysis by cluster
- Evaluate results

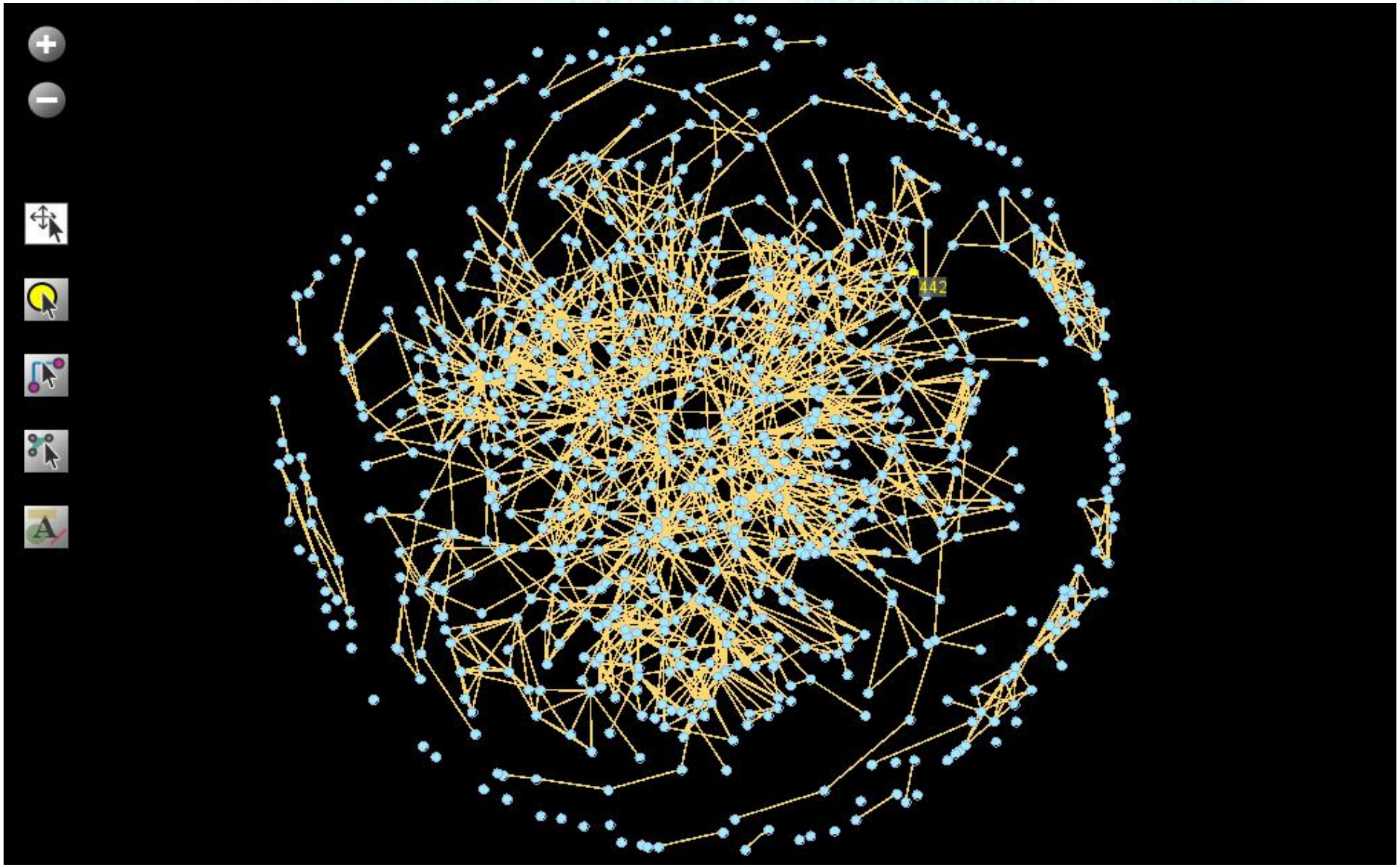
Folklore Networks

- Types of networks
  - Networks of storytellers
  - Networks of stories
  - Networks of motifs
- Visualization of networks
  - 2-D embedding
  - Dynamic network modeling
- Analysis of networks
  - Characteristics of the network
  - Criticality (betweenness, centrality)
  - Understanding links (PageRank, in-degree, out-degree)
  - Clustering on networks
    - Networks as classifiers?

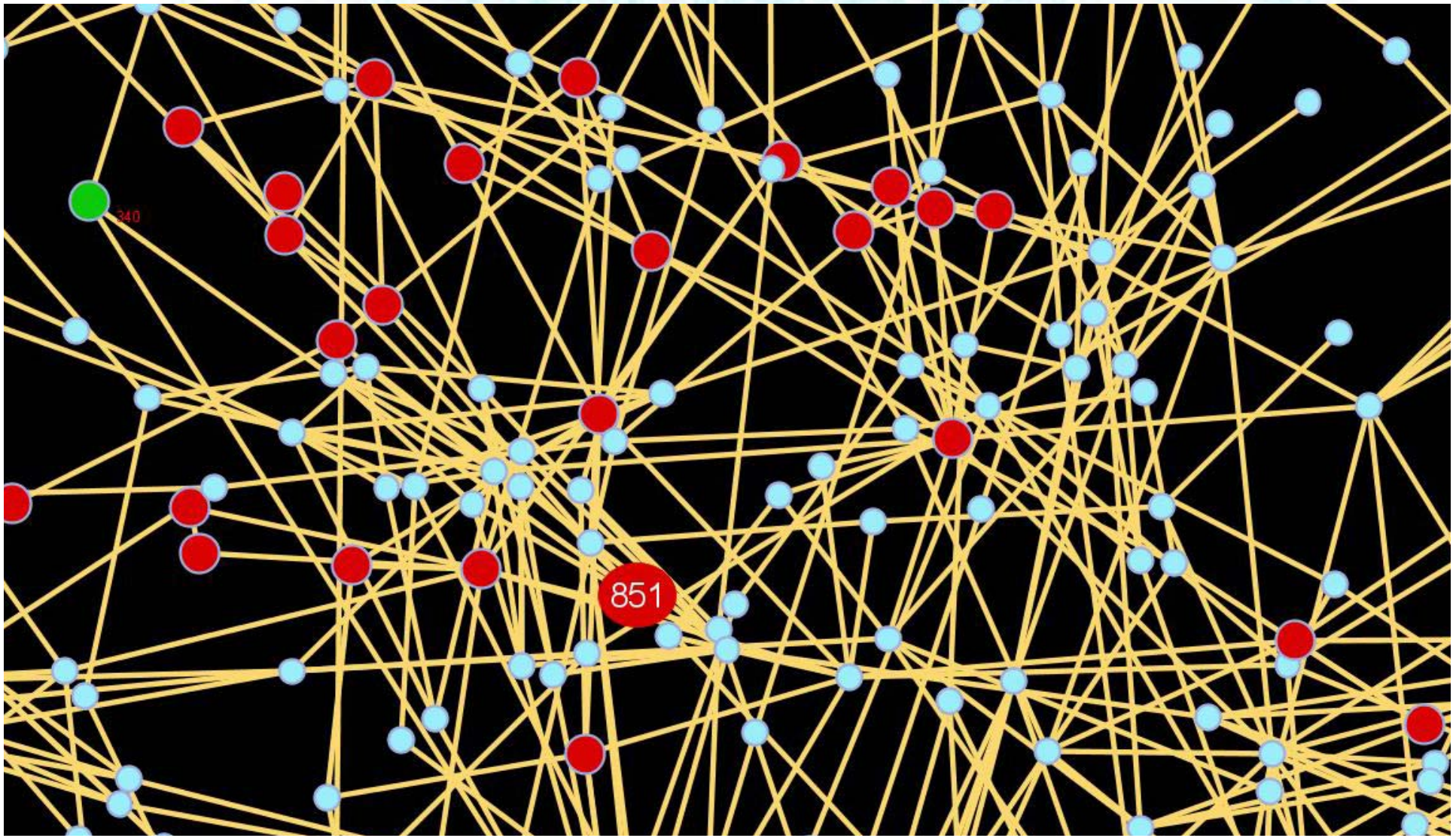
Storyteller networks

- Local networks – connect all storytellers in a given parish
- Fieldtrip networks – connect all storytellers on a given fieldtrip
- Collector-Storyteller networks—connect all storytellers to all collectors with whom they worked
- Inferred / Affiliation networks
    - Connect storytellers by work groups (eg millers, fiddlers, etc)
    - Connect storytellers by other affiliations (eg gender, age, education)

Networks of Stories

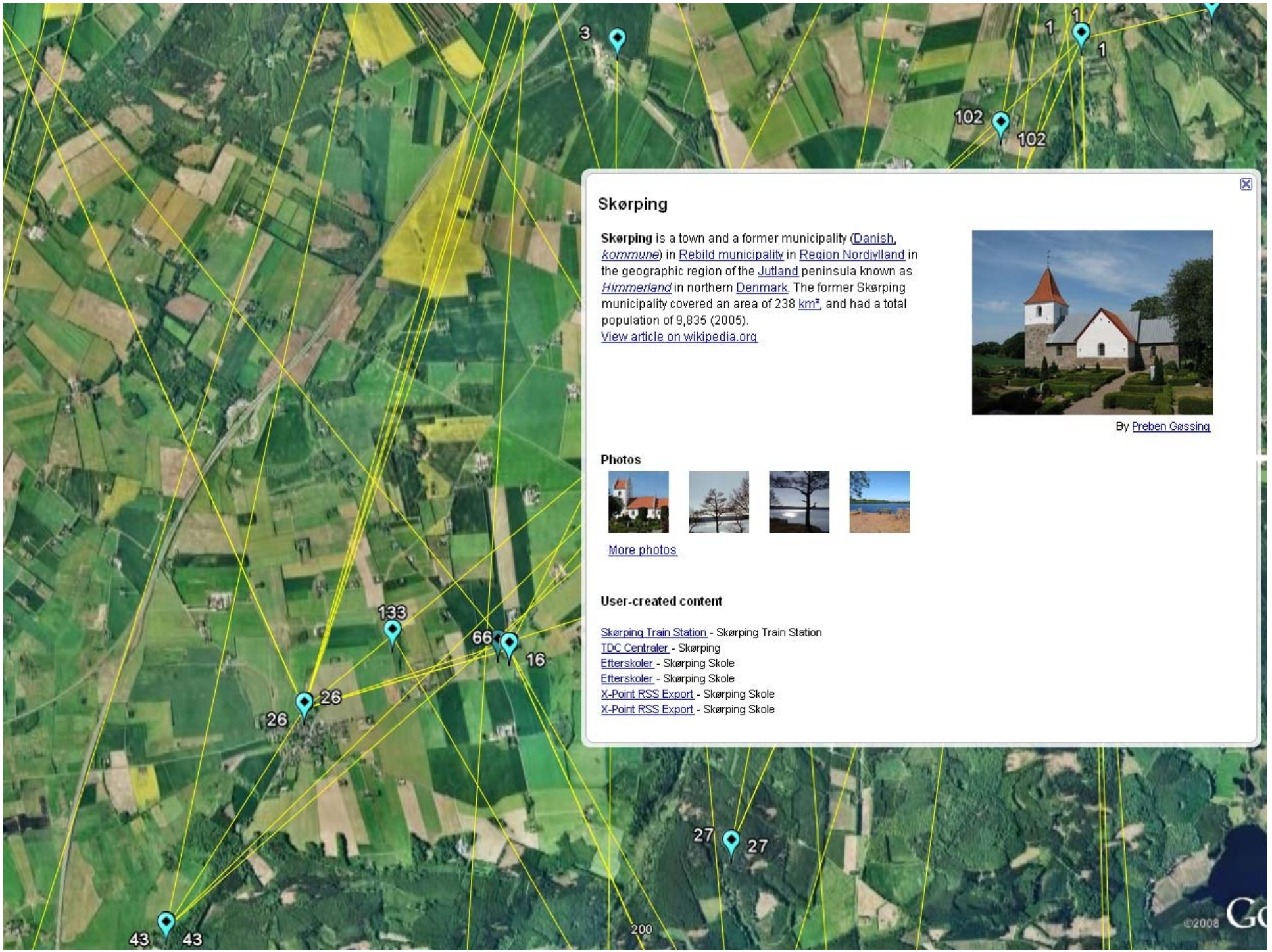


Networks of Motifs



Mapping Networks

- Important geographic component to folklore networks
- Network layout schema often “decoupled” from geographic attributes of nodes and edges
- Is there a benefit to “anchoring” nodes to the historic geography?
- Example: Stories linked by collection proximity and keywords, mapped into Danish landscape
  - “Critical” nodes/stories
  - High “page rank” nodes/stories



Skørping

Skørping is a town and a former municipality (Danish, *kommune*) in Rebild municipality in Region Nordjylland in the geographic region of the Jutland peninsula known as *Himmerland* in northern Denmark. The former Skørping municipality covered an area of 238 km², and had a total population of 9,835 (2005).
View article on wikipedia.org

By Preben Gøssing

Photos

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Directions for future work

- Dynamic networks
  - Animations / geographic based animations
- Multimodal networks
  - Integrate network information from several networks
- Geographic visualization of network models
- Integration of network analysis and hGIS