



Cartography M.Sc.

Constructing Parallel Narratives in Cartographic Storytelling

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Outline

- Introduction and Motivation
- Research Objectives
- Methodology
- Results
- Case Study
- Discussion and Conclusion

“Should all visual stories follow a three-act narrative and are all narrative elements needed for effective visual storytelling? Absolutely not.” - Roth (2020, p. 7)

“Literacy in the 21st century means thinking critically, making sense of a bombardment of media and information sources, and making choices about what to read and how to read it.” – Koss (2009, p. 79)

- **R01** – Examine the design elements and techniques used to enhance and structure a story in both visual and cartographic storytelling.
- **R02** – Examine parallel narrative structures present in literature and film.
- **R03** – Develop a typology categorizing the types of parallel narratives in cartographic stories.
- **R04** – Test methods of presenting parallel narratives in cartographic storytelling discovered by objective three.

Research Objective 1

Research Question 1: What are the important **techniques** used in cartographic storytelling to tell a story?

- How are visual and cartographic stories **structured**?
- What **elements** (devices) do visual and cartographic stories use to emphasize and enhance a story?

Research Objective 2

Research Question 2: How are **parallel narratives** presented in literature and film?

- What **defines** a parallel narrative?
- What **typology** is there for parallel narratives in literature and film?

Research Objective 3

Research Question 3: How can cartographic parallel narrative stories be **classified**?

- What **techniques** or characteristics do existing examples of parallel narratives in cartographic stories have?

Research Objective 4

Research Question 4: What design **elements** or **techniques** are most effective in distinguishing between as well as providing a comparison of parallel narratives in cartographic storytelling?

- How can the data from the research group BioInvasions – global change – Macroecology at the University of Wien be presented in a **cartographic parallel narrative story**.

- Existing research
 - Visual storytelling
 - Cartographic storytelling
 - Parallel Narratives
- Qualitative content analysis
 - Coding
 - Card Sorting

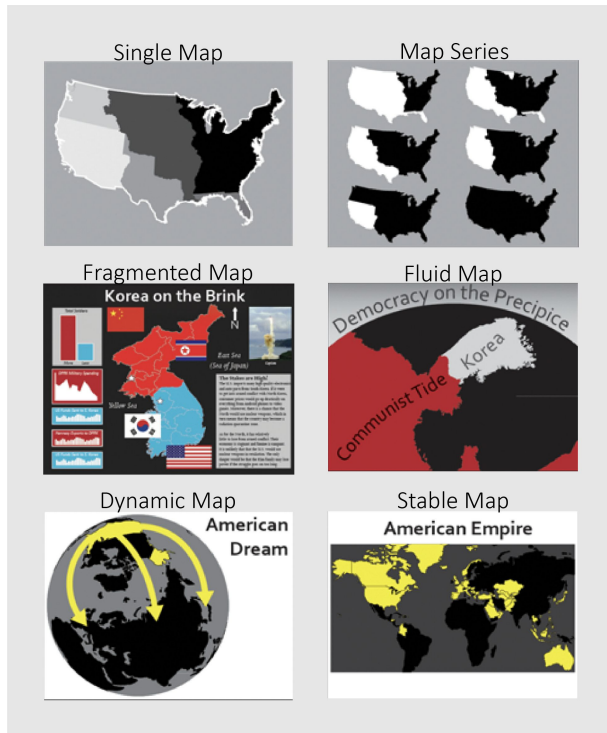
How are narratives presented in cartographic storytelling and what **elements** and **techniques** are implemented to enhance the narratives?

- Narrative Design Patterns
- Narrative Visualization Elements
- Interactivity

How are narratives presented in cartographic storytelling and what **elements** and **techniques** are implemented to enhance the narratives?

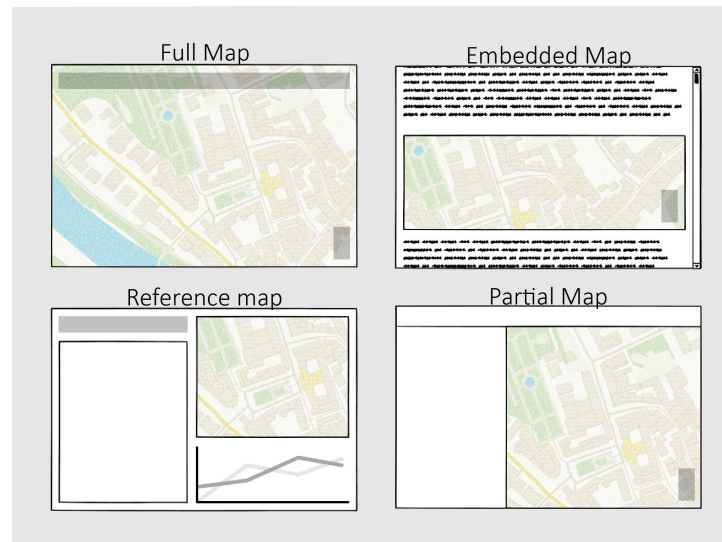
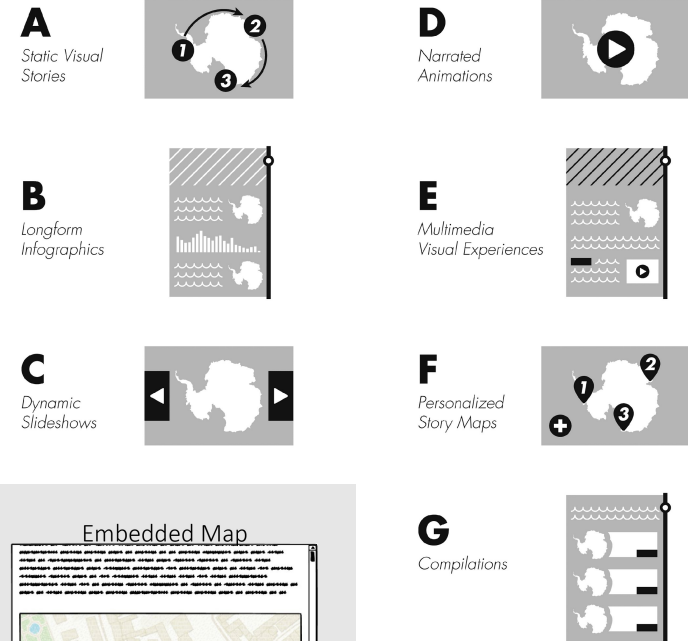
- Cartographic Storytelling Genres
- Map Layouts
- Tropes

Cartographic Storytelling



Visual representations of three groupings of map layout styles (Muehlenhaus, 2011).

Cartographic story genres presented by Roth (2020).



Visual representations of four map layouts (Gaigg, n.d.).

Parallel Narratives

Parallel narratives present multiple storylines and follow multiple protagonists' distinct stories.

- Common **theme, event, character, or artifact** (Learning Center, n.d.).
- Found in literature and film

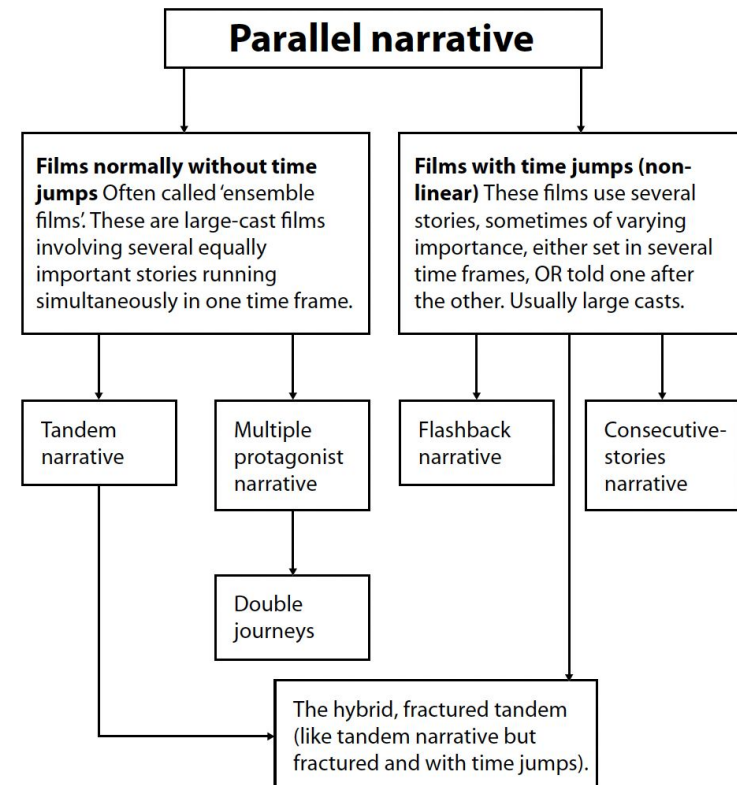
Parallel Narratives – Literature and Film

Literature

Category	Definition
One Event, Multiple Perspectives	Novels that tell a story that focuses on one major event, which is told from the point of view of a number of different participants involved with the event.
One Story, Multiple Perspectives	Novels that tell one story, but the tale is told via alternating narrators or perspectives.
Multiple Stories, Multiple Perspectives, Intertwined	Novels that tell multiple stories told by multiple characters, whose lives become somehow intertwined.
Then and Now	Novels in which the main character or a number of characters tell their individual stories at different points in time through the use of flashbacks and flash forwards.
Parallel Stories	Novels in which two parallel stories are told, each of which typically takes place in a different time period, often through the use of a journal or as an older character telling a younger character stories of his or her youth.

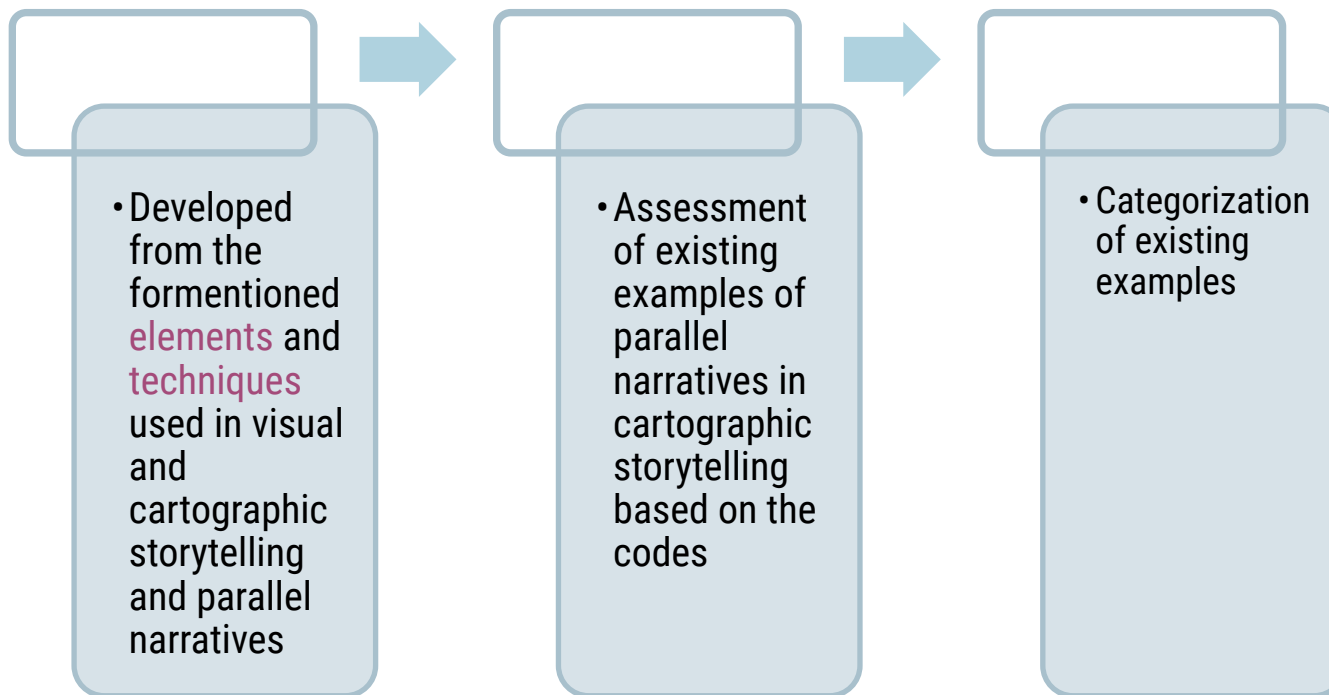
Parallel narratives categories in literature defined by Koss (2009)

Film



Breakdown of the categories of parallel narratives in film (Aronson, 2010).

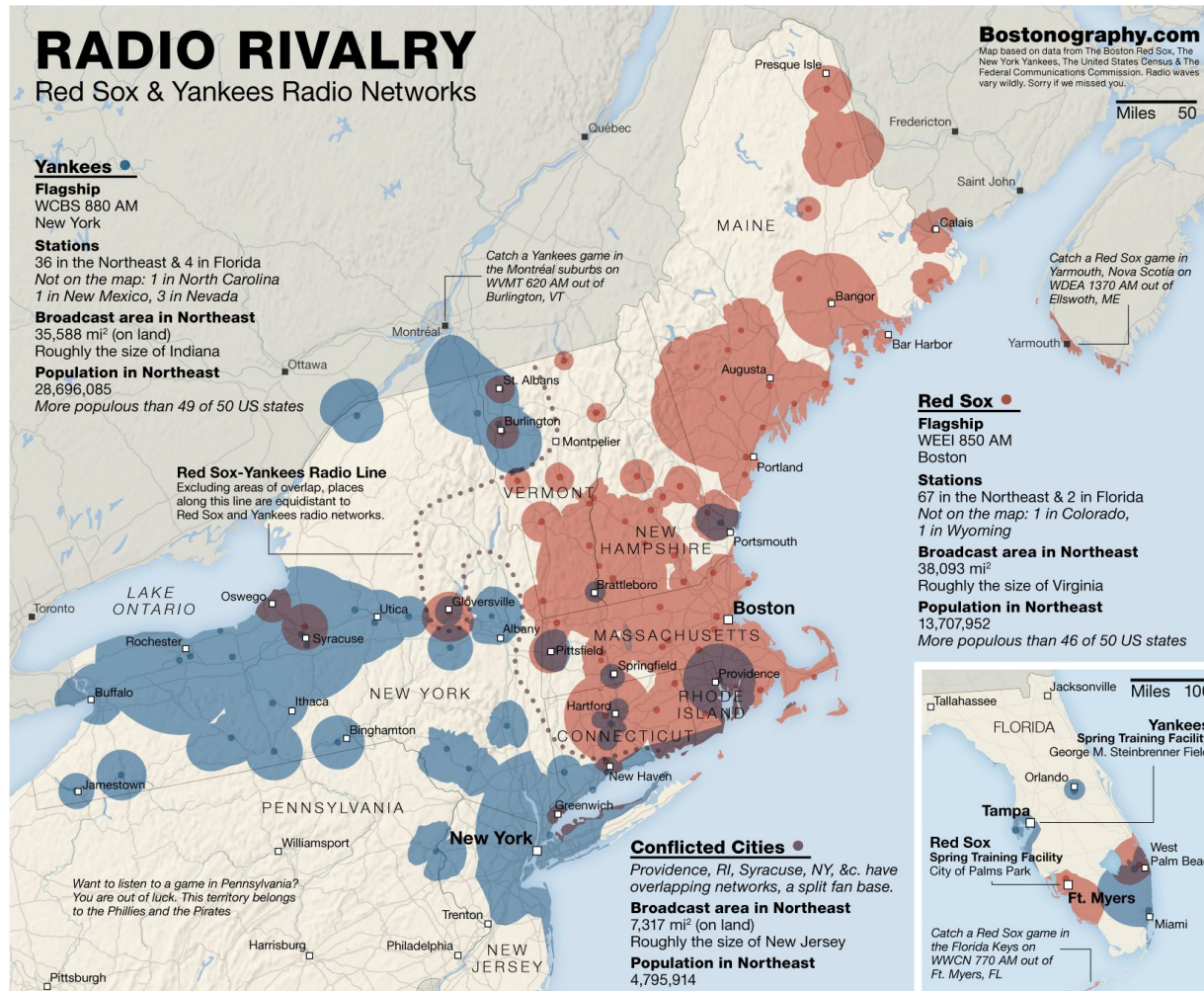
What is qualitative content analysis?



What is a cartographic parallel narrative story?

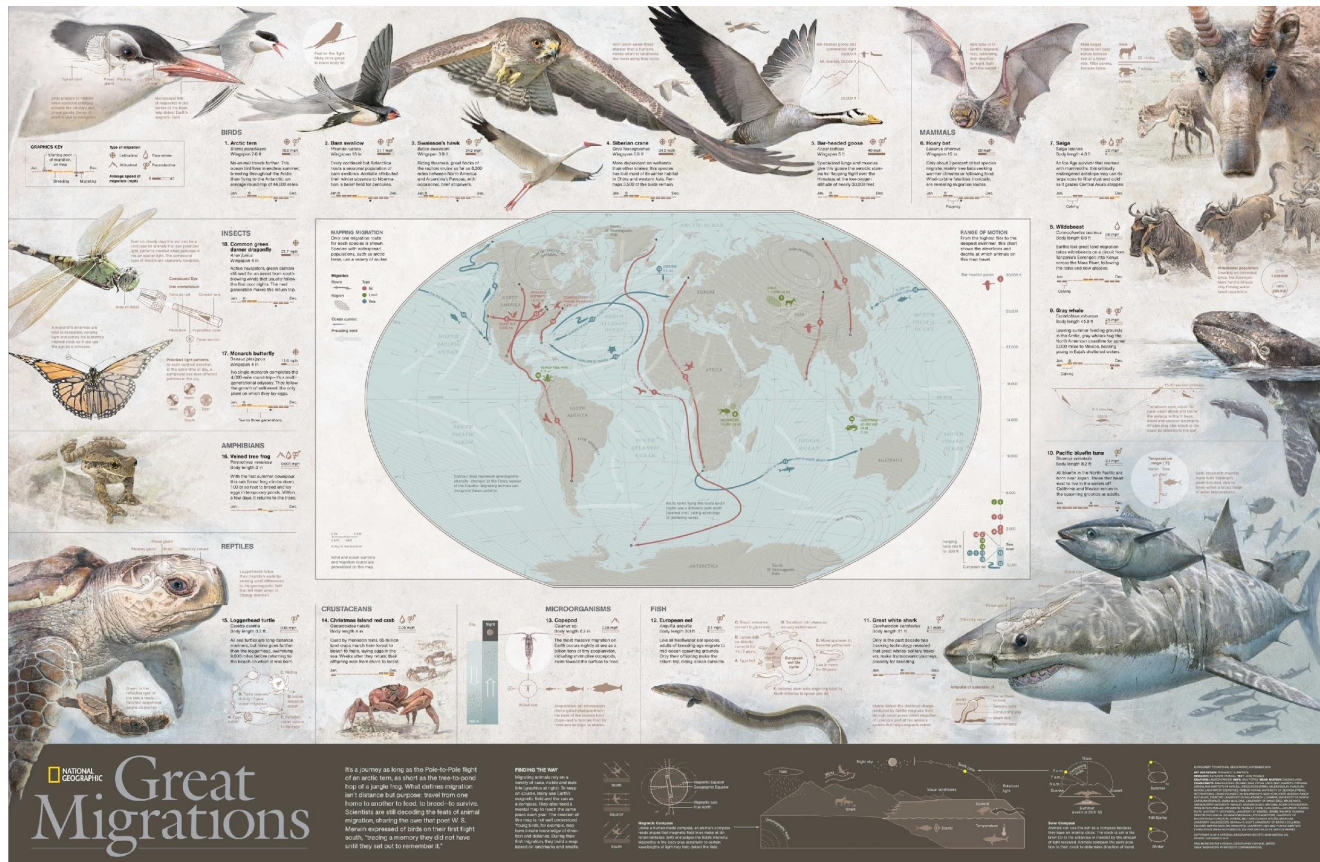
Parallel narratives in cartographic storytelling can be defined as a map or combination of maps that with additional text and media present two or more narratives interwoven by common theme

Existing Examples



Radio Rivalry - Red Sox and Yankees Radio Networks by Wallace (2011).

Existing Examples



Great Migrations, published in the November 2010 issue of National Geographic Magazine (Pepple, 2010).

Existing Examples



Screenshots from the cartographic story, Time to Choose, published by the Conservation Lands Foundation (Van City Studios, n.d.).

Qualitative Content Analysis –

Genre	Map Layout	Interactivity	Trope	Narrative Patterns	Visual Narrative Tactics	Parallel Narrative Tactics
Static visual stories	Embedded map	Martini glass structure	Mood	Incorporating the audience	Highlighting	Color separating narratives
Longform infographics	Reference map	Interactive slide show	Continuity	Repetition	Interactivity	Number of narratives
Narrated animations	Full map	Drill down story	Dosing	Juxtaposition	Messaging	Link
Multimedia visual experiences	Partial map		Metaphor	Human behind the dot		Contrasting vs complimentary
Dynamic slideshow	Side by side		Attention	Rhetorical question		Sequence
	Small multiples			Familiar setting		
	Fragmented vs fluid			Call to action		
	Dynamic vs stable			Gradual visual reveal		
	Single map vs map series			Defamiliarization		
				Meaningful use of space		
				Concretize		

Qualitative Content Analysis – Card Sorting

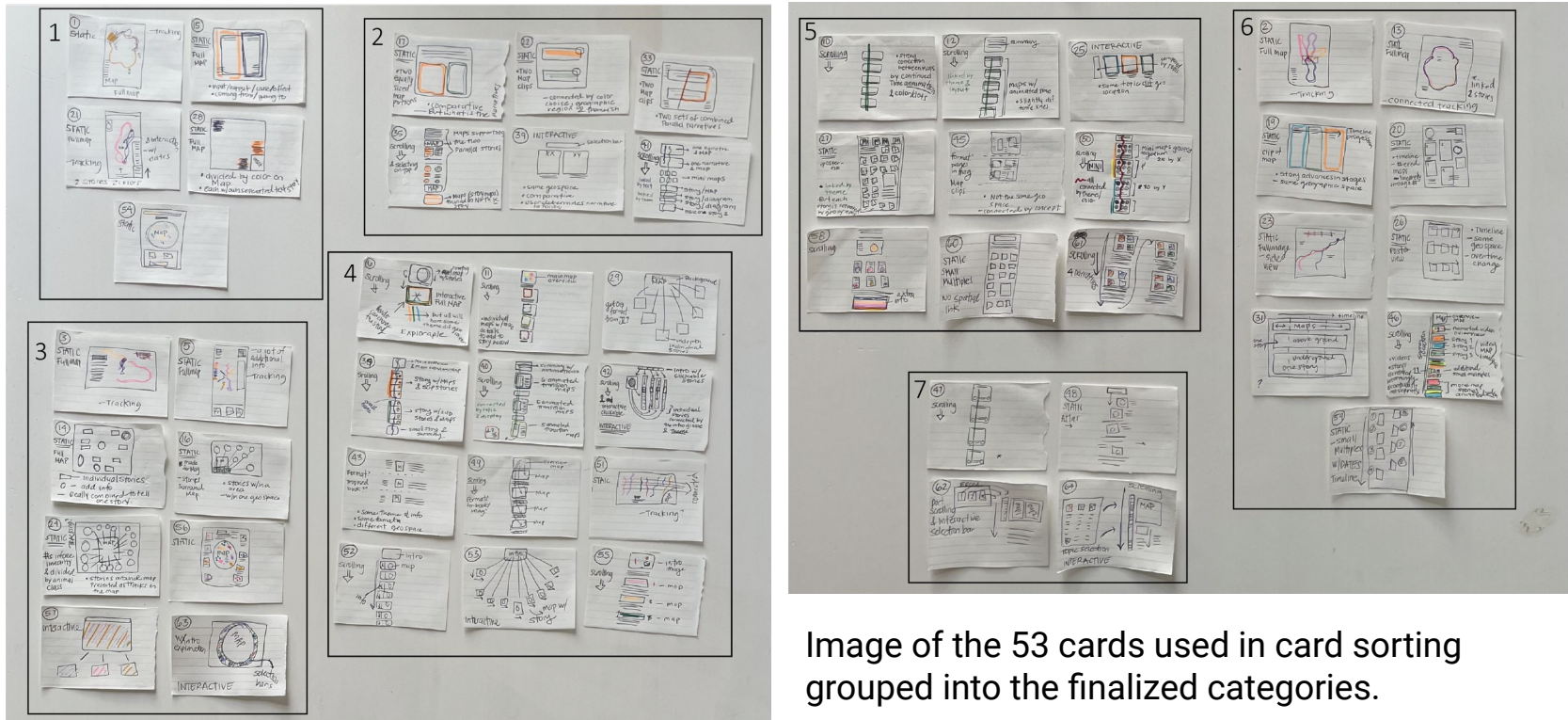


Image of the 53 cards used in card sorting grouped into the finalized categories.

Results – Coding

Genre

- Over 91% of the maps fell into either the genre static visual stories (49%) or the genre longform infographic (42%).

Map Layout

- 50% of the cartographic parallel stories were classified as using a partial map layout.

Trope

- The trope enforcing linearity was used in 96% of the stories.

Narrative Pattern

- The narrative pattern juxtaposition was used in 57% of the stories and the narrative pattern repetition was used in 42% of the stories.

Parallel Narrative Tactic

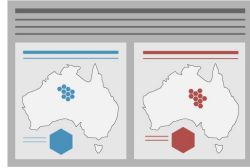
- For sequence, simultaneous narratives (42%) were most common followed by non-linear narratives (38%) and then linear narratives (21%).

Results – Categories of Cartographic Parallel Narrative Stories.

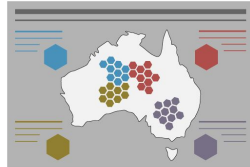
1
Two Narratives
One Map



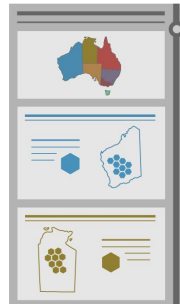
2
Two Narratives
Multiple Maps



3
Many Narratives
One Map



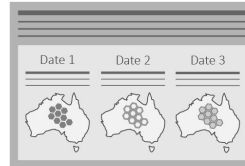
4
Many Narrative
Multiple Maps
Spatial Connection



5
Many Narrative
Multiple Maps
No Spatial Connection



6
Same Space
Temporal
Progression



7
Same Space
Different
Point of View



Visual example of each
Cartographic Parallel
Narrative Story category

Invasive Alien Species (IAS) Scenarios with data from the research group BioInvasions – global change – Macroecology.

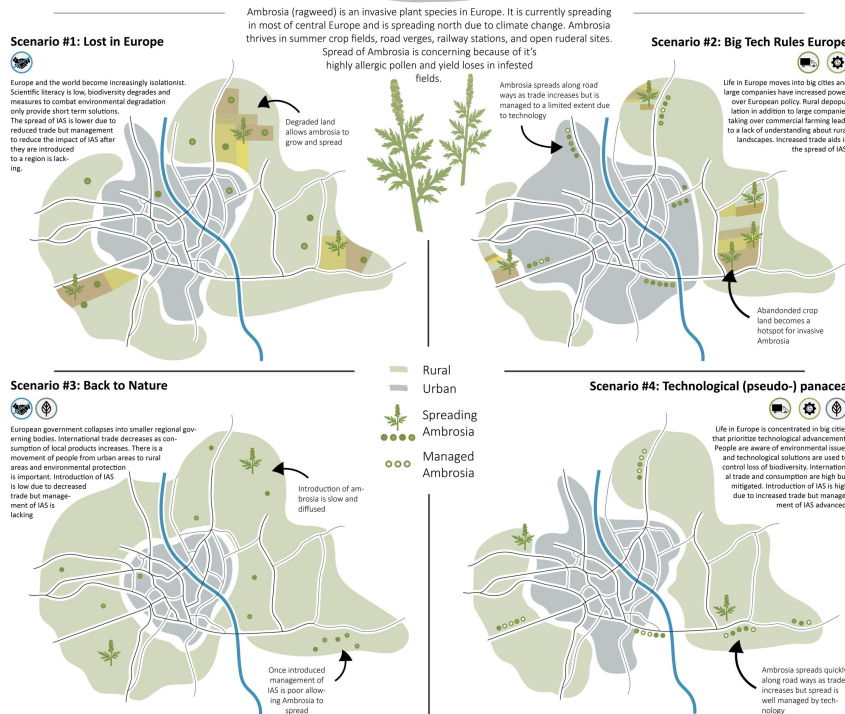
- (1) *Lost in Europe*, (2) *Big Tech rules Europe*, (3) *Back to nature*, and (4) *Technological (pseudo-)panacea* (Saul & Jeschke, n.d.).
- 7. Same Space – Different Point of View

Case Study – IAS Cartographic Parallel Narrative Stories

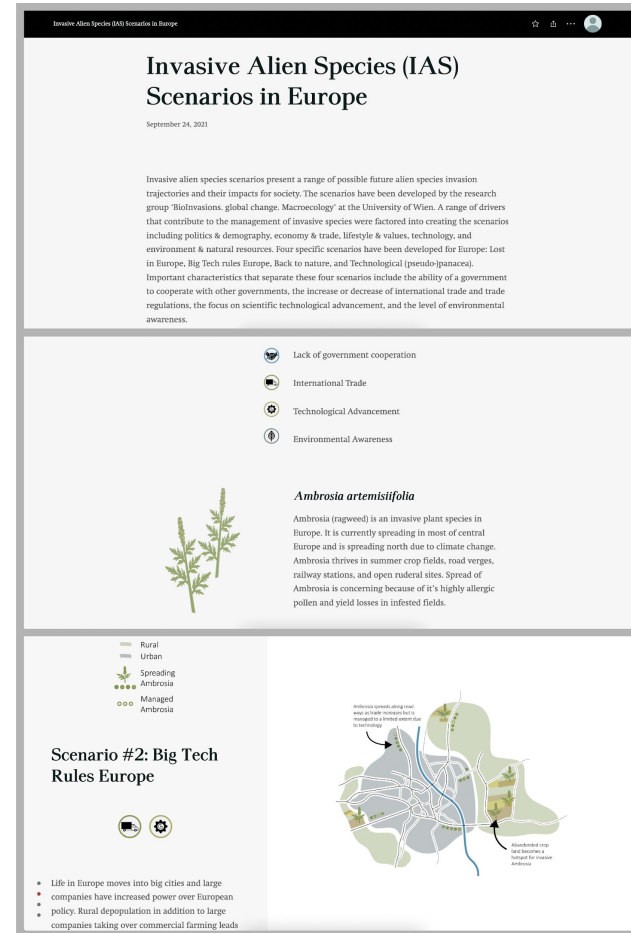
Invasive Alien Species (IAS) Scenarios in Europe

Invasive alien species scenarios present a range of possible future alien species invasion trajectories and their impacts for society. The scenarios have been developed by the research group 'BioInvasions, global change, Macroecology' at the University of Wien. A range of drivers that contribute to the management of invasive species were factored into creating the scenarios, including politics & demography, economy & trade, lifestyle & values, technology, and environment & natural resources. Four specific scenarios have been developed for Europe: Lost in Europe, Big Tech rules Europe, Back to Nature, and Technological (pseudo-) panacea. Important characteristics that separate these four scenarios include the increase or decrease of international trade and trade regulations (🌐), the focus on scientific technological advancement (🔬), the ability of a government to cooperate with other governments (🤝), and the level of environmental awareness (🌱). The following maps portray the landscape of any city in central Europe and demonstrate how the invasive species, *Ambrosia artemisiifolia*, would react based on each scenario.

Ambrosia artemisiifolia



Static IAS Scenarios cartographic parallel narratives story



Scrolling IAS Scenarios cartographic parallel narratives story

- RQ1: Visual and cartographic stories use genre, map layout, interactivity, messaging, trope, narrative patterns, visual narrative tactics, and visual structure tactics to present a story.
- RQ2: A parallel narrative is defined by the presentation of two or more narratives in one story.
- RQ3: Categorization of parallel narratives in cartographic stories was based on several concepts including: what linked the two narratives, how the two narratives interacted in the visualization, and what visual elements guided the viewer between the narratives.
- RQ4: For the static story break lines were rated the highest in their effectiveness in separating the narratives. For the scrolling story titles were rated the highest in their effectiveness in separating the narratives.

- Techniques, structures, and design elements are used in displaying parallel narratives.
- Categorization of parallel narratives in cartographic storytelling.
- Software Platforms.

Thank you for listening



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