*Article*

# Filming the Historical Geography: *Story from the Realm of Maps in Regensburg*

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**Abstract:** Research on a specific topic requires the individualized cartographic methods of work that may be defined as the *Realm of Maps*. The double dimensionality in the *Realm of Maps* is understood here as a physical place—a studio workroom—and as a research method. In this study, we focused on the way of presenting a research method designed to study the topic of historico-geographical space in the form of a short film story. The second purpose is to indicate the legitimacy of combining two dimensions of working with maps, the real one and the virtual one, to be able to collect cartographic and descriptive sources in one scientific center. Our research on the *Story from the Realm of Maps in Regensburg: 'People Movement in Southeast Europe'* included a concept adopted by cartographical, historical, and geographical sources; the construction of a studio workroom; a script draft; individual sequences of the story in different types of media; editing the video, along with publishing it on an online video-sharing platform. We used as many different types of geomedia as possible, which, on the one hand, boosts the attractiveness of the film and, on the other, may hamper the proper perception of the main film plot. Finally, we recommend principles of map design for the film, with analog maps and maps created specifically for the short film, published using online video-sharing platforms.

**Keywords:** *Realm of Maps*; geomedia; map workroom; short film; cartographical story; medium means; map design; historico-geographical space; Southeast Europe; video-sharing platform

## 1. Introduction

The open access to multiple map collections changed their informational nature because users explore digital copies of maps in an interactive way, on computer screens [1]. More and more frequently, research methods are based on the analysis of map fragments on the computer screen without studying the entire map in paper form or without seeing a comparative analysis of multiple cartographic images at the same time. Old and modern maps play crucial roles in the study of changes that occur in geographical space in terms of their chronology and the topic analyzed [2].

Scientific institutes build map portals, the so-called geoportals, for their collections, along with rendering paper maps available in libraries [3]. Geoportals facilitate the interactive usage of maps through several functions such as enlarging the map contents, georeference, transparency, covering with transparency, etc. [4]. However, the resignation from looking at cartographic images in the original size may reduce the perception of spatial knowledge that a cartographer included at the first general level of perception and other levels as well. Since professional cartography began to develop in the 16th century, the principles of map design, related to publication technology, graphic pragmatism, and gestaltism, started to form [5]. Particularly, in the research on the artistry of manuscript maps, direct contact with cartography is indispensable [6].

A researcher, during a query in a map room, combines reading original maps with viewing digital copies and interactive access to map resources on their laptop screen in a complementary way [7]. Research on a specific topic requires individualized cartographic methods of work that may be defined as the *Realm of Maps*. In this study, double dimensionality in the *Realm of Maps* is understood as both a physical place, i.e., a studio/atelier, and a research method. Individualized stay in the *Realm of Maps* created can be compared with the presence of the gamer in a video game when he is immersed in the reality of the *Realm of Games* [8–10].

Methods of distributing historico-geographical research activities extend to more advanced audio–visual forms, apart from classic academic publications in journals or monographs [11,12]. Interactive multimedia websites, as well as online video sharing and social media platforms, are gaining popularity as media that transfer knowledge. Publishing the results of academic projects related to historico-geographical space in a traditional way is now complemented by multimedia websites [13,14]. Visual storytelling in cartography and map modification by using appropriate structural features of textual media more suitable for storytelling are considered interesting forms of an interdisciplinary approach [15–17]. This issue is also part of ongoing debates in the field of multimedia cartography, particularly in terms of established forms of expression [18–20]. Multiple studies touch upon the cognitive limits of animated maps [21] and the increasing role of story maps and interactive information graphics in spatial information [22].

We assume that map design should be based on fundamental general principles embedded in cartographic knowledge. In modern research of map design, it is a frequent practice to refer to classic principles of good map design formulated in the 1960s, 1970s, and 1980s. The fundamental principles of map design, adapted to modern ways of map publishing, include Bertin's visual variables [23], Hake's specific gestalt principles [24], Freitag's pragmatics of signs [25], Dent's focus of attention [26], Imhof's order of cartographic symbols [27], Robinson's figure–ground relation [28], Ratajski's primary symbol [29], and Keates' symbol generalization [30].

Short videos posted on online video-sharing and social media platforms constitute open forms of rendering a story widely available [31]. The most significant tips regarding the creation of one's own story from the world of maps are related to the length of the video and the construction of a coherent plot in a three-act script. The concept of the video includes one crucial idea related to space, e.g., in the form of a question, to which the viewer receives the answer in the last scene [32,33]. In terms of knowledge of geographical space based on maps, such a three-act script includes (1) the beginning, which introduces a narration built around the idea of a specific geographical phenomenon, sign, or cartographical shape; (2) the middle part, which employs the compilation of various geomedia; (3) the ending with conclusions and encouragement to undertake further studies [34]. The draft of the script is based on sequences written according to consecutive presentations of cartographic elements. A logical construction of the plot of the map story determines a good script: a coherent sequence of cause and effect events in space and time, focused on cartographic signs and symbols [7,26].

In general, in this study, we focused on the presentation of a topic from the historico-geographical field in the form of a short film that included maps. The creation of a map story according to a complementary combination of historical expertise in a specific political and physical region with traditional principles of map design, good practices of writing a short film script, and the use of media means was a methodological challenge. The work carried out in this study consisted of building the *Realm of Maps* in order to study historical events in geographical space, creating the draft of the script and individual sequences of the story in different types of media, and finally, formulating map design principles for cartographic visualizations in the short film.

## 2. Aims and Questions

Highlighting the essence and media quality of the presentation in the form of a short film story, we focused on the way of presenting research methods constructed to study the

topic in historico-geographical space. In the process of creating a film story, we preferred using techniques and instruments for registering the way of moving around the *Realm of Maps*, both physically and digitally.

The first goal of the research was to suggest a method of storytelling in the form of a short video based on research methods, the so-called *Realm of Maps*, constructed particularly for the purpose dedicated to a specific research topic in historico-geographical space. The second purpose was to indicate the legitimacy of combining two dimensions of working with maps, the real one and the virtual one, to be able to collect cartographic and descriptive sources in one scientific center. Achieving both goals is linked to answering the following questions:

- What are the conditions of building a map workroom to study historical events in a geographical space?
- What elements should a script to a short film for stories from realms of maps include?
- How many and what medium means can be used for representing cartographic forms in specific sequences and generally in the entire film?
- What map design principles can be adapted for cartographic visualizations in the short film?

## 3. Materials and Methods

To achieve our objective and answer these questions, we adopted five main stages of research as follows:

- Pinpointing concepts adopted by the following types of approach: cartographical, historical, organization of library sources, and geographical, as well as adaptation of classic map design principles (Section 3.1.);
- Constructing the physical part of the *Story from the Realm of Maps in Regensburg*—a studio workroom according to the layout based on knowledge obtained from maps and publications in the Leibniz Institute for East and Southeast European Studies—IOS-Regensburg (Section 3.2, Figures 1 and 2);
- Creating the draft of the script for the *Story from the Realm of Maps in Regensburg: 'People Movement in Southeast Europe'* (Section 3.3, Figure 3);
- Creating individual sequences of the story in different types of media: animation, 3D models, animation of photos 180, 360, animation–immersion (Section 3.4, Figure 4);
- Editing the video and publishing it on an online video-sharing platform (Section 4).

### 3.1. Concept

The team working on the project consisted of scientists and experts in multimedia cartography, history of cartography, creation of old map databases and sharing cartographic resources, general physical and socio-economic geography, and the history of Central and Eastern Europe. Having discussed these interdisciplinary approaches, we adopted a common concept, including the following initial assumptions:

- The final media form of the story—a short film entitled the *Story from the Realm of Maps in Regensburg* for online video sharing;
- The viewer—a public user with general geographical and historical knowledge, an expert, or a researcher;
- The story structure—three acts consisting of a beginning (title, topic, and questions); a middle (the immersion in the *Realm of Maps*, individual sequences presenting historico-geographical space and specific events); an ending (answers and inspiration for future considerations; the closing of the *Realm of Maps*);
- The plot of the story—a single plot related to the most important historical events in one geographical space constituting a referential cartographic core with a brief textual narration, at a pace following the rhythm of a musical piece and with a wide range of geomedia;
- Two dimensions of the *Realm of Maps*—a physical dimension, i.e., a studio workroom (printed maps, atlases, wall maps, sketches in books, graphics, catalogs, etc.) and a dig-

ital dimension (maps, schemes, 3D models, cartographic visualizations, photographs, geoportals, map scans, etc.);

- A cartographic core of the story—a recognizable cartographic shape for a quick, intuitive spatial reference on all cartographic visualizations in all sequences;
- Medium means—the range was assumed as wide as possible, including textual (descriptions, dates, geographical names, dialogues); graphics (schemes, drawings, raster copies of old maps, photographs (traditional 180, 360); video (traditional, 360); animation; music, e.g., a piece of instrumental classical music representative of the specific historico-geographical space;
- Cartographic forms—cartographic pictograms, political maps, hypsometric maps, old maps, 3D maps, and cartographic animations [35];
- Principles of map design—e.g., high contrast [28], focus of attention [26], minimization of map elements [25,36], pictorial symbols [27,29,30], filling in the entire ratio of 16:9 with contents without a frame [11,26], and visual variables [23].

### 3.2. The Realm of Maps in Regensburg—Studio Workroom

The construction of the *Realm of Maps* as a workroom for creative activities, adjusted to the topic 'The People's Movement in Southeast Europe', occurred after the layout was prepared. Figure 1 shows the layout with a sketch map of Europe including the sea coastline, the line of the Danube, mountain chains, and circles of cities, along with their names. Around the contour of Europe, some historical events were placed, and they were matched to corresponding cartographic sources. The idea behind the workroom was to select the material from the Leibniz Institute for East and Southeast European Studies and place the selected sources that will be significant to our story in the workroom [37]. In the center of the workroom, there was a large table with maps, atlases, books, photographs, a notebook, and wall maps hung around, which 'enclosed' the physical dimension of the *Realm of Maps* (Figure 2) [38]. Access to digital map collection with metadata and georeference through the GeoPortOst portal was provided by laptops.
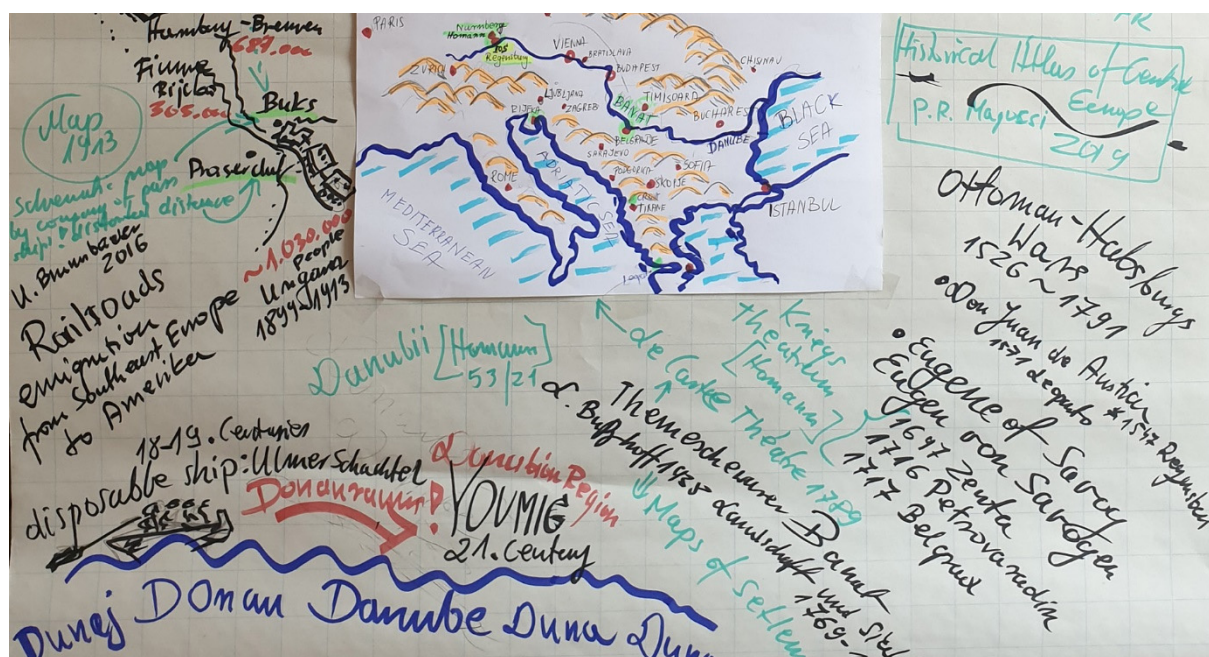


**Figure 1.** Layout with a sketch map of Europe including the sea coastline, the line of the Danube, mountain chains, and circles of cities, along with their names.

**Figure 2.** Physical dimension of the *Realm of Maps*—the workroom with a large table with maps, atlases, books, photographs, a notebook, and wall maps.

### 3.3. Drafting a Movie Script—The Story Plot: 'The People's Movement in Southeast Europe'

The layout (Figure 1) and detailed analysis of historico-cartographic materials in the workroom (Figure 2) allowed researchers to form the draft of the video script. When writing the draft of the script, we focused on the preservation of storytelling rights that are subject to the appropriate relationship between the narrator and viewer, as well as on a smooth plot in three acts [39]. The short film script includes ordered sequences in three acts with appropriate time proportions and matched time of duration for each sequence, with an accuracy of 5 s (Figure 3).

Following the specificity of creating the *Story from the Realm of Maps*, the draft of the script included the description of consecutive sequences according to the following points: text narration, different types of media, and cartographic form. Our audio effect was a single instrumental piece so that the viewer could focus solely on the visual aspects. In that stage of the research, we juxtaposed different types of media with corresponding cartographic forms to maintain a coherent plot of the story and show the full value of the *Realm of Maps* in IOS Regensburg.

### 3.4. Creating Story Sequences

A total of 13 sequences of the film, whose frames are graphically depicted in Figure 4, were created according to the concept described in Section 3.1 and the draft of the script in Figure 3. In the first sequence, viewers can see the white background, with the words of the title 'Story from the Realm of Maps in' appearing in turn. The last word of the title, 'Regensburg', appears at a distance near the circle symbolizing the location of the city. The blue line of the Danube, which becomes a cartographic core of the entire story from now on, 'flows' through the circle thanks to animation. In the next sequence, the Danube is the main element of the digitally created grayscale relief map, with the text of the narration being the topic and briefly asked questions in the form of interrogative pronouns. Additionally, in the third sequence, a special animation depicting spherical views of the workroom was employed to stimulate the opening of the workroom and cause the viewer to be immersed in the *Realm of Maps*.

**Act 1: Beginning** *25" 0:00 – 0:25*

Sequence 1: Title                                                                                          *5"        0:00*
  **Text narration**: Story from Realm of Maps / Regensburg / Danube
  **Medium mean**: text, animation, graphic, music
  **Cartographic form**: line shape of Danube, circle symbol of Regensburg

Sequence 2: Topic and questions                                                       *20"       0:05*
  **Text narration**: PEOPLE MOVEMENT IN SOUTHEAST EUROPE / WHO? HOW? WHY? WHEN?
  WHERE? // ... to answer these questions YOU are welcome to our REALM OF MAPS
  **Medium mean**: text, animation, graphic-map, music
  **Cartographic form**: line shape of Danube, grayscale relief map with coast line

**Act 2: Middle** *3'15" 0:25 – 3:40*

Sequence 3: Immersion in Realm of Maps                                      *10"       0:25*
  **Text narration**: Immerse yourself in our Realm of Maps
  **Medium mean**: text, animation, photos of workroom from spherical view, music
  **Cartographic form**: folio maps and wall maps in the workroom

Sequence 4: Researchers in map workroom                                    *60"       0:35*
  **Text narration**: [*Dialogue balloons*] The Homann Map of the Balkan Peninsula /
  ...it was published in Nuremberg around 1718 / Who moved the borders of the Empire south? /
  The genius strategist Prine Eugene of Savoy won the Battles of Petrovaradin 1716 and
  Belgrade 1717/ Here on the Danube / Eugene of Savoy took for Habsburgs the Banat
  **Medium mean**: text in dialogue balloons, video 360, music
  **Cartographic form**: folio maps and wall maps in the workroom

Sequence 5: Geographical space                                                       *10"       1:35*
  **Text narration**: Geographical space
  **Medium mean**: text, animation, screenvideo: flyover with 3D hypsometric map, music
  **Cartographic form**: grayscale relief map, hypsometric map 2D and 3D

Sequence 6: Historio-geographical space                                       *15"       2:25*
  **Text narration**: Movement of state borders / 2021 / 1910 / 1800 / 1718 / 1647
  **Medium mean**: text, animation, political map, music
  **Cartographic form**: political maps

Sequence 7: Habsburg-Ottoman battles 1716-1717                    *10"       2:40*
  **Text narration**: Victory battles of Prince Eugene of Savoy
  **Medium mean**: text, symbol of battle, political map, music
  **Cartographic form**: political maps, old coloured coper map

Sequence 8: Settlement in Banat 1720-1820                              *10"       2:50*
  **Text narration**: Settlement organization by Habsburg in Banat 1720-1820
  **Medium mean**: text, animation of boat symbol, political map, music
  **Cartographic form**: political map, pictorial sign

Sequence 9: Settlement in Banat 18th-19th Centuries *20"       3:00*
  **Text narration**: Settlement organization by Habsburg in Banat 18.-19. Century
  **Medium mean**: text, animation of cart symbol, political map, printscreen, music
  **Cartographic form**: political map, pictorial sign, print screen of geoportal

Sequence 10: Economic migration to USA                                     *20"       3:20*
  **Text narration**: Settlement Economic migration to U.S.A. / Prager Station
  **Medium mean**: text, animation, train and port symbols, political map, video, music
  **Cartographic form**: political map, pictorial signs

**Act 3: End** *50" 3:40 – 4:30*

Sequence 11: Answers                                                                        *20"       3:40*
  **Text narration**: Settlement organization by Habsburg in Banat 18.-19. Century
  **Medium mean**: text, animation of cart symbol, political map, print screen, music
  **Cartographic form**: political map, pictorial sign, print screen of geoportal

Sequence 12: Next ask,closing of Realm of Maps                   *20"       4:00*
  **Text narration**: Youth migration in the Danube Region? / to answer this question...
  visit our Realm of Maps again...
  **Medium mean**: text, animation of cart symbol, political map, print screen, music
  **Cartographic form**: political map, folio maps and wall maps in the workroom

Sequence 13: End credits                                                                 *10"       4:20*

**Figure 3.** The short film script with ordered sequences in three acts with text narration, different medium means, and cartographic form, and with appropriate time proportions and matched time of duration for each sequence, with an accuracy of 5 s.
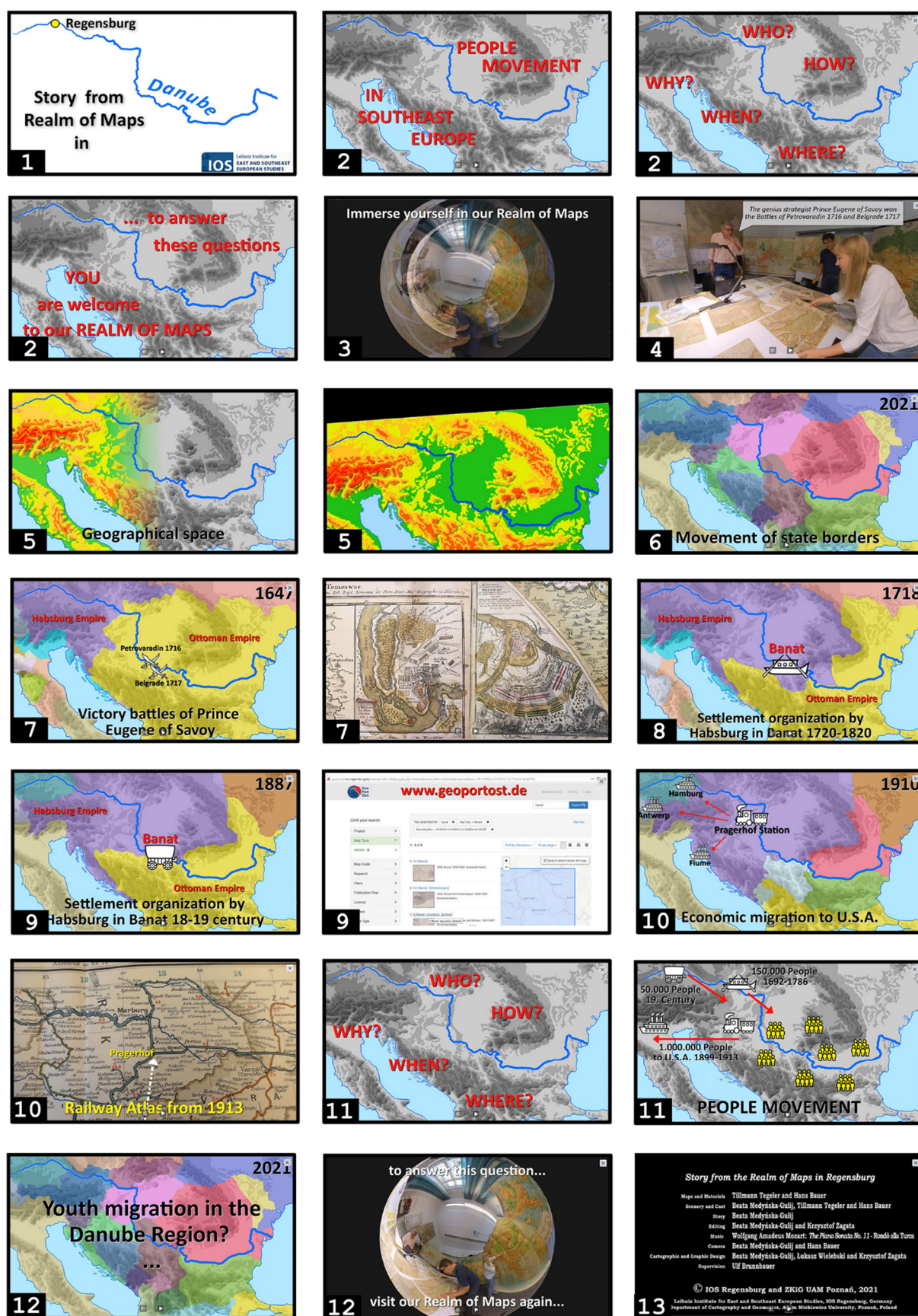
**Figure 4.** A total of 13 sequences of the film, whose frames are graphically depicted.

In the fourth section, a 360-degree camera shows three researchers walking in the workroom enclosed by wall maps, standing over maps on the table, and discussing historical events. The dynamics of the discussion are highlighted by speech balloons, stylized to resemble cartoon speech balloons, from which we can read crucial facts, dates, names, and geographical names.

In the fifth sequence, we can see the geographical space of Southeast Europe with a high generalization of the cartographic contents, leaving only the Danube, mountain chains, lowlands, and coastline on the map. The grayscale relief map from the first sequences transforms into a suggestive hypsometric map that becomes a 3D map before our eyes. We begin our flight over the Danube surrounded by mountain chains, which makes us perfectly aware of the geographical importance of the relief of this part of Europe. The presentation of the historico-geographical space occurs in the sixth sequence, in which colorful stains of individual states in the form of a political map with the animation of the changes in state borders from 2021 back to 1647 apply onto a relief map.

The next sequences of the film include four chronologically ordered events that were located on a political map by means of pictorial signs designed: a fight, boat, cart, train, and a port. The following additional media presentations of other cartographic materials from the *Realm of Maps* were added to this visualization:

–   A photograph of a part of the copperplate map 'The War Theatrum' designed by Homann around 1718;
–   A print screen of the internet service of map search from geoportost.de and a fragment of a map of Banat of 1858;
–   Zooming the location of a junction station and a railway from the atlas of 1913 with a traditional camera.

To indicate the direction in which the population migrated, researchers used the animation of 'walking' pictorial symbols of boats and carts, as well as arrows that showed directions to seaports.

In the 11th sequence, the viewer can see the questions asked at the beginning of the film again and receives answers to them appearing on the map, with the symbols of residents and those representing the ways of migration, the number of people, and moving arrows indicating the directions of the people's movement. The 12th sequence is a political map with a question about modern migration around the Danube and the animation presenting spherical views of the workroom that imitates closing the gate to the *Realm of Maps*. The 13th sequence includes end credits following the convention of feature films.

## 4. Results—Editing the Film and Uploading It to the Online Video-Sharing Platform

To create suitable cartographic forms, the following types of media were employed: graphic software (Inkscape, Adobe Photoshop); geoinformation software (ArcGIS Pro); a screen recorder and video editor (Insta360Studio, Camtasia); a camera (Panasonic); a smartphone (Samsung GalaxyS10); a 360-degree camera (Insta360EVO); an MSI-VR laptop. The editing was performed in the Camtasia video editor and included the following parameters: an MP4 video file, 16:9 aspect ratio, encoded at the 1080p: $1920 \times 1080$ (Full HD) resolution. The film was uploaded to the YouTube channel 24 January 2021: https://www.youtube.com/watch?v=E-mChqmYn2A.

The length of the film with 13 sequences is 4 min and 30 s, with the first act lasting 25 s, the second one lasting 3 min and 13 s, and the last one, 50 s. Overall, 11 sequences are between 10 and 20 s long. The fourth sequence is an exception—it lasts 1 min and includes the dialogue of three researchers. According to the assumptions, in the film, there is only one piece of classical music with a fast tempo, directly linked to the history of Southeast Europe: The Piano Sonata No. 11 'Alla Turca' by Wolfgang Amadeus Mozart, from 1783 [7].

Simple, easily identifiable cartographic forms and brief subtitles are crucial to help the viewer follow the plot [17]. Neutral, black titles of individual sections, such as 'Movement of state borders', are centered and placed at the bottom of the film frame. The years in

which the borders of the states changed were adjusted to the upper right corner of the frame to avoid the discomfort of watching 'jumping' years. Only in one case did we use speech balloons, created to resemble a dialogue from a cartoon, to make the exchange between three researchers preserve the dynamics of them moving around maps along with spontaneous dialogue. The ease of reading the subtitles results from the employment of a single-element, sans serif font [28].

To make our story coherent, we used two repetitions: two shots from the beginning of the film were used at the end. The first repetition is related to crucial questions: the 12th sequence uses the same questions and the same shot with interrogative pronouns appearing one by one along the Danube on the map. The other repetition is related to the opening of the *Realm of Maps* that imitates the immersion of the viewer in the world of maps in the second sequence. In the 12th sequence, the animation of the photograph 360 is reversed, which suggests the closing of the *Realm of Maps*.

To make moving from one cartographic visualization to another smoother, the study used a fade-out effect with a black frame that lasted for 1 s, and fade-through from the left to the right side for the scale of colors, and in the sixth sequence, 'Movement of state borders', for seven political maps. The line of the Danube is a stable graphical element of each shot because it is located in the same spot of the map, and it is always at the same scale and has the same cartographic symbol [25,26]. The cartographic shape of the Danube was preserved by designing a very thick blue line for the extending width from the river head in Swabia to the mouth of the river in the sea [24].

## 5. Discussion and Conclusions

To sum up our theoretical discussions, practical design, and the final version of the film, we examined the value of a suggested way of storytelling in the form of a film that applies certain specific research methods, i.e., the *Realm of Maps*, and is dedicated to a specific research topic related to historico-geographical space. Currently, in the time of digitalization and mapping websites, personal queries of cartographic sources in libraries and scientific institutes are frequently replaced with online studies of digital copies and the use of geoportals. Such a trend intensified during the pandemic; thus, we believe that the employment of geomedia is an excellent way to show the legitimacy of combining two dimensions of working with maps. It makes it possible to develop real and virtual methods of exploring the collections of cartographic and descriptive sources in one specific scientific center or in the library map department [40].

Returning to the question about the conditions of building a map workroom for the purpose of studying historical events in geographical space, we would recommend ordering old maps on a large table with possibly easy access to each map, and symbolically enclosing the working space with wall maps. A physical wall symbolically enclosed with historical maps allows one to grasp different perspectives on perceiving and combining facts. However, one needs to also consider individual preferences in terms of research methods based on maps [41].

The script that orders the plot of the story according to acts and sequences, including also the text of the narration, the medium, and the cartographic form, becomes crucial, especially when we assume that such film is the demonstration of the researcher's knowledge, but also a method of presenting the results or passing the knowledge to viewers. Such a combination of cartographic signs, symbols, and mapping techniques with media can be defined as a geomedia activity [42]. The legitimacy of creating content in the film for two types of viewers—typical users of online video sharing and social media platforms, with general knowledge of history and geography, and scientists, experts in the field—still remains open to debate [43].

The film is fast paced and includes very rhythmical classical piano music. The length of the film is also problematic. A 4.5 min video may seem too long for public users, while it may be considered too short for an expert and not discussing the topic profoundly enough [36].

For our film, we assumed two levels of knowledge perception. At the first, general level for public users, the user can see visually attractive sequences but may have a problem grasping the relation between pieces of information in individual sequences (e. g. due to the lack of geographical names). However, experts will easily associate historical facts with the location and, through such a comprehensive geomedia visualization, they may actually spot new links or be inspired to search for them [44]. At this point, we could ask a question about the potential of such a film for a better understanding of the presented phenomena. Although each map reader reads and interprets map signs individually, map designers may have an impact on reading and interpreting static and dynamic cartographic images in the right way thanks to the employment of classic principles [45,46]. One should also bear in mind that the appeal of the way of cartographic presentation does not need to go hand in hand with its effectiveness [20,36,47].

Hence, there is no single answer to the question about the right number of media and their types that should be used in the film [33]. In this case, we used as many different types as possible, which, on the one hand, boosts the appeal of the film and, on the other, may hamper the proper perception of the main film plot [20].

In our methodological approach, we decided to employ a complementary combination of the knowledge of historical geography, map design principles, general good practices of writing a short film script, and the use of media. A film script with sequences ordered in three acts with text narration, medium mean, and cartographic form, was vital to the creation of the *Story from the Realm of Maps in Regensburg*. However, building a workroom and drafting a layout together by historians and cartographers, as well as adapting classic map design principles in order to create new cartographic visualizations, proved to be crucial for visual storytelling in this case.

On the basis of the research, we can offer the following recommendations for filming historical geography with analog maps and maps created specifically for films published on online video-sharing and social media platforms:

- Adjust the map format to the ratio 16:9 in the horizontal orientation;
- Include an easily recognizable and repetitive referential element on maps (here, the Danube and the coastline);
- Fill in the entire film frame with the content;
- Do not use frames for cartographic content;
- Do not place a legend or a linear scale on the map (without a numerical scale!);
- Design pictorial map symbols of high contrast to the background (e. g., symbols filled in white with a black contour on colorful areas);
- Use line symbols with high width (such as on wall maps);
- Prioritize the animation of point symbols over the animation of area symbols on the map;
- Use the minimal number of subtitles and place them in a single spot on the film frame to prevent them from 'jumping' in consecutive shots;
- Present old folio and wall maps in the film along with the researcher to show their size and way of use.

We believe that availability on public platforms and an appealing form of sharing knowledge of maps in order to discover new interdisciplinary relations constitute the two greatest assets of short films about maps [48]. The informative value and appeal of such films are to be determined in further research. It may have an impact on the formulation of further recommendations for filming historical geography. Indeed, those alternative ways can serve better communication in the field of publishing research stages and results, as well as their individual scientific and professional methods [49]. Additionally, a question arises about the kind of impact such a film has on the perception of historico-geographical phenomena for different user groups, e.g., schoolchildren, the general public, experts, and researchers, and how it differs between them.

To summarize, the recommendations that we suggested could come to fruition thanks to the cooperation of historians, geographers, and cartographers who created this particular

workroom (the *Realm of Maps*) while being also based on classic principles of map design. In fact, this is a good point for collecting some feedback from real users, i.e., the public, experts, and analysts. We look forward to opening a broader discussion on the limits of the use of the proposed framework and to making the differences in limits for designers and users part of the discourse, with the emphasis on various ways of using the proposed framework.

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# References

1.  Tegeler, T.; Bauer, H. Introduction: Maps in Libraries. Trends in Enabling Spatial Information Retrieval. *E-Perimentron* **2019**, *14*, 110–116.
2.  Domosh, M.; Heffernan, M.; Withers, C. *The SAGE Handbook of Historical Geography*; SAGE Publications: London, UK, 2021; ISBN 978-1526404558.
3.  Kuźma, M.; Bauer, H. Map Metadata: The Basis of the Retrieval System of Digital Collections. *Int. J. Geo-Inf.* **2020**, *9*, 444. [CrossRef]
4.  Uhl, J.H.; Leyk, S.; Chiang, Y.-Y.; Duan, W.; Knoblock, C.A. Map Archive Mining: Visual-Analytical Approaches to Explore Large Historical Map Collections. *Int. J. Geo-Inf.* **2018**, *7*, 148. [CrossRef] [PubMed]
5.  Medyńska-Gulij, B. How the Black Line, Dash and Dot Created the Rules of Cartographic Design 400 Years Ago. *Cartogr. J.* **2013**, *50*, 356–368. [CrossRef]
6.  Medyńska-Gulij, B.; Żuchowski, T.J. *European Topography in Eighteenth-Century Manuscript Maps*; Bogucki Wydawnictwo Naukowe: Poznań, Poland, 2018; ISBN 978-83-7986-204-7.
7.  Medyńska-Gulij, B. *Kartografia i Geomedia*; Wydawnictwo Naukowe PWN: Warsaw, Poland, 2021; ISBN 978-83-01-21554-5.
8.  Williams, J.P.; Smith, J.H. *The Players' Realm. Studies on the Culture of Video Games and Gaming*; McFarland & Co.: Jefferson, NC, USA, 2007; ISBN 978-0786428328.
9.  Kersten, T.P.; Edler, D. Special Issue "Methods and Applications of Virtual and Augmented Reality in Geo-Information Sciences". *PFG—J. Photogramm. Remote. Sens. Geoinf. Sci.* **2020**, *88*, 119–120. [CrossRef]
10. Zagata, K.; Gulij, J.; Halik, Ł.; Medyńska-Gulij, B. Mini-Map for Gamers Who Walk and Teleport in a Virtual Stronghold. *Int. J. Geo-Inf.* **2021**, *10*, 96. [CrossRef]
11. Medyńska-Gulij, B.; Lorek, D.; Hannemann, N.; Cybulski, P.; Wielebski, Ł.; Horbiński, T.; Dickmann, F. Die kartographische Rekonstruktion der Landschaftsentwicklung des Oberschlesischen Industriegebiets (Polen) und des Ruhrgebiets (Deutschland), Cartographic reconstruction of the landscape development of the Upper Silesian industrial area (Poland) and the Ruhr area (Germany). *KN J. Cartogr. Geogr. Inf.* **2019**, *69*, 131–142.
12. Jones, K. David Rumsey Map Collection. *Multimed. Technol. Rev.* **2017**. Available online: https://www.arlisna.org/publications/multimedia-technology-reviews/1200-david-rumsey-map-collection (accessed on 13 October 2021).
13. Maiellaro, N.; Varasano, A. One-Page Multimedia Interactive Map. *Int. J. Geo-Inf.* **2017**, *6*, 34. [CrossRef]
14. Horbiński, T.; Cybulski, P.; Medyńska-Gulij, B. Web Map Effectiveness in the Responsive Context of the Graphical User Interface. *Int. J. Geo-Inf.* **2021**, *10*, 134. [CrossRef]

15. Roth, R.E. Cartographic Design as Visual Storytelling: Synthesis and Review of Map-Based Narratives, Genres, and Tropes. *Cartogr. J.* **2021**, *58*, 83–114. [CrossRef]
16. Thöny, M.; Schnürer, R.; Sieber, R.; Hurni, L.; Pajarola, R. Storytelling in Interactive 3D Geographic Visualization Systems. *Int. J. Geo-Inf.* **2018**, *7*, 123. [CrossRef]
17. Mocnik, F.-B.; Fairbairn, D. Maps Telling Stories? *Cartogr. J.* **2018**, *55*, 36–57. [CrossRef]
18. Horbiński, T.; Zagata, K. Map Symbols in Video Games: The Example of "Valheim". *KN J. Cartogr. Geogr. Inf.* **2021**, *14*, 13. [CrossRef]
19. Edler, D.; Dickmann, F. The Impact of 1980s and 1990s Video Games on Multimedia Cartography. *Cartographica* **2017**, *52*, 168–177. [CrossRef]
20. Medyńska-Gulij, B.; Forrest, D.; Cybulski, P. Modern Cartographic Forms of Expression: The Renaissance of Multimedia Cartography. *Int. J. Geo-Inf.* **2021**, *10*, 484. [CrossRef]
21. Harrower, M. The Cognitive Limits of Animated Maps. *Cartographica* **2007**, *42*, 349–357. [CrossRef]
22. Clarke, K.C.; Johnson, J.M.; Trainor, T. Contemporary American cartographic research: A review and prospective. *Cartogr. Geogr. Inf. Sci.* **2019**, *46*, 196–209. [CrossRef]
23. Bertin, J. *Semiologie Graphique—Les Diagrammes, les Reseaux, les Cartes*; Gaultier: Paris, France, 1967.
24. Hake, G. *Kartographie*, 2nd ed.; Walter de Gruyter: Berlin, Germany; New York, NY, USA, 1976.
25. Freitag, U. Semiotik und Kartographie. Über die Anwendung kybernetischer Disziplinen in der theoretischen Kartographie. *Kartogr. Nachr.* **1971**, *21*, 171–182.
26. Dent, B. *Principles of Thematic Map Design*; Addison-Wesley Publishing Company: Boston, MA, USA, 1985; ISBN 978-0201113341.
27. Imhof, E. *Thematische Kartographie*; Walter de Gruyter: Berlin, Germany; New York, NY, USA, 1972.
28. Robinson, A.H.; Sale, R.D.; Morrison, J.L. *Elements of Cartography*, 4th ed.; John Wiley & Sons, Inc.: New York, NY, USA, 1978; ISBN 9780471017813.
29. Ratajski, L. The methodical basis of the standardization of sign on economic maps. *Int. Yearb. Cartogr.* **1971**, *11*, 137–159.
30. Keates, J. *Cartographic Design and Production*; Longman: London, UK, 1973; ISBN 978-0582482838.
31. van Dijck, J. *The Culture of Connectivity: A Critical History of Social Media*; Oxford University Press: Oxford, UK, 2013; ISBN 978-0199970780.
32. Nash, P. *Short Films. Writing the Screenplay*; Oldcastle Books: New York, NY, USA, 2012; ISBN 978-1842435014.
33. Cooper, P.; Dancyger, K. *Writing the Short Film*, 3rd ed.; Elsevier/Focal Press: Burlington, MA, USA, 2005; ISBN 978-0240805887.
34. Booker, C. *The Seven Basic Plots. Why We Tell Stories*; Bloomsbury Academic: New York, NY, USA, 2006; ISBN 978-0826480378.
35. Kraak, M.J.; Ormeling, F.J. *Cartography. Visualization of Geospatial Data*, 4th ed.; CRC Press: Abingdon, UK, 2020.
36. Medyńska-Gulij, B.; Wielebski, Ł.; Halik, Ł.; Smaczyński, M. Complexity Level of People Gathering Presentation on an Animated Map—Objective Effectiveness Versus Expert Opinion. *Int. J. Geo-Inf.* **2020**, *9*, 117. [CrossRef]
37. Brunnbauer, U. *Globalizing Southeastern Europe. Emigrants, America, and the State Since the Late Nineteenth Century*; Lexington Books: Lanham, MD/Boulder, CO/New York, NY, USA; London, UK, 2016; ISBN 978-1498519557.
38. Magocsi, P.R. *Historical Atlas of Central Europe, 3rd Revised and Expanded Ed.*; University of Toronto Press: Toronto, ON, Canada, 2018; p. 296.
39. Shuman, A. *Storytelling Rights. The Uses of Oral and Written Texts by Urban Adolescents*; Cambridge Studies in Oral and Literate Culture 11; Cambridge University Press: Cambridge, UK, 1986; ISBN 9780511983252.
40. Kühne, O.; Edler, D.; Jenal, C. A Multi-Perspective View on Immersive Virtual Environments (IVEs). *Int. J. Geo-Inf.* **2021**, *10*, 518. [CrossRef]
41. Caquard, S.; Cartwright, W. Narrative Cartography: From Mapping Stories to the Narrative of Maps and Mapping. *Cartogr. J.* **2014**, *51*, 101–106. [CrossRef]
42. Collins, A.; Neville, P.; Bielaczyc, K. The role of different media in designing learning environments. *Int. J. Artif. Intell. Educ.* **2000**, *11*, 144–162.
43. Pham, H.-H.; Farrell, K.; Vuong, Q.-H. Using YouTube Videos to Promote Universities: A Content Analysis. *Tech. Technol. Educ. Manag.* **2017**, *12*, 58–72.
44. Finkler, W.; León, B. The power of storytelling and video: A visual rhetoric for science communication. *J. Sci. Commun.* **2019**, *18*, A02. [CrossRef]
45. DiBiase, D.; MacEachren, A.M.; Krygier, J.B.; Reeves, C. Animation and the Role of Map Design in Scientific Visualization. *Cartogr. Geogr. Inf. Syst.* **2013**, *19*, 201–214. [CrossRef]
46. Cybulski, P.; Wielebski, Ł. Effectiveness of Dynamic Point Symbols in Quantitative Mapping. *Cartogr. J.* **2019**, *56*, 146–160. [CrossRef]
47. Wielebski, Ł.; Medyńska-Gulij, B. Graphically supported evaluation of mapping techniques used in presenting spatial accessibility. *Cartogr. Geogr. Inf. Sci.* **2019**, *46*, 311–333. [CrossRef]
48. León, B.; Bourk, M. *Communicating Science and Technology Through Online Video. Researching a New Media Phenomenon*; Routledge: Abingdon, UK, 2018.
49. Cooke, S.J.; Gallagher, A.J.; Sopinka, N.M.; Nguyen, V.M.; Skubel, R.A.; Hammerschlag, N.; Boon, S.; Young, N.; Danylchuk, A.J.; Metcalf, V. Considerations for effective science communication. *FACETS* **2017**, *2*, 233–248. [CrossRef]