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Researching Stylistic Neutrality for Map Evaluation

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Abstract

Stylistic neutrality is the basis for the stylistic evaluation of maps. Furthermore, the stylistic neutrality of a map as a cartographic text may be related to objectivity. However, what constitutes stylistic neutrality is not clearly stated in the field of cartography. The problem is complicated by the fact that the stylistically neutral image is a hypothetical image. The aim of this research is to investigate stylistic neutrality by exploring the peculiarities of cartographic language functioning in different fields of social activity. The research combines descriptive analysis, stylistic analysis, cartographic and interpretative methods. Firstly, the research reveals the concept of cartographic stylistic neutrality, in line with the cartographic linguistic paradigm. Secondly, an analysis of the characteristics of cartographic language in different fields of social activity from the point of view of stylistic neutrality is carried out. Thirdly, an example is developed to illustrate stylistic cartographic neutrality. Stylistic neutrality is characterised by the stylistic features of cartographic language: clarity, accuracy, conciseness, calmness, abstractness, temperance, neutrality and moderateness. The style of cartographic production for inventory and research activities is closest to stylistic neutrality, while the style of reflective activity is the most expressive and acts as a source of concreteness for stylistic neutrality.

Keywords: stylistic neutrality; map style; cartographic language; standardisation; objectivity

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1. Introduction

The lack of objectivity in maps is at the heart of critical cartography [1]. To establish neutrality in a map and to assess the proportionality of objectivity and overall creativity in an image, it is useful to investigate the way of representation, i.e., to study not what is represented but how it is represented. When the map is treated as text, the way of speaking is studied. The way of representing or speaking, which has acquired a systematicity of use, is described as style [2]. Objectivity, as a result of the functioning of cartographic language, is available for investigation through the study of functional styles of cartographic language and the establishment of cartographic stylistic neutrality therein.

Cartographic stylistic neutrality is a fictitious image that, due to its limited applicability, rarely takes a pure form. Stylistic neutrality has not been extensively studied in scientific research. It is mentioned in passing, and stylistic neutrality is given various names. However, at the level of intuitive knowledge, we rely on some version of stylistic neutrality as the starting point for assessment when we refer to any map style. The stylistic neutrality developed at the scientific level can serve as a supporting basis for a cartoqualimetric assessment of styles, and thus for further formalisation and standardisation. This would

help to better manage and work with the lack of objectivity in maps, considering that the cartographic text with the highest objectivity is a variant close to stylistic neutrality.

The aim of this research is to investigate stylistic neutrality by exploring the peculiarities of cartographic language functioning in different fields of social activity.

To achieve the goal, the following tasks are addressed:

1. Develop the concept of a neutral cartographic style;
2. Identify, from existing examples of map styles, the fields of social activity where the styles of cartographic production most closely approximate to stylistic neutrality;
3. Develop an example of cartographic stylistic neutrality following a non-applicational, fundamental research approach.

Research suggests that a non-application-oriented approach to basic scientific research is needed to ensure greater objectivity in the example of stylistic neutrality. Drawing on the linguistic theory of functional styles of language, cartographic stylistic neutrality is investigated in relation to the function performed by the cartographic language and the field of use of the cartographic language [3]. The distinction of the element of cartographic stylistic neutrality in the system of cartographic language is a new approach in cartographic research.

This research is based on a literature review and critical analysis, a stylistic analysis and comparison of map styles based on empirical evidence, and an experimental activity to create an example of a neutral-styled map using a cartographic method. Conclusions reached by induction to solve a research problem are based on examples and evidence, observation of concrete facts and theoretical generalisation.

An example of cartographic stylistic neutrality can be an initial workpiece and an initial image for the formation of derived styles on the map by varying the proportions of the combination of stylistic features and cartographic language functions.

It is a complex combination of visual characteristics, described by numerical expressions and configuration settings, and with further development, it is possible to model, formalise, standardise, apply to production and automate the process. The characteristics of the cartographic style are explored in the context of style transfer between works [4]. To extend human capabilities in cartography through artificial intelligence, the principle of stylistic neutrality could be applied to recognise the level of objectivity of images by collecting more examples of map styles close to stylistic neutrality. Once the cartographic functional style has been modelled and the results obtained, the resulting insights can be used to improve the map generators, by specifying stylistic neutrality as the initial (lowest) level of expression that corresponds to a complete objective thought, against which further comparisons can be made.

In studies conducted by other authors, meanings close to cartographic stylistic neutrality are referred in various ways (elementary, minimal, standard, traditional, basic, neutral) emphasising different aspects of style. Elementary style is the style of geometric primitives that form the style of a map [5]. Minimal style is a visualisation of a database using common schemas, while standard style is one that has been applied with the minimum graphical enhancement necessary to meet the basic criteria of communicative quality [6]. The traditional style is the style of topographic maps [7]. A base map is a map style designed to support thematic map layer overlays [8]. A neutral map is a map that presents information objectively and does not contain an evaluative element [1].

In scientific literature, concepts associated with cartographic stylistic neutrality are mentioned in the context of cartographic design style and/or cartographic language style.

Artistic styles of cartographic design include styles that imitate performance techniques (watercolour), styles that imitate artistic styles (pop art), and styles that imitate individual styles (Cassini style). These map styles belong to the original styles. Another

group of map styles in this classification are traditional styles. The formation of artistic styles in cartographic design is based on the transfer of map styles between works using artificial intelligence tools and technology [7].

Map styles, examined from the perspective of the interaction of cartographic design and cartographic language, are as follows:

- Expressive styles (lyrical, extravagant, playful, etc.). Map styles are distinguished according to the intentions of the map maker (signification, clarification and emphasis), proposed by H. Schlichtmann [9], and the purpose of the map [6]. Among the stylistic features, clarity [10,11] and uncertainty [12,13] in cartographic imagery have been widely examined.
- Cartographic design styles (functional). Depending on the purpose (function) of the map, cartographic design styles are distinguished (inventory, scientific work, educational, planning, advertising). They are evaluated in a complex way with the semiotic system of map symbols. Style is defined by the peculiarity of the graphic expression used on the map [14].
- Functional map styles. According to the general functions of maps (representing, cognitive, informational, systemic) and special functions (documentation, practical, systemic, etc.), functional styles of modern maps are distinguished (utilitarian, scientific, popular, artistic) [15]. The style of a map is the sum of its characteristic features and is based on the purposeful selection of expressive means that support some of the map's functions. Map stylistics use the methods for other levels of map language (signs, morphology, syntax) [16].

Scientific research examines the following styles of cartographic language:

- Cartographic functional styles (documentary, scientific, informational, rhetorical). Styles are distinguished based on the area of use of cartographic language and the functions performed by cartographic language. Cartographic language functions, analogous to linguistic stylistics and the theory of functional language styles [17–19], are distinguished on the basis of propositional functions [20]. The functions of cartographic language are aesthetic, representational, directive, appellative, etc. [3].
- Topographic map styles. These are distinguished by examining the legends of topographic maps of European countries with long cartographic traditions and the quantity, structure, organisation and changes through time of the geographical objects depicted in them. The results of the study have led the researchers to determine that the style of topographic maps is a reflection of state policy and its changes. This suggests the presence of political values in the style of topographic maps [2].
- Rhetorical style of the map. The map is analysed in terms of the ratio of objectivity and suggestiveness on the map [1]. When the map is considered as text, linguistic access to the map is enabled [1,21–23], allowing cartographic language to be analysed as structural levels [16,24].

The abovementioned styles are an indication that they are distinguished in relation to the reference style, since the presence of relativity, and hence comparability, is a necessary condition for the emergence of a style. The least stylistically processed layer of the map is identified in some works and not highlighted in others.

It can also be noted that in the listed examples of styles, in addition to objectivity, the map may contain not only evaluation (political, ideological, aesthetic), but also expression [25,26]. According to the explanation given in deontic logic, propositions have at least four functions: descriptive, prescriptive, evaluative and expressive. Descriptive sentences refer to a descriptive function and connote a fact of reality [27]; thus, a prescriptive statement also performs a descriptive function [20]. Since all areas of societal

activity are generally characterised by value judgement [28], there is no reason to seek absolute objectivity.

The objectivity associated with cartographic stylistic neutrality is a prerequisite for scientific research. According to G. Frege, objectivity is independence from sensations, observations, impressions or images created on the basis of remembered sensations [29]. In the philosophical worldview of objectivism, science must be neutral, impartial (objectivity) and facts must be recorded without their social, political or ideological evaluation. In this sense, cartographic stylistic neutrality is a neutral, impartial recording of facts on a map without an evaluative element. Scientific objectivity itself is also not pure neutrality and has an evaluative element. Objective thinking, rational reasoning and individuality are important aspects of Western culture, while a holistic approach, spirituality and intuitiveness are distinctive features of Eastern culture [30]. To ensure greater objectivity in the example of cartographic stylistic neutrality, it is appropriate to rely on the disinterested approach of fundamental scientific research, which allows us to see the whole without an evaluative gaze and impartially include all important elements in that whole. The chosen means for recording an objective fact is cartographic language, its representational function, where the word "function" is inherently associated with inevitable practicality. Therefore, for all the reasons listed above, cartographic stylistic neutrality is a sign of conditional objectivity without an evaluative element on the map.

2. Materials and Methods

2.1. Research Methods

To achieve its objectives, this research was carried out methodically in the following steps:

1. Literature review on the research topic and critical analysis;
2. Development of the concept of cartographic stylistic neutrality;
3. Cataloguing and methodological analysis of contemporary examples of map style;
4. Creating a stylistically neutral cartographic image.

Research is conducted within the paradigm of cartographic language in the philosophy of positivism in the direction of analytical philosophy. It is based on qualitative methods. Inductive and deductive methods are used in the research.

Data analysis methods:

- Stylistic analysis. The methodological tools it provides are used to describe the characteristic styles of cartographic language. Stylistic analysis requires a variety of examples, as stylistic similarities are best seen against a background of differences. The analysis of cartographic styles is based on research on contemporary map styles.
- Comparative analysis. It is used to compare stylistically marked maps used in different activities with each other and with a stylistically neutral image.
- Statistical analysis. It is applied to identify trends in the use of cartographic language in various fields of social activity, to calculate the average and total values of stylistic features and to compare them with each other and with a stylistically neutral image.
- Experimental method. It is applied to create an example of cartographic stylistic neutrality, based on the results of the analysis of contemporary map styles.
- Cartographic method. It is used to create maps on the chosen wind energy topic.
- Interpretive method. It is used to provide insights into the research questions being addressed.

Since the functions of cartographic language are realised by presenting stylistic features in a cartographic image, stylistic features are studied on the map. They are common to all maps, and therefore provide an opportunity to determine the cartographic functional

style on the map. Stylistic elements are paired according to the principle of opposites. A pair of stylistic features is a pair that has a feature in common, but not in equal amounts. The first member of these pairs corresponds to neutral stylistics and the lowest expression of the indicated stylistic feature, and the second member to the highest expression of the indicated stylistic feature. In a cartographic representation, both members of a pair of stylistic features can be equally expressed simultaneously. These pairs are chosen to provide an opportunity to describe the expression of thought, speech, sensation, suggestion and affect. The meanings of stylistic features vary in different areas of social activity. This helps to identify the intentions of the mapmaker, the functions of the cartographic language and cartographic functional styles.

The methodology for stylistic evaluation of maps lists fields of societal activity in which cartographic language functions to satisfy social needs, while identifying the main accents that may influence the cartographic style [3]:

- Inventory. Registration of objects in the database and marking on the map in state registers and cadastral information systems; existing factual, historical and planned objects are inventoried. Evidence of facts is based not only on legal registration of facts, empirical measurements, experience, but also on logical analytical methods.
- Research. Maps that convey the results of scientific research (crime locations, labor shortages, etc.). Historical maps are complex in terms of expression. Complexity is associated with the state of objects and the nature of the expression of such objects.
- Evaluation. Maps showing the zoning of the territory according to selected characteristics. A scientific assessment is being made, not a personal assessment or insight.
- Forecasting. Maps representing long-term and short-term forecasts (weather, climate change, etc.).
- Planning. This activity includes the development of graphic solutions in the territorial planning process, marking the locations of planned activities and related permit information on the map. Planning material is provided against the background of topographical information.
- Regulation. Regulations published by responsible authorities that are in cartographic form.
- Orientation. Cartographic production for outdoor orientation (orienteering); standardised symbols are used.
- Navigation. Maps for navigation in the area; these maps provide detailed directions and instructions.
- Teaching. Publishing educational materials in cartographic form. Highlighting outliers (the most important, the largest, the most interesting objects) on the map, indicating the most prominent objects and the extremes.
- Advertising. Highlighting objects and places on a map on a subjective basis, for example, for commercial purposes.
- Reflection. Conveying reactions to topics that are relevant to society through cartographic means.
- Cooperation. Problems and events observed in the area are marked on cooperation maps.

To determine the map style closest to neutrality, the stylistics of cartographic production is studied in those fields of activity where cartographic language operates (Figure 1):

The following cartographic language functions are distinguished in the methodology for stylistic map evaluation:

- Descriptive function. This is a descriptive function of cartographic language. When data is in the accumulation stage and the information is incomplete or has no clear trend, the information is not yet fully clear and its value has not been determined. Data becomes an asset when it meets quality requirements [31], covers the entire territory and are evenly distributed in the mapped area. The descriptive function of

cartographic language is characteristic of maps based on data in the initial stage of preparation.

- Informative function. This reflects the systematisation and presentation of facts on a map. Objects are depicted in an abstract and generalised way (e.g., using choropleth maps), with technical characteristics of the objects, indices and notes indicating the results of analysis.
- Representative function. The geometry and physical properties of objects are emphasised. A geographical object is represented by conventional symbols based on signs of external similarity. The cartographic image is characterised by specificity.
- Expressive function. This allows for expressing thoughts visually and reflect judgements.
- Appellative function. The user recognises him/herself when looking at such a map. The appellative function of the map can be inferred from the words "You are here", etc.
- Directive function. The information provided on the map activates the user, encouraging or initiating user actions.
- Aesthetic function. The aesthetic function of the cartographic language determines the completeness, order and harmony of the map. Clarity of thought is sought here through the use of artistic means. The aesthetic approach is predominant.

Figure 1. Fields of social activity in which cartographic language functions.

The cartographic language on a map has one main function and several additional functions.

Eight pairs of stylistic features are distinguished in the methodology for stylistic map evaluation:

- Clarity–Ambiguity. The wider, blurred, disappearing lines of the cartographic image, the more transparency and gradient surfaces, the greater the ambiguity and uncertainty of information transmission in the cartographic image.
- Accuracy–Generalisation. The less curved the lines and contours, the more generalised the information is conveyed in the cartographic image.
- Conciseness–Completeness. The more information on the map, the more detailed and complete the image. Displaying only essential information in a cartographic image is associated with presenting information concisely. Data management principles (grouping, classifying objects) help to present information concisely.
- Calmness–Expressiveness. The more static and framed compositions, regular expressions of geographical objects, phenomena and processes, the calmer the tone of

information presentation. Often it is specific for linear cartographic compositions. On the contrary, painterly expression allows for the expressive conveyance of information.

- Abstractness–Concreteness. The closer the graphic form of the sign is to the object depicted, the more specific the information conveyed and the more unambiguously the object can be identified.
- Temperance–Figurativeness. The fewer ornamented surfaces, structured lines and colours in a cartographic image, the more temperance the information conveyed, the less figurative the image. For example, presenting a railway line in alternating black and white sections increases the figurativeness of the map.
- Neutrality–Suggestiveness. The fewer symbols that allow the map user to identify themselves, for example, as a citizen, a driver or a landowner, that are used in the cartographic representation, the more neutral the information on the map. The "you are here" message on the map is addressed to the map user and is suggestive.
- Moderateness–Directiveness. The less information related to rules, restrictions and instructions conveyed on a map, the more moderate the information is presented. Directiveness is increased by the use of directional vectors, arrows, restrictive and prohibitive signs, and presentation and highlighting of regulatory zones.

In this methodology, the starting point of theoretical cartographic stylistic neutrality, which is equated with objectivity, in the evaluation system is zero. From this, the actual cartographic stylistic neutrality of the evaluated map can be determined. Adhering to the criteria of clarity, accuracy and conciseness when creating a cartographic image helps to logically convey information on the map. Conciseness shows what is depicted and how it is structured: accuracy—how detailed or, conversely, schematically marked; clarity—how strictly or, conversely, smoothly and fluently the information is conveyed. As can be judged from the arrangement of stylistic features in pairs (first "clarity", then "ambiguity", respectively, "abstractness", finally, "concreteness", "conciseness" and "completeness"), the methodology of cartographic stylistic evaluation assumes objectivity and rationality on the basis of stylistic neutrality. The opposite case would indicate a phenomenological approach [32,33] to the issue under consideration. If stylistic neutrality is the focal point of cartographic stylistic evaluation, the limits of expression are defined by phenomenology. Looking at reality through a phenomenological prism, the specificity of the location becomes apparent and at the same time the limits of graphic expression are expanded. This is taken into account in further research.

2.2. Data Sources

The study of cartographic stylistic neutrality involves an analysis of actual map styles. For this purpose, examples of map styles are collected.

During this research, while improving the methodology for assessing cartographic styles, 240 maps were selected for further research from the 2000 maps initially reviewed, i.e., 20 maps from each of 12 areas of social activity in which cartographic language functions, focusing on the most diverse and vivid cases of cartographic expression in maps. These maps are publicly available and used as base maps on national spatial information portals, embedded in media releases, publications, scientific articles, reports, school textbooks, promotional materials and elsewhere.

According to the form of the map, the maps studied are analog and electronic, and according to the purpose of the map: general reference, special-purpose and thematic maps.

A map has been prepared that provides an example of cartographic stylistic neutrality. The public interest theme of wind energy, which is in line with the Sustainable Development Agenda's goal of ensuring access to affordable, reliable, sustainable and modern energy [34,35],

was chosen as an example illustrating cartographic stylistic neutrality. The territory mapped is Lithuania.

The wind energy map shows wind energy plants and wind farms, power lines and electrical substations, the road network, hydrographic objects, protected areas, forests, and built-up areas.

The following primary data and information sources were used:

- Spatial data for wind energy plants, which can be downloaded from a standard map under an Open Database License from the OpenStreetMap website supported by the OpenStreetMap Foundation [36];
- Static map of the wind farms in Lithuania available for download from the Lithuanian Wind Power Association website [37];
- Spatial data of 110,330,400 kV power lines and electrical substations available from the GDR50LT—Georeference Spatial Data Set for the Territory of the Republic of Lithuania at the scale of 1:50,000, managed by the National Land Service under the Ministry of Environment of the Republic of Lithuania [38], available for download from the Lithuanian Spatial Information Portal website;
- Spatial data of the road network, hydrographic objects, protected areas, forests and built-up areas from the ERM_250LT—Georeference Spatial Data Set of the Territory of the Republic of Lithuania at scale 1:250,000, according to the requirements of the international project EuroRegionalMap and managed by the National Land Service under the Ministry of Environment of the Republic of Lithuania [39], available for download from the Lithuanian Spatial Information Portal website;
- Spatial data of the state border and boundaries of the administrative units—EBM_100LT Georeference Spatial Data Set of the Territory of the Republic of Lithuania at scale 1:100,000, according to the requirements of the international project EuroBoundaryMap and managed by the National Land Service under the Ministry of Environment of the Republic of Lithuania [40], available for download from the Lithuanian Spatial Information Portal website;
- Spatial data of the geographical names from the state's Cadastre of the Georeference database of the Republic of Lithuania, managed by the Ministry of Environment of the Republic of Lithuania [41] and available for download from the Lithuanian Spatial Information Portal website.

The map was produced using the free, open-source desktop geographic information systems (GIS) software QGIS Desktop (Version 3.34.6), which is a project of the Open Source Geospatial Foundation [42] and can be downloaded from the QGIS software website.

3. Results

3.1. Analysis of Existing Map Styles in Terms of Stylistic Neutrality

Stylistic analysis and evaluation of maps from the perspective of cartographic stylistic neutrality is performed visually according to the developed methodology. During the stylistic analysis of existing maps, efforts are made to identify the map with the lowest stylistic expression as the map closest to stylistic neutrality.

To obtain quantitative information about the style of the existing maps, the stylistic features are given certain values: the expression of the first member of the pair is given a point of "0" and the expression of the second member is given a point of "1". An intermediate value, where the balance of both members of the pair is observed or there is a characteristic intermediate expression between the first and second members of the pair, is evaluated at 0.5 points. There are eight pairs of stylistic features in total. Since 20 existing map style examples from each field of society's activity are evaluated, the minimum possible number of points is 0 and the maximum is 20 expression points for the

evaluation of each stylistic pair. After summing the values of all pairs of stylistic features, the total maximum possible stylistic assessment of cartographic production from every field of society's activity is 8 × 20 = 160 expression points. The following results of the stylistic analysis of cartographic language functioning in the fields of social activity are obtained (Figure 2):

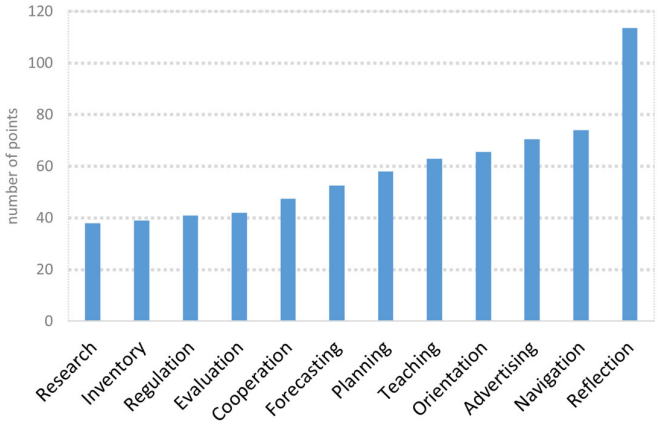

Figure 2. Stylistic expression of cartographic language (in points) in the fields of social activity.

In Figure 2, the horizontal axis lists the 12 areas of social activity, and the vertical axis shows the stylistic feature evaluation values (in points), obtained by summing the style evaluation values of all 20 maps in each area of activity. The areas of activity in the diagram are sorted in ascending order by the number of stylistic evaluation points collected. As can be seen, the maps have different values for the stylistic scores.

The lowest number of stylistic expression points is characteristic of research and inventory map styles used in science and administration (38 and 39 points, respectively). Cartographic production, as a result of reflection, is characterised by the greatest stylistic expression (114 points). The style associated with research, teaching, planning, evaluation and forecasting is academic, conforms to a formal register, characterised by impersonal communication, abstract and conceptual speaking, concise presentation of information, schematisation of the situation, generalisation of the outline of objects. However, the arguments presented aim for impact and the contrasts aim for liveliness. The cartographic style of recording facts and inventorying objects is characterised by the accurate representation of the location of objects, the detailed presentation of information and the creation of a sensory image of the objects, but the means of effective and suggestive speech are not applied on the map.

According to the sum of stylistic expression points, the stylistics of cartographic works in several areas of activity acquires similar meanings, for example, in the case of the assessment and the cooperation activities. The differences become apparent when looking at the stylistic analysis results on a radar-type chart. The cartographic production style for inventorying activities is distinguished by a unique combination of stylistic features and proportions, associated with the expression of logic, in order to demonstrate the external similarity of the depicted objects with geographical features. Here, the effect of cartographic language is created by means of logical argumentation in the cartographic image. The objects presented for essential information are marked with universal abstract signs, which acquire concreteness after being associated with a certain meaning. The stylistics of cartographic works relating to instructions (regulation, orientation and navigation) is expressive and suggestive, as is the stylistics of cooperative works, which is expressive and figurative. The stylistics of advertising and reflexive works is similar in their scale of expression, persuasive and effective appeal to the map user, and highlighting of visual

aesthetics. The grouping of social activity fields according to the stylistic similarity of cartographic production is presented in Figure 3:

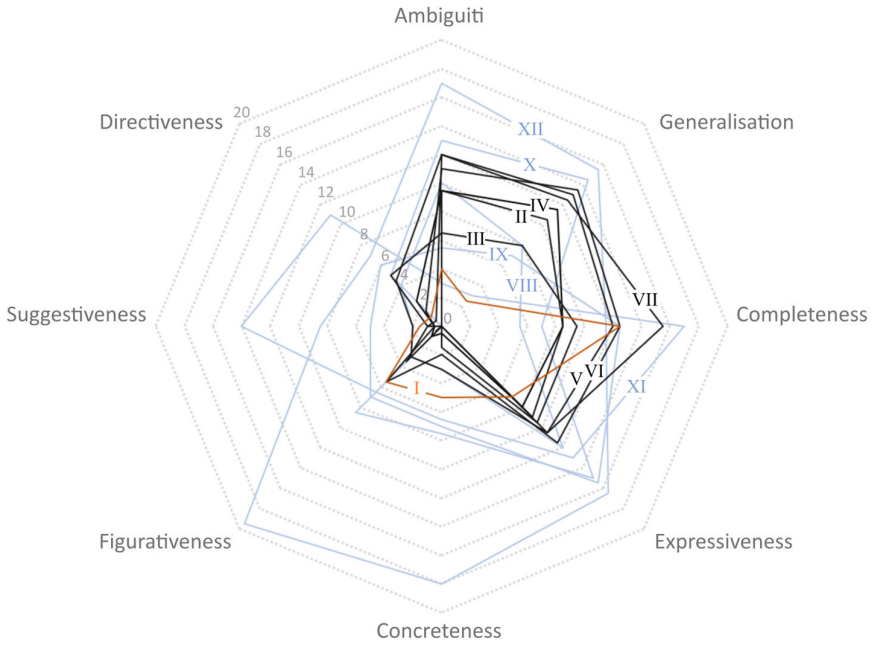

Figure 3. Social activity fields according to stylistic similarity of cartographic production: I—inventory; II—research; III—regulation; IV—assessment; V—forecasting; VI—planning; VII—teaching; VIII—cooperation; IX—orientation; X—advertising; XI—navigation; XII—reflection.

In Figure 3, the axis of the diagram shows the stylistic expression evaluation points obtained by deriving the average of the stylistic feature evaluation points in each activity area. In the diagram, the stylistics of cartographic production for research and inventory activities is closest to stylistic neutrality, as the values of stylistic features reflecting objectivity (clarity, accuracy and conciseness) and stylistic features reflecting value judgement, impact, suggestiveness and expression are the lowest.

Judging from both Figures 2 and 3, the stylistics of cartographic production for research and inventory activities is closest to stylistic neutrality.

Furthermore, the diagram in Figure 3 shows that clarity is characteristic of cartographic production from all fields of activity, although its size and weight compared to other stylistic features are not the same. In the examples of map styles under consideration, the same stylistic feature—"clarity"—is expressed by different means in different fields of activity. For example, in cartographic production for research activities, clarity is developed by presenting in detail the technical characteristics of the depicted geographical features. In the stylistics of cartographic production for reflective activity, clarity is achieved by expressing an idea, albeit in a few sketchy strokes, but with such firmness and conviction or such an unexpected visual metaphor that someone's personal idea becomes a common idea. The problem being examined on the map becomes clear from detailed arguments and development of the situation, using the stylistics of cartographic production for research activities. The idea can be clearly understood without much persuasion, using the stylistics of the cartographic production for reflective activity. Clarity is achieved by naming and marking facts on the map, using the stylistics of cartographic inventory activities.

The low number of stylistic expression points, the combination of stylistic features and proportions provide an opportunity to judge the representational function performed by cartographic language in the cartographic production for inventory activities, the intention of the map maker—signification. In research activities, the primary function of cartographic

language is informational, the additional function is directive, and the intention of the map maker is signification and clarification. In the activities of regulation, orientation and navigation, the main function of cartographic language is informational; additional functions are expressive, appellate and directive, and the intention of the map maker is clarification and emphasis. A descriptive function can be observed in the stylistics of some cartographic production for cooperation activity, where facts are collected on a map over a period of time without a clear goal or monitoring, in order to identify trends and cases. In advertising and reflection activities, the main function of cartographic language is aesthetic, the additional function is directive, and the intention of the map maker is emphasis. In the same field of activity, cartographic language can also be characterised by different language functions, depending on the group of users for whom the map is intended (Figure 4):

Figure 4. Comparison of the functions of cartographic language in the stylistics of cartographic production for regulatory activities (**left**—[43], **right**—[44]).

In Figure 4, both of the maps are evacuation plans. The map on the left represents facts without reference to actions; the function of cartographic language is representational; the map on the right not only shows and structures facts, clearly presenting them, but also indicates actions, directions and routes from the territory. The main function of cartographic language is informative, and an additional one is directive.

Examples of cartographic production styles for inventory and research activities are provided (Figure 5):

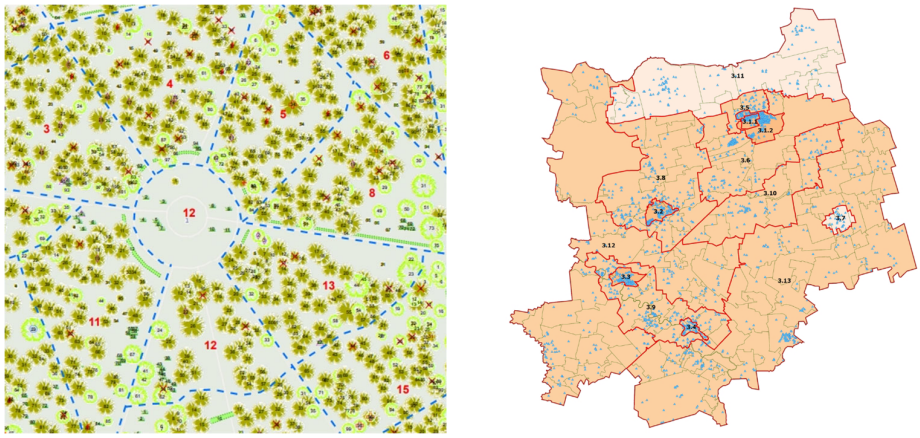

Figure 5. Comparison of stylistic examples of cartographic production for inventory and research activities (**left**—[45]; **right**—[46]).

In the example of cartographic production style for inventory activity in Figure 5 on the left information on the inventory of trees in the blocks is provided and the predominant stylistic features are clarity, accuracy and completeness. In Figure 5 on the right the

land transaction information in the district is provided and the predominant stylistic features are clarity, the balance between accuracy and generalisation, and the balance between conciseness and completeness. In this example the accuracy and completeness are achieved due to the detailed and abundant presentation of plots in the background, and generalisation and conciseness due to the presentation of summarised plot assessment information and boundaries in the foreground.

Information about the objects depicted on the map is obtained in a variety of ways, ranging from empiricism and rationality to intuitiveness and authority. Territorial planning maps demonstrate planned objects together with the actual topographic objects, while the utility network map provides information about underground areas that are not accessible visually and by instrumental measurements. An image that is inaccessible to vision and instruments becomes visible on maps with the accuracy that the cartographic method of recording position, time, and state of affair ensures (Figure 6):

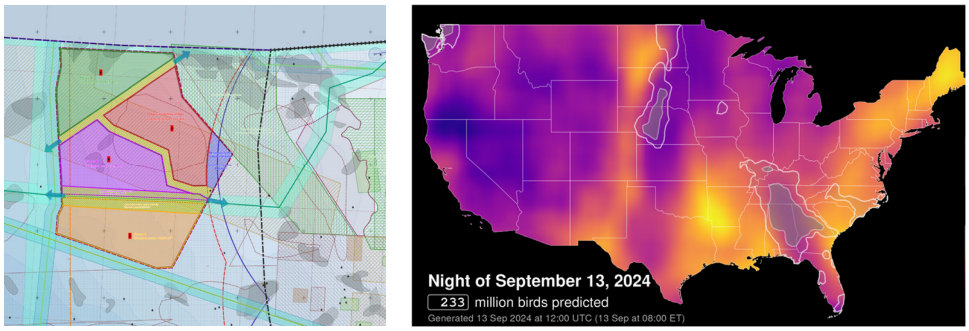

Figure 6. Comparison of stylistic examples of cartographic production for planning and forecasting activities (**left**—[47]; **right**—[48]).

In Figure 6, the map fragment on the left depicts the planned areas at sea, which are not visible in the area, and the map on the right shows the spread and boundaries of the predicted phenomenon in the area under consideration. The main function of cartographic language in the example of the cartographic production style for planning activities shown on the left is informational; the additional function is representational. On the right, in the example of the cartographic production style for forecasting activities, the main function is informational and the additional function is expressive.

In the case of cartographic stylistic neutrality, which is closest to the stylistics of cartographic production for inventory and research activities, cartographic language performs a representational function determined by the map maker's intention of signification. Intentionality is phenomenological in nature [49]. According to M. Merleau-Ponty [49], "every scientific determination is abstract, signitive, and dependent, just like geography with regard to the landscape where we first learned what a forest, a meadow, or a river is".

Therefore, in forming an example of cartographic stylistic neutrality, it combines a theoretical scientific approach and a phenomenological perception of reality. This indicates that the source of the concreteness of cartographic stylistic expression is the stylistics of cartographic production for reflective activity.

3.2. Preparation of an Example of Cartographic Stylistic Neutrality

Once the concept of cartographic stylistic neutrality has been defined and the maps of social activities that are closest in expression to stylistic neutrality have been identified, it is possible to create and demonstrate a neutral stylistic map in practice. An example of a cartographic stylistic neutrality map is given in Figure 7:

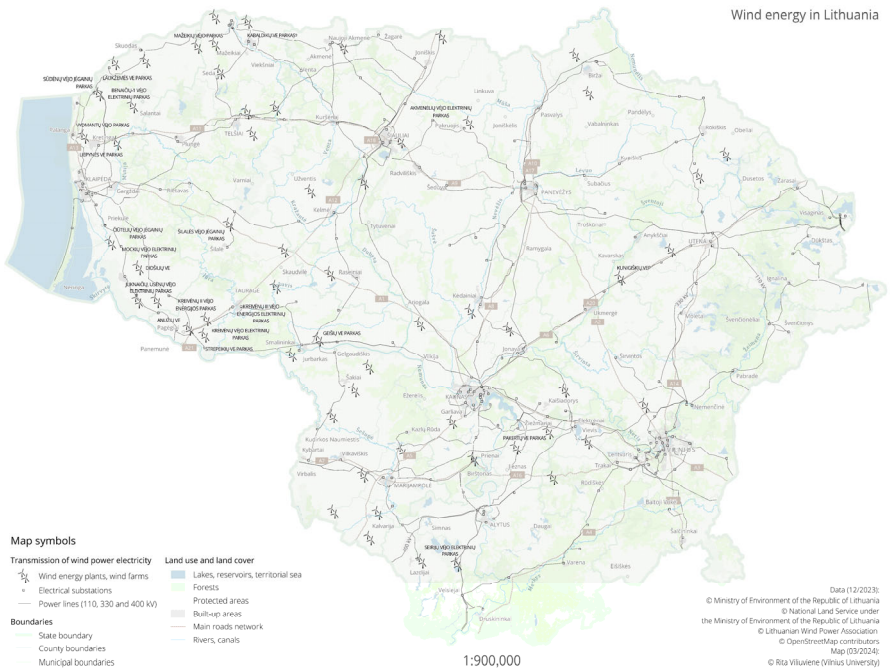

Figure 7. "Wind energy in Lithuania" 1:900,000 scale map to illustrate cartographic stylistic neutrality.

An enlarged fragment of the map "Wind energy in Lithuania" is shown in Figure 8:

Figure 8. Enlarged fragment of the "Wind energy in Lithuania" 1:900,000 scale map.

In Figure 8 the fragment of the map "Wind energy in Lithuania" shows the Pakertai wind farm in the Kaisiadorys District Municipality in Lithuania; the names of inhabited places are in the local Lithuanian language.

In a stylistically neutral cartographic image, the marking of geographical objects on the basis of current geographical knowledge determines the representational function of the cartographic language. This image is the basis and incentive to reflect on pure reality, to emphasise it independently, without being guided by the judgement and assessment offered by others, and the opportunity to provide objective information about objective reality. Geographical objects are represented on a map through their physical features, their spatial distribution and their interrelationships with other geographical objects. Objects are marked with scalable symbols using elementary graphics and notation. They are coloured in pastel colours typical of the region's landscape, making it possible to distinguish one group of objects from another, convey characteristics and form the foreground and background. Naming objects helps to navigate a situation and recognise objects and places. In a cartographic image, some amount of expression is noticeable because the objects are depicted as a single composition.

In a neutral style map, attention should be focused the point-like objects on the map and the expression used to represent them. Maps used in research use abstract geometric symbols to represent point-like objects. In a neutral style cartographic representation, the information is represented using a symbol similar to a geographic object, as is common in inventory maps. Thus, a cartographic image of stylistic neutrality is an intermediate option between research and inventory style maps. Elements of concreteness in the map, like concrete examples in abstract speech, help to maintain a connection with the depicted reality and remain in a neutral relationship with the environment. In this way, cartographic stylistic neutrality is linked to the stylistics of cartographic production for reflective activity.

The stylistic analysis and evaluation of the created cartographic example of stylistic neutrality is as follows: an intermediate value of clarity and ambiguity (0.5 points), accuracy (0 points), an intermediate value of conciseness and completeness (0.5 points), calmness (0 points), an intermediate value of abstractness and concreteness (0.5 points), temperance (0 points), neutrality (0 points), and moderateness (0 points). The stylistic evaluation point value of the cartographic example of stylistic neutrality is 1.5 points.

The cartographic stylistic neutrality of the map "Wind energy in Lithuania" (1:900,000) is characterised by an intermediate value of clarity and ambiguity due to the maintenance of equality and uniformity, when no object in the depicted landscape is highlighted, it is viewed in a panorama.

There is an intermediate value of conciseness and completeness due to the disclosure of complex elements in the wind energy network but only in the most general terms, mentioning the more important elements in this category.

There is an intermediate value of abstractness and concreteness due to the colours characteristic of the landscape and the establishment of the silhouette of wind turbines in the landscape next to the conventional marking.

The map accurately conveys information, indicating the location and boundaries of objects, and detailed contours. The scene is characterised by subtlety, no judgement is made, there is no action and plot, there are no references or elaborate figures of cartographic language, and there is no attempt to attract users. The image and the scene are therefore neutral and objective, while the surrounding environment is calm, restrained, uninvolving and unaffected.

Since facts are marked on a map of cartographic stylistic neutrality without judgement, there is no narrative element in the map; therefore, cartographic language performs a representational function in it. The map maker's intention is signification on theoretical grounds without practical interest. The scope of the example of cartographic stylistic neutrality is not defined, since in such a map, which presents only objective facts and no evaluation, from the user's perspective it becomes unclear what was intended to be said. Such a map does not convey ideas or highlight problems. On the other hand, it provides the user a unique opportunity to ask questions, make their own assessment, see the alternatives and choose between them.

In terms of the expression of stylistic features (total sum of expression points, combination and proportions of individual stylistic features), the cartographic stylistic neutrality is between the stylistics of the inventory and the stylistics of the cartographic output of the research activity (Figure 9):

In Figure 9, the cartographic stylistic neutrality is characterised by less expression than the style of the inventory and research cartographic production. The stylistic expression boundaries of the cartographic production for reflective activity are the widest in the diagram. The axis of the diagram indicates the value (in points) of the generalised evaluation of each stylistic feature on the map. The value was obtained by deriving the overall average from the analysed map styles according to different areas of activity: inventory, research,

reflection. The cartographic stylistic neutrality curve in the diagram is drawn based on evaluated map style examples from the field of inventory and research activities. The examples whose stylistic expression was rated as 1.5 or less points were chosen (the value must not exceed the stylistic expression points of the prepared cartographic stylistic neutrality example, i.e., it must be equal 1.5 or less points). Sixteen such examples were selected (along with a prepared example of stylistic neutrality). The stylistic expression evaluation points of these maps were summed and averaged. The generalised values of the expression of stylistic features in points were calculated on a cartographic stylistic neutrality map.

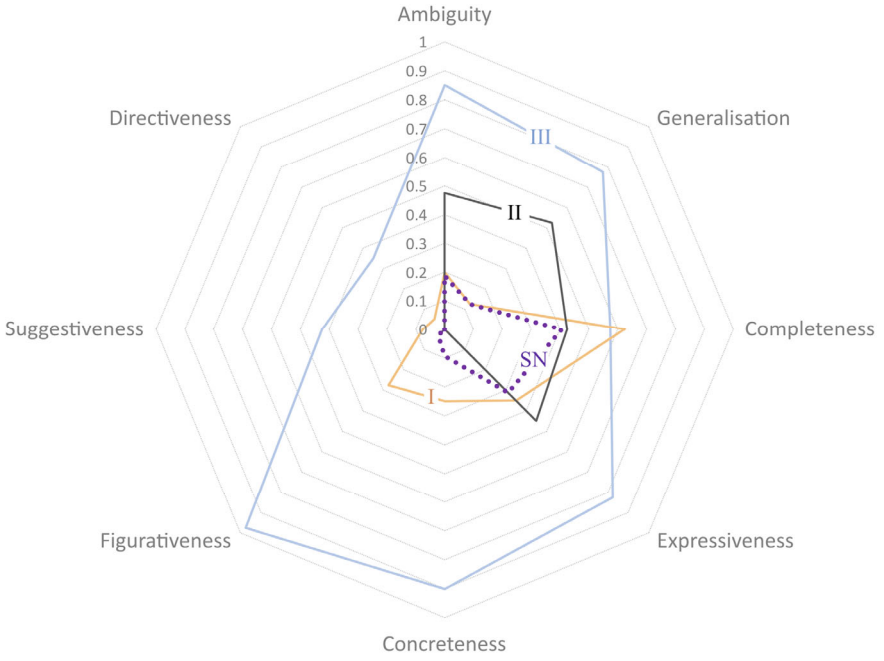

Figure 9. Cartographic stylistic neutrality in relation to the stylistics of the lowest and the highest expression of cartographic production: SN—Stylistic neutrality; I—field of activity—inventory; II—field of activity—research; III—field of activity—reflection.

Figure 10 shows several examples that were selected for cartographic stylistic neutrality calculations:

While the expression of the geographical objects would be stylistically neutral, when the elements are brought together to form a stylistically coherent image, the overall composition becomes more expressive, thus allowing for the creation of meaning, the beginning of a story and the expression of a complete thought. For this reason, it is considered that the expression of the style of a neutral stylistic map, calculated in points, cannot be equal to "0" points. This can also be seen in Figure 9.

Stylistic neutrality is a reference base and is used to form other derived cartographic styles, which can then be compared on a relative basis with each other. The versatility of stylistic neutrality makes it important in the process of stylistic analysis, comparison and evaluation. If the initial image of the map maker or the map user is a kind of aspiration or an idea of what the map should look like, and an image that is being approached, then the neutral style image in this case is an image from which expressive means are being used to achieve the aspiration. Stylistic neutrality is a constant and a common denominator, and derived styles are variables in the style classification.

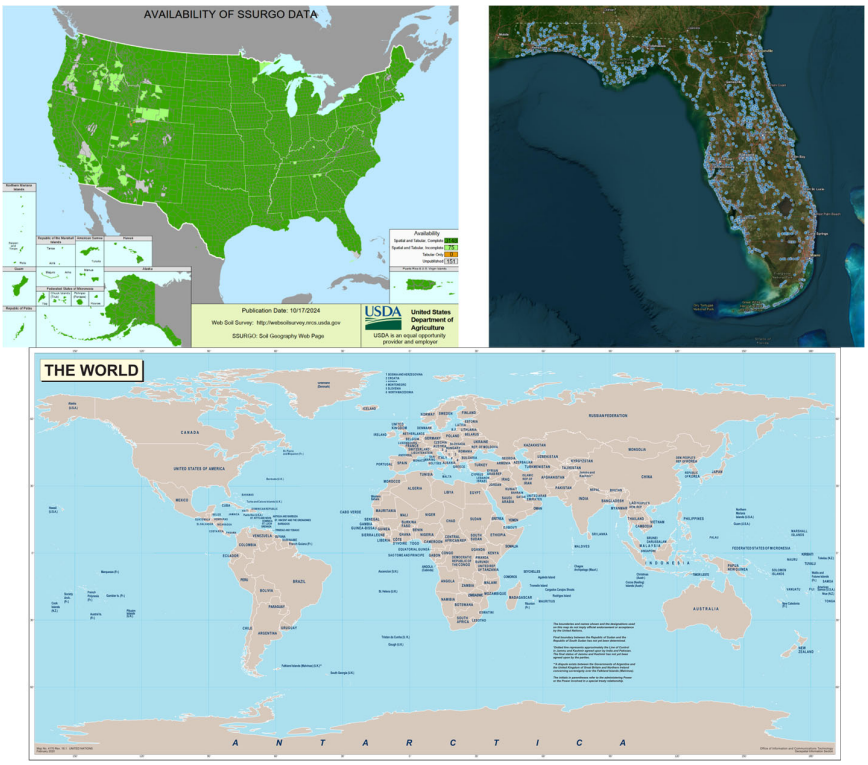

Figure 10. Map style examples that were selected for cartographic stylistic neutrality calculations (**top left**—[50]; **top right**—[51]; **bottom**—[52]).

4. Discussion

The map developed, as an example of a neutral register, is not fixed and is not finite in terms of time, expression and quality of communication. The cartographic representation could be improved by gaining valuable insights from a user survey, by introducing more neutral style details, etc.

The cartographic style neutrality example among other objects shows point-like objects. The example shown depicts operating wind power plants, so an asymmetrical symbol is used to represent wind power plants and wind farms (Figure 7). Research shows that the use of asymmetrical signs is not neutral and has an impact on users [53]. When refining the image of cartographic stylistic neutrality, it is also necessary to take into account the division of objects into categories and hierarchical structures, as this is the creation of opposites. Classification of objects is evaluative, has an impact and therefore increases expression. In further exploring the specifics of cartographic language functioning, it is appropriate to consider cartographic stylistic neutrality for the possibility of its standardisation. The international geographic information standard "Portrayal" [54] and the Open Geospatial Consortium standard "Symbology Encoding" [55] provide the ability to specify the result, i.e., set of map symbols. The most suitable map sign is usually determined by iteration through approximation. However, when creating a map, priority should be given to the overall image of the desired result, rather than a single cartographic symbol. The desired result is achieved by detailing the overall picture. Following the schemes helps with this. More abstract than the general map functions in the "Symbology Encoding" standard could be adherence to functional style schemes. Cartographic functional style describes the functioning of cartographic language, defined through the functions of cartographic language and the fields of use of cartographic language. Typical combinations of language functions and fields of use are equivalent to schemes, where the degree of expressiveness of the derived style is assessed taking into account cartographic stylistic neutrality.

5. Conclusions

Cartographic stylistic neutrality as an equivalent to objectivity in maps is investigated in relation to the function performed by the cartographic language and the field of use of the cartographic language.

By conducting a stylistic analysis of existing maps, the map with the least stylistic expression as the one closest to stylistic neutrality was identified. The lowest number of stylistic expression points is characteristic of research and inventory map styles used in science and administration (38 and 39 points, respectively). Cartographic production, as a result of reflection, is characterised by the greatest stylistic expression (114 points).

Stylistic neutrality is characterised by cartographic language qualities: clarity, accuracy, conciseness, calmness, abstractness, temperance, neutrality, moderateness. Cartographic language, characterised by these stylistic features, performs a representative function and is the result of the signification of geographical objects on a map.

Since the cartographic example of stylistic neutrality that has been created implies the presentation of objective facts without judgement, expression, impact or influence, it is the user's immersion in the map that will determine how the communication process will proceed and how the information will be transformed into map knowledge. The cartographic stylistic neutrality provides the user a unique opportunity to create their own assessment, see the alternatives and choose between them.

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References

1. Harley, J.B. Deconstructing the map. *Cartographica* **2011**, *26*, 1–20. [CrossRef]
2. Kent, A. Topographic maps: Methodological approaches for analyzing cartographic style. *J. Map Geogr. Libr.* **2009**, *5*, 131–156. [CrossRef]
3. Viliuviene, R.; Bevainis, L. Evaluation of cartographic functional styles for wind energy mapping. *Adv. Geod. Geoinf.* **2025**, 74. [CrossRef]
4. Kang, Y.; Gao, S.; Roth, R. Artificial intelligence studies in cartography: A review and synthesis of methods, applications, and ethics. *Cartogr. Geogr. Inf. Sci.* **2024**, *51*, 599–630. [CrossRef]
5. Christophe, S.; Mermet, S.; Laurent, M.; Touya, G. Neural map style transfer exploration with GANs. *Int. J. Cartogr.* **2022**, *8*, 18–36. [CrossRef]
6. Beconyte, G. Cartographic styles: Criteria and parameters. In Proceedings of the 25th International Cartographic Conference, Paris, France, 3–5 July 2011.
7. Christophe, S. Cartographic Styles between traditional and original (towards a cartographic style model). In Proceedings of the AutoCarto 2012, Columbus, OH, USA, 16–18 September 2012.
8. Field, K. *Cartography*; Esri Press: Redlands, CA, USA, 2018.
9. Schlichtmann, H. Visualization in thematic cartography: Towards a framework. In Cartography and Cartosemiotics. *Sel. Probl. Theor. Cartogr.* **2002**, 49–61.
10. Prestby, T.J. Trust in maps: What we know and what we need to know. *Cartogr. Geogr. Inf. Sci.* **2023**, *52*, 1–18. [CrossRef]
11. Robinson, A.; Demšar, U.; Moore, A.; Buckley, A.; Jiang, B.; Field, K.; Kraak, M.J.; Camboim, S.; Sluter, C. Geospatial big data and cartography: Research challenges and opportunities for making maps that matter. *Int. J. Cartogr.* **2017**, *3* (Suppl. S1), 32–60. [CrossRef]

12. Duzer, C. Some methods for indicating cartographic uncertainty, fifteenth through eighteenth centuries. *J. Hist. Knowl.* **2024**, *5*, 31–55. [CrossRef]
13. MacEachren, A.; Robinson, A.; Hopper, S.; Gardner, S.; Murray, R.; Gahegan, M.; Hetzler, E. Visualizing geospatial information uncertainty: What we know and what we need to know. *Cartogr. Geogr. Inf. Sci.* **2005**, *32*, 139–160. [CrossRef]
14. Dumbliauskienė, M. *Kartografinės Komunikacijos Pagrindai [Fundamentals of Cartographic Communication]*; Vilniaus Universiteto Leidykla: Vilnius, Lithuania, 2002.
15. Pravda, J. Language aspect of map representation. In Proceedings of the 18th International Cartographic Conference, Stockholm, Sweden, 23–27 June 1997.
16. Pravda, J. The stylistic aspect of maps. *Geogr. Časopis* **1990**, *42*, 233–250.
17. Župerka, K. *Stilistika [Stylistics] (3-Ioji Laida)*; Šiaulių Universiteto Leidykla: Siauliai, Lithuania, 2014.
18. Ramonienė, M.; Brazauskienė, J.; Burneikaitė, N.; Daugmaudytė, J.; Kontutytė, E.; Pribušauskaitė, J. *Lingvodidaktikos Terminų Žodynas [Glossary of Linguodidactic Terms]*; Vilniaus Universiteto Leidykla: Vilnius, Lithuania, 2012.
19. Yule, G. *The Study of Language*, 7th ed.; Cambridge University Press: Cambridge, UK, 2020.
20. Parent, X.; van der Torre, L. *Handbook of Deontic Logic and Normative Systems*; College Publications: England, UK, 2013.
21. Chabaniuk, V.; Dyshlyk, O. Crosscutting cartographies: Language paradigm in past, now, and in future. *Kartogr. Listy* **2024**, *32*, 3–21.
22. Kent, A.J.; Vujakovic, P. Stylistic diversity in European State 1:50 000 topographic maps. *Cartogr. J.* **2009**, *46*, 179–213. [CrossRef]
23. Song, Z.; Roth, R.E.; Houtman, L.; Prestby, T.; Iverson, A.; Gao, S. Visual storytelling with maps: An empirical study on story map themes and narrative elements, visual storytelling genres and tropes, and individual audience differences. *Cartogr. Perspect.* **2022**, 10–44. [CrossRef]
24. Ott, D. Generative Grammar. In *Reference Module in Social Sciences*; Elsevier: Oxford, UK, 2024. [CrossRef]
25. Gartner, G. Seeing the "perfect world" through Heinrich Berann's Panorama Map of the Alps. *Int. J. Cartogr.* **2021**, *7*, 240–244. [CrossRef]
26. Mitxelena-Hoyos, O.; Amaro-Mellado, J.L. Impact of cartographic and labeling standards on the dissemination of toponymy: Particularities of bilingual regions. A case study: Euskadi, Spain. *Cartogr. Geogr. Inf. Sci.* **2025**, 1–22. [CrossRef]
27. Polous, N. Smart Cartography: Representing complex geographical reality of 21st century. *Int. J. Cartogr.* **2023**, *9*, 619–637. [CrossRef]
28. Hirose, I.; Olson, J. *The Oxford Handbook of Value Theory*; Oxford University Press: Oxford, UK, 2015. [CrossRef]
29. Newen, A.; von Savigny, E. *Įvadas į Analitinę Filosofiją [Introduction to Analytic Philosophy]*; Baltos lankos: Vilnius, Lithuania, 1999.
30. Hye, P. *Script Effects as the Hidden Drive of the Mind, Cognition, and Culture*; Springer Nature: Berlin/Heidelberg, Germany, 2020. [CrossRef]
31. *ISO 19157*; Geographic Information—Data Quality. International Organization for Standardization: Geneva, Switzerland, 2023.
32. Kent, A. Cartographic Style and the Aesthetic Fix. *Cartogr. J.* **2017**, *54*, 1–4. [CrossRef]
33. Ng-Chan, T.; Lally, N.; Hayashi, S. Art and cartography: Views from somewhere. *Int. J. Cartogr.* **2024**, *10*, 139–143. [CrossRef]
34. Kent, A.J.; Vujakovic, P.; Eades, G.; Davis, M. Putting the UN SDGs on the map: The role of cartography in sustainability education. *Cartogr. J.* **2020**, *57*, 93–96. [CrossRef]
35. Kraak, M.J.; Roth, R.; Ricker, B.; Kagawa, A.; Sourd, G. *Mapping for a Sustainable World*; The United Nations: New York, NY, USA, 2020.
36. OpenStreetMap Foundation. OpenStreetMap Data. 2023. Available online: https://www.openstreetmap.org (accessed on 13 December 2023).
37. Lithuanian Wind Power Association Map. 2017. Available online: https://lvea.lt/wp-content/uploads/2017/04/LVEA-map-4.1.pdf (accessed on 10 December 2023).
38. National Land Service under the Ministry of Environment of the Republic of Lithuania. GDR50LT—Georeference Spatial Data Set for the Territory of the Republic of Lithuania at the Scale of 1:50,000. 2023. Available online: https://www.geoportal.lt/geoportal/en/web/en/national-land-service_download (accessed on 13 December 2023).
39. National Land Service under the Ministry of Environment of the Republic of Lithuania. ERM_250LT—Georeference Spatial Data Set of the Territory of the Republic of Lithuania at Scale 1:250,000 According to the Requirements of the International Project EuroRegionalMap. 2023. Available online: https://www.geoportal.lt/geoportal/en/web/en/national-land-service_download (accessed on 13 December 2023).
40. National Land Service under the Ministry of Environment of the Republic of Lithuania. EBM_100LT—Georeference Spatial Data Set of the Territory of the Republic of Lithuania at Scale 1:100,000 According to the Requirements of the International Project EuroBoundaryMap. 2023. Available online: https://www.geoportal.lt/geoportal/en/web/en/national-land-service_download (accessed on 13 December 2023).
41. Ministry of Environment of the Republic of Lithuania. GRPK—Spatial Data Set of (Geo) Reference Base Cadastre (Static). 2023. Available online: https://www.geoportal.lt/geoportal/en/web/en/search#queryText=grpk (accessed on 10 December 2023).

42. Open Source Geospatial Foundation. *QGIS Desktop*; Version 3.34.6; Open Source Geospatial Foundation: Beaverton, OR, USA, 2023. Available online: https://qgis.org/download/ (accessed on 1 December 2023).
43. Akmene District Municipality. Akmene District Evacuation Plan. Available online: https://gis.akmene.lt/portal/apps/webappviewer/index.html?id=c962446534c1490e9550d6b5f224d28b (accessed on 12 February 2025).
44. Chapman University. Tsunami evacuation plan. In *Cognitive Evaluation of Method for Providing Evacuation Information and Instruction*; Chapman University: Orange, CA, USA, 2012.
45. Alytus District Municipality. Alytus City Park [Map]. 2022. Available online: https://alytus.lt/lt/gyventojams/zeldynu-inventorizacijos-duomenys (accessed on 13 December 2024).
46. State Enterprise "Centre of Registers". Land Plot Transactions Map 2019-01-01-2023-08-01. In Maps of Land Value Zones of the Akmene District Municipality Territory and a Mass Land Valuation Report; Mazeikiai, Lithuania. 2023. Available online: https://e-seimas.lrs.lt/rs/lasupplement/TAD/64b5f740a0d111ee8172b53a675305ab/19b58190a83611ee8172b53a675305ab/ (accessed on 15 June 2025).
47. Ministry of Energy of the Republic of Lithuania. Renewable Energy Development Zone in the Baltic Sea. 2021. Available online: https://offshorewind.lt/lt/teritorijos-planavimas/ (accessed on 3 November 2024).
48. Van Doren, B.M.; Horton, K.G. BirdCast, Migration Forecast Map. 2024. Available online: https://birdcast.info/migration-tools/migration-forecast-maps/ (accessed on 10 December 2024).
49. Merleau-Ponty, M. *Phenomenology of Perception*; Routledge: New York, NY, USA, 2013.
50. United States Department of Agriculture. Soil Data Availability Map. 2021. Available online: https://websoilsurvey.nrcs.usda.gov/DataAvailability/SoilDataAvailabilityMap.pdf (accessed on 15 June 2025).
51. Florida Fish and Wildlife Conservation Commission. FWC Florida Boat Ramp Inventory. 2009. Available online: https://geodata.myfwc.com/datasets/myfwc::fwc-florida-boat-ramp-inventory (accessed on 1 November 2024).
52. Klettner, S. Affective Communication of Map Symbols: A Semantic Differential Analysis. *ISPRS Int. J. Geo-Inf.* **2020**, *9*, 289. [CrossRef]
53. *ISO 19117*; Geographic Information—Portrayal. International Organization for Standardization: Geneva, Switzerland, 2012.
54. Open Geospatial Consortium Inc. *Symbology Encoding Implementation Specification*; Version 1. 2006.1.0.; Open Geospatial Consortium Inc.: Arlington, VA, USA, 2006.
55. United Nations Map of the World. 2020. Available online: https://en.m.wikipedia.org/wiki/File:Official_United_Nations_World_Map_-_20_February_2020.svg (accessed on 25 November 2024).