

ISTRIA AS A SITE AND AS A SUBJECT MATTER IN THE PRODUCTION AND ORGANIZATION OF REGIONAL KNOWLEDGE: BIBLIOMETRIC AND SOCIOLOGICAL ANALYSIS

Marjan HOČEVAR

University of Ljubljana, Faculty of Social Sciences, Kardeljeva ploščad 5, 1000 Ljubljana, Slovenia
e-mail: marjan.hocevar@fdv.uni-lj.si

Sanja BOJANIĆ

University of Rijeka, Academy of Applied Arts, Center for Advanced Studies of Southeastern Europe, Slavka Krautzeka 83, 51000 Rijeka, Croatia
e-mail: sanja.bojanic@uniri.hr

Tomaž BARTOL

University of Ljubljana, Biotechnical Faculty, Jamnikarjeva 101, 1000 Ljubljana, Slovenia
e-mail: tomaz.bartol@bf.uni-lj.si

ABSTRACT

This study maps, visualizes, evaluates and interprets scientific papers in journals dealing with the site (place) and subject-matter of Istria. The approach is interdisciplinary. The data were taken from the Web of Science (WoS) citation database, processed with the VOSviewer program, and analytically evaluated. The occurrence and distribution of terms in titles and abstracts of articles clustered in characteristic groups of related studies are assumed as topics and agendas. Granulation of clusters reveals differences in research approaches across and within disciplines. Within the natural sciences, distinctive bio- and geological clusters emerge. Social sciences and humanities permeate each other in a single cluster, with marked terminological heterogeneity. The main conclusion is that Istria's epistemic contexts and methodological approaches manifest themselves on four contextual levels: 1. Istria as a site is one of many topics in a wider context within the natural sciences; 2. here can also be the subject of single narrow and specific topics; 3. nation-specific (state-) can be found in various disciplines; 4. the social sciences and humanities are associated with diverse multicultural, cross-border related topics. The analysis of the organization and production of knowledge suggests that the multifaceted and elusive regional character of scientific endeavors co-shapes Istria's evolving specific supranational sociocultural identity.

Keywords: region Istria, knowledge organization, regional knowledge, science mapping, bibliometrics, epistemic cultures

L'ISTRIA COME SITO E COME SOGGETTO NELLA PRODUZIONE E ORGANIZZAZIONE DEL SAPERE REGIONALE: ANALISI BIBLIOMETRICA E SOCIOLOGICA

SINTESI

Questo studio mappa, visualizza, valuta e interpreta articoli scientifici in giornali che trattano del sito (luogo) e del soggetto dell'Istria. L'approccio è interdisciplinare. I dati sono stati presi dal database Web of Science (WoS), elaborati con il programma VOSviewer e valutati analiticamente. La presenza e la distribuzione di termini nei titoli e nelle sintesi di articoli raggruppati in gruppi caratteristici di studi correlati sono assunti come soggetti e agenda. La granulazione dei cluster rivela differenze negli approcci di ricerca tra e all'interno delle discipline. All'interno delle scienze naturali emergono distinti cluster bio- e geologici. Scienze sociali e umanistiche si compenetrano in un unico cluster, con marcata eterogeneità terminologica. La conclusione principale è che i contesti epistemici e gli approcci metodologici dell'Istria si manifestano su quattro livelli contestuali: 1. l'Istria come sito è uno dei tanti argomenti in un contesto più ampio all'interno delle scienze naturali; 2. qui può anche essere oggetto di singole tematiche ristrette e specifiche; 3. la specificità della nazione (stato) può essere trovata in varie discipline; 4. le scienze sociali e umanistiche sono associate a diversi temi multiculturali e transfrontalieri. L'analisi dell'organizzazione e della produzione di conoscenza suggerisce che il carattere regionale sfaccettato ed elusivo degli sforzi scientifici co-forma l'identità socioculturale specifica sovranazionale dell'Istria in evoluzione.

Parole chiave: regione Istria, organizzazione della conoscenza, conoscenza regionale, mappatura della scienza, bibliometria, culture epistemiche

INTRODUCTION¹

How to approach the bibliometric (scientometric) review, assessment and interpretation of the published production of (scientific) knowledge on the subject matter of Istria and about the site/area of Istria? This is a narrower question within a broader dilemma about the situational (site-specific) nature of knowledge production, its reception and publication, and about “where knowledge happens”. Science, after all, is always tied to particular times and sites.

Any such attempt necessarily involves limitations, some sort of selectivity, and a standardized procedure for dealing with the diverse material or types of documents. Although limited in many ways, the assessment of periodicals as indexed in (international) databases is the most standardized indicator of scientific output. The limitations are several, for example, the coverage of only relatively recent knowledge production (twentieth century, and onwards) and the inevitable disciplinary incongruence (or even bias) when comparing the natural sciences² on the one hand, and social sciences and humanities on the other hand, particularly on the account of specific publishing practices in scientific disciplines³. Monographs cannot be retrieved and analyzed very systematically, for several reasons. Scopus and WoS contain monographs by only selected (international) publishers and are in this respect partial. The general epistemological observation that “the distance between disciplines can in some cases appear small, in terms of subject matter, but be large in terms of methodology or perspective” (McNeill, 1999, 315) is particularly relevant in the case of Istria. Namely, the validity of science mapping in order to evaluate research lies in large part in the databases’ representativeness of the scientific activity studied. Databases WoS and Scopus focus mostly on journals and much less on other means of scientific knowledge diffusion. Yet, communication practices in science differ and are reflected in the ‘epistemic cultures’ of research fields (Mongeon & Paul-Hus, 2016).

The purpose of this study is to map, visualize, evaluate and interpret scientific articles involving Istria in journals. To this effect, one could also consult the increasingly powerful Google Scholar and Google Books ‘search engines’. However, retrieval procedures in Google can specifically focus only on

document titles where it is not possible to disambiguate between the many publications that Google indexes. If one browses complete full-texts one is challenged by overwhelming tens of thousands of records where a search term can come about anywhere in a publication, also only in some very minor random contexts. Whereas, theoretically, it is possible to use Google Scholar for research evaluation, such an analysis would be extremely time-consuming requiring considerable manual intervention, even on a very small dataset of books (Mingers & Meyer, 2017).

These books on Istria are predominantly a subject of Croatian, Slovenian and Italian bibliographies, which are not analytically comparable with each other. One must here consult national bibliographic collections, which also catalog historical works of relevance, which is especially the case with the Italian library catalogs. Ranking of scholarly publishers of books would involve difficult procedures of a detailed matching, cleaning, and standardizing procedure for publisher names and titles, on top of that, an access to unique datasets would be required. The unclear selection criteria in databases can be particularly detrimental for the researchers with national or regional interests (Zuccala *et al.*, 2015). For example, some studies suggest that books from Central Europe are not recognized or are cited mostly by colleagues from their own countries. Despite the great importance of books in social sciences and humanities, bibliometric studies have shown that the share of cited authored and the edited books is nevertheless constantly declining (Jokić *et al.*, 2019).

As the assessment of books alone would require an expert knowledge of this subject, we resorted to a method of limiting our consideration only to scientific journals. Being aware of such limitations especially in the fields of the Social sciences and humanities, we have nevertheless detected a quite vigorous growth of articles in these fields in the more recent period. Thus, the method of science mapping (bibliometrics, scientometrics)⁴ and visualizations that we employ in this study can efficiently map only records in databases. To our knowledge, such or a similar study on the subject of specific supranational socio-cultural and spatial assemblages has not yet been conducted.

1 This study was conducted in the frame of research fellowship (May 15 – July 15, 2022) at the Center for Advanced Studies of Southeastern Europe, University of Rijeka, Rijeka, Croatia (Marjan Hočevar). It was partly supported by the Slovenian Research Agency (Grant P5-0181, Marjan Hočevar; Grant P4-0085, Tomaž Bartol).

2 By ‘natural sciences’, we refer to agriculture, biology, earth science, materials science, medicine, etc. The category of ‘social sciences and humanities’ includes arts (it can also be referred to as ‘arts and humanities’).

3 The still-vivid epistemological dilemmas about universality, objectivity, and rationality go beyond the purpose of this study (see e.g. Reed, 2010; Bojanić, 2017).

4 In the metrics of science there is no strict delineation between these concepts. Development of science can be mapped using different methods. We use the term bibliometrics which is the most established. Scientometrics and informetrics are also used.

The approach is interdisciplinary, linking science mapping and analytical sociological considerations (Gläser & Laudel, 2004; Sooryamoorthy, 2020). The purpose is to map, visualize, evaluate and interpret scientific articles. Our quantitative method employs a program (VOSviewer) which enables a more general overview of the circumstances of a site where elusive narratives on the subject matter of Istria have been shifting over time. This method allows some interpretive dimensions of 'big data analytics'.

For the sociological interpretation of clusters thus visualized, we used an analytical framework based on the theoretical *concept of epistemic cultures* in the production of scientific knowledge (Knorr Cetina, 1999; Knorr Cetina, 2007; Cohendet et al., 2014). Tentative reliance on this concept allows for a certain qualitative interpretation of cluster visualization, connection networks, terminological features, and other data. We start from the basic methodological premise of *the logic of knowledge organization and information retrieval* (Hjørland, 2013). We take into account affirmative epistemological arguments about site-specific organization, production and dissemination of knowledge. On a regional scale, culture has shaped scientific endeavor and, in turn, scientific practices have been instrumental in forming identities (Livingstone, 2010). In this case study, we presume that the authors, regardless of topic, research perspective, disciplinary and epistemological orientation, communicate the term *Istria* (noun) or *Istrian* (adjective) in the title and/or abstract. This is the common denominator in this study, which determines the relationships between (major) groups and subgroups of research agendas based on journal publication patterns and authors' terminological choice. The terms *Istria* and *Istrian* are heuristically considered as *research element* and all articles as *Istrian corpus*.

The structure of the article is as follows: in Chapter 2, we outline the background and motivation in tackling the combined bibliographic-sociological analysis of Istria. We start from the assumption that the elusive character of the Istrian entity produces specifics in the production of scientific knowledge that can be quantified and then interpreted. Whereas very numerous similar bibliometric analyses, which involve science mapping and big-data-related visualizations, address nation states, it is very difficult to find related studies which focus on particular regions/sites characterized by dual (or even threefold) supranational attributes which are characteristic of Istria. In Chapter 3, we explain the methodological design and research instrument (Data processing, and software VOSviewer) and highlight methodological limitations. In the fourth chapter, we visualize the extracted data and analytically evaluate the findings. In the concluding chapter, we summarize the basic

considerations regarding knowledge organization and information retrieval with regard to different epistemic cultures in support of further research in 'Istrian studies'.

BACKGROUND AND LITERATURE REVIEW: ISTRIA AS AN ELUSIVE SUBJECT MATTER AND ISTRIA AS A SITE

Istria has been, as many researchers point out, an elusive and fluid subject matter, concept, descriptor or entity in time and space (Peršolja, 2020; Frykman, 2003). Elusiveness is more or less characteristic of the entire disciplinary spectrum of natural sciences, social sciences and humanities in the treatment of socio-cultural or geo-physical artifacts, phenomena and processes in Istria (e.g. *Istrian region*, *Istrian peninsula*, *Istrian dialect*, *Istria basin*). However, this characteristic is more pronounced in qualitative, also non-positivist (critical) approaches to the treatment of Istria in social sciences, arts and humanities. In the context of epistemic characteristics of disciplines, it can be generally argued that natural sciences deal mostly with factual natural phenomena, which are located within the physical environment of Istria. Social sciences and humanities deal with the social and cultural phenomena and processes of Istria. One of the purposes of our empirical experiment is to detect the possible overlap of epistemic principles, i.e. the treatment of Istria as a subject matter and the treatment of matters within the (site) of Istria. We start from the established definition in sociology and cultural geography, on permeation of 'physical space' (site) and 'social space' (habitus). Social space is understood as a physical, multiscale expression of social relations and interdependencies (Knoblauch & Löw, 2020; Bourdieu, 1996; Silber, 1995). An important, even key element for Istria has been the perceived character of supranational social space (also referred to as transnational space, transborder zone/region, contact societies/spaces etc.). The processual logic produces somewhat elusive multidimensional space and social compositions within concrete physical localities (Božić & Kuti, 2019; Mlinar, 2001, Bufon, 2002; Stjepanović, 2018). Such a social/physical space, discussed in the articles on Istria within the social sciences and humanities, is characterized by a permeation of local, regional, national and transnational levels within different socio-cultural processes.

The Istrian knowledge corpus extends from nomothetic (generalized) to idiographic (particularistic) bibliographic units with numerous research agendas and approaches, both qualitative and quantitative, within and among disciplines. Elusiveness of Istrian subject matter and site with numerous contingencies pose a challenge to the definition of (scientific) knowledge organization and production about Istria.

In terms of disciplinary demarcations, to name just a few: historiographic, geographic, linguistic, demographic, socio-cultural, geo-political, geotectonic etc., the boundaries or borders in various spatial and social meanings and usage have been shifting, over time. For example, Istria as a *research element* of a wider scale is contingent on biotic or physiographic traits, which go beyond Istria. Another example would be period-specific demarcations that are historically and geographically not connected or associated with current state or understandings of Istria. In addition, as stressed above, this elusiveness and fluidity may present a particular challenge for researchers in the social sciences, and humanities who deal with human populace, socio-spatial changes and processes and their artefacts (Paasi, 2021; Schroer, 2019). Here, the subject matter may be somehow influenced by researcher's social-value-driven observation, which could be, in some research agendas and at times, politically (ideologically) 'charged'. When interpreting the published corpus of Istrian scientific knowledge, it is necessary to take into account this aspect already at the level of the usage of terms by authors.

In general, how do researchers name, describe and define the site of *Istria*? Often, they refer to this fluctuating social, cultural and/or geographical area just as *Istria*, and more rarely as *Istrian peninsula* (also *Istria peninsula*), which is, however, a more common notion in natural sciences where the researchers frequently emphasize the physical-geographic designation *peninsula* (with precincts also sometimes open to discussion). It is also noticeable that the (non-) adjective use is related to the national affiliation of authors, where, for example, authors use the form 'Slovenian Istria', 'Croatian Istria', 'Southern Istria', etc. Describing Istria as a site or as a research topic or agenda, both as a noun *Istria* and adjective *Istrian*, authors thus use many different terms, with specific meanings and (disciplinary) emphases, such as e.g. *region*, *border zone* or *contact area* (with various adjectives). As expected, *social space* designations as defined above are markedly more characteristic in Social sciences and humanities in various contexts of specifically *Istrian regionalism*, either as a fact, perceived reality or as a part of modern processual mechanism in the intertwining of supranational integration and autonomy (Agnew, 2018; Pike, 2007; Hočevar, 2017). The frequency of regional occurrences in the published scientific corpus indicates that Istrian subject matter is included in contemporary studies and thinking about space, place, and scale as relational and habitual rather than as territorial or spatially bounded entity.

Istria is an interesting subject to investigate – in terms of knowledge organization and information retrieval in databases – precisely because of the

intertwining of the elusiveness of the subject matter and/or the geographical area (Table 1).

Let us state here that the aim of this study is not to review the myriad of the above listed and all other possible situational contexts. Neither is our study a review of all articles on Istria, but of certain bibliographic parameters in this literature. A review would be an entirely different enterprise, a study on its own and involving an assembly of 'istriologists' or Istrian specialists, working on, both imagined (interpretative) and factual (explanatory) based 'istrianism' or 'istrianity' within the various fields of science. Here, we do not encroach on the domain of historians, regionalists, geographers, geologists and other scholars who have already explored Istria in comprehensive publications, for example, Darovec (1992, 2009), Matijašič (1993), Klemencic & Bufon (2014), and in numerous specialized studies (Gortan Carlin & Lovrinić, 2021; Schellenberg, 2021; Maletić et al., 2014). There is no direct connection in the literature between biblio- or scientometric and conceptual treatments of Istrian subject matter. Authors in the field of social sciences and humanities often, but only indirectly, refer to epistemological, methodological and terminological dilemmas, either when studying specific topics within sub-disciplinary Istrian specialty, e.g. geography (Staut, Kovačič & Ogrin, 2007; Bufon, 2002) or, vice versa, when they thematize more general aspects of changing epistemic practices (Jagetic Andersen, 2021; Schellenberg, 2021). Regarding the thematization of qualitative approaches (in combination with quantitative ones), Adam & Podmenik (2005) presented a field research project in Slovenian Istria, in the context of the application of inclusive research designs in the Slovenian social community. Rašić Bakarić (2005) performed a cluster analysis of the location of the elusive regional level of Croatian Istria while Čučković (2012) discussed northwestern Istrian topography in the context of unclear and conflicting historical records. In connection with methodological problems in the empirical research of Istrian subject matter with regard to the issues of geography, identity or linguistic delimitation, the topics of tourism (Sedmak, 2021; Brščić et al., 2020) and regional data are especially prominent (Čok, Kavaš & Zimmermann, 2016).

In bibliometric or science mapping studies, Istria has not been investigated as such but only detected as a term (concept, topic). In an editorial using Vosviewer-based evaluation of the journal *Tourism and Hospitality Management*, Istria was detected along Dubrovnik as the most frequent place where tourism-related studies in Croatia were conducted (Janković & Perić, 2021) and was also identified as a keyword in conceptual clusters of social sciences, natural sciences, and humanities in study addressing Croatian scientific bibliography (Schatten, 2013).

Table 1: Occurrence of characteristic nouns and adjectives in phrasal association with Istria/Istrian (articles in the Web of Science).

Phrase	Occ.	Phrase	Occ.	Phrase	Occ.
"area of Istria"	12	"Istria Croatia"	129	"Istrian peninsula"	96
"Istria area"	1	"Croatian Istria"	18	"Istria peninsula"	20
"Istrian area"	1	"Istria in Croatia"	4	"peninsula of Istria"	3
"Istrian coast"	32	"Istria county"	25	"peninsula Istria"	2
"coast of Istria"	13	"Istrian county"	5	"Istria region"	20
"coastal Istria"	2	"county of Istria"	3	"Istrian region"	16
"Istria coast"	1	"Slovenian Istria"	42	"region of Istria"	15
"territory of Istria"	4	"Slovene Istria"	30	"region Istria"	4
"Istrian territory"	1	"Istria Slovenia"	5		

Similarly addressing a national bibliography, Istria was detected as one of the keywords frequently used in the journal *Acta Geographica Slovenica* (Urbanc et al., 2014). A journal dedicated to Istrian studies (*Acta Histriae*) was noticed as one of the journals (indexed by Web of Science and Scopus) where historians from Poland publish their works (Osiński, 2014) while a MSc thesis employed a bibliometric approach in an analysis of the journal 'Vjesnik Istarskog arhiva' (Journal of Istrian Archive) (Sabolić, 2020). In life sciences, Istrian coast was mentioned in a study on marine mucilage (Türkistanli et al., 2021), and Istrian olive oil in a review on research trends of geographical origin of oils (Tahir et al., 2022) or assessment of olive oil tourism (Hernández-Mogollón et al., 2019). As mentioned, in those studies, Istria was only identified in the full texts of these documents. It has never featured as a topic of a bibliometric analysis on its own.

In order to geographically/spatially frame our further examination of possible science-mapping articles, we searched for other multilingual and 'transborder' entities or regions, in connection with bibliometric science mapping, and possibly indexed by citation databases Scopus or Web of Science. We checked those involving historical parts of northern Italy and especially Austria (Austro-Hungarian Empire, in the final period), for example, Banat (Vojvodina), Bessarabia, Bukovina, Burgenland, Galicia (Eastern), Transylvania, Trentino, Tyrol (also as South Tyrol / Alto Adige). Only one document used such approaches: a bibliometric study using Bukovina as an example (Shyliuk, 2019). As a complement, we also examined the contexts of some other regions, for example, Alsace, Catalonia, Crimea, Flanders, Friesland, Lapland, Lusatia, Masuria, Pomerania,

and Schleswig-Holstein. In this case, we detected only such studies which involved the subjects of Flanders and Catalonia but without specific reference to supranational, multicultural or transborder contexts. These two regions are simply too large, too populous and scientifically too productive to be assessed along other regions on the same scale. Except for the aforementioned study on Bukovina, none of these studies employed a supranational entity as a subject of a bibliometric research.

The terms transboundary or cross-border have also been used in agricultural sciences, with regard to the Istrian sheep and exchange of genetic material. In this sense, the conflicts are likely of a more amorous nature. Here, an important share of articles uses the adjective Istrian which refers to the indigenous (autochthonous) Istrian Pramenka (*sl: istrska pramenka, hr: istarska pramenka*), and to a lesser extent to the Istrian shorthaired hound (*hr: istarski kratkodlaki gonič, sl: istrski kratkodlaki gonič*). The races of domestic animals (both farm- and companion animals) which have gained a recognized designation are not necessarily confined to an area. This is a limitation of our study. Nevertheless, the number of such articles is not so high. After all, this adds an additional 'flavor' to the region of Istria, which has landed its name to a myriad of phenomena and activities of a very wide nature.

MATERIALS AND METHODOLOGY

The study uses Web of Science (WoS) citation database as the main source of data while the sociological interpretation supplements the quantitative (visualized) analysis, which is based on data extraction from WoS. Scopus database could also be used, however,

there are some methodological limitations involving Scopus. Our retrieval procedure involves the terms in the abstracts and article titles. Here, Scopus does not disambiguate between English-language- and parallel-language-titles in the title-search-field. In this field, it provides both titles. Parallel-language terms are thus also counted which produces many duplicate items, which considerably skews the clustering and visualizations. This is particularly the case in the subject areas of Social Sciences and Arts and Humanities where many articles are published in non-English languages.

Thus we used WoS-based abstracts and titles. Their co-occurrences are structured into a map. Such maps can be interpreted as a proxy for a discipline what was investigated, for example, on the case of psychology by Flis & van Eck (2018). The study involves original research and review articles. As mentioned in the introduction, this is a limitation of both citation databases; therefore this study only focuses on the subject of Istria as being reflected in scientific periodicals (journals/serials). We included the entire period of the Web of Science database and examined all records indexed by the database up until May 2022.

Search statement:

ab=(istria or istrian) or ti=(istria or istrian)

Refined by: Document types: Article or Review article (n=1,043 as of May 2022).

The initial procedure was thus to design the optimal search statement, presented above (syntax or query). In the case of Istria, this was straightforward as it only involved the two essential terms: *Istria* and the adjective *Istrian*. Here, however, some 'manual' disambiguation was necessary. In the preliminary assessment, we identified several articles, which addressed the ancient Greek-Roman city Istria in Danube delta (Romania) as well as Romanian writer Dora d'Istria. We could not withdraw such records by simply excluding the geographical term Romania because there is an additional complication of an ancient mix-up of Istria peninsula and Danube and erroneous accounts of it flowing into the Adriatic (Vedriš, 2012). On top of that, there are Romanian scientists who participate in a research on the tiny Istro-Romanian linguistic group in Istria in Croatia. Therefore, all unconnected records relating to Istria in Romania had to be found and excluded manually.

Text data mining (terms in the titles and abstracts)

Visualizations were conducted by using the program VOSviewer, 2022 version 1.6.18 (Van Eck & Waltman, 2022). In order to correctly visualize text maps we cre-

ated a thesaurus whereby we excluded generic terms in the structured abstracts (e.g., aims, design/methodology/approach, objective, paper, results⁵). The natural language processing algorithms consist of various steps, for example, a noun phrase unification. Accents are removed from characters, upper case characters are converted to lower case, plural noun phrases are converted to singular. Here, some limitations apply and some errors are possible.

This program groups terms into clusters of items represented by circles of specific colors. Items with a higher weight are larger than items with a lower weight. An item may belong to only one cluster. It is more strongly linked to the items in that cluster. The position of items in the cluster indicates relatedness. However, an item may also have links to items in other clusters. These links are represented by lines. Clustering techniques are presented in more detail by Waltman et al. (2010).

Bibliographic data mining (journals and countries)

Bibliographic data of interest were, in our case, also the principal journals as well as the countries of an author's affiliation - i.e. the address of an author's institution. With the help of this programme we arranged the journals into clusters according to Bibliographic coupling (relatedness of journals based on the number of references two journals have in common). The number of articles in a journal are reflected in a size of a circle pertaining to a journal. Again, the possible links to other clusters are represented by lines.

The countries of an author's affiliation are arranged by way of co-authorship. The size of a circle again reflects the number of articles produced by authors in a particular country. The strength of links (the width of lines) shows the intensity of collaboration between countries.

Average time of the manifestation of an item

The maps can also be arranged through the overlay visualization by way of a specific color scale (seamless shading). In our case, the colors indicate the average occurrence of an item in time (year). If the items are colored in blue-color palette it means that the average year is older. If the occurrence of an item is more recent then the colors are reddish. The very recent subjects of interest are thus red and are represented by small circles, on account of still low counts of novel terms.

⁵ For example, on a few instances we found that the form *istria* was converted to the form *istrium* which in fact does not exist. In this case, we used thesaurus in order to map *istrium* to *istria*. The procedures are explained in detail in the manual (Van Eck & Waltman, 2022) so we present only the essential methodological procedures.

RESULTS

At the very beginning we should note that all terms are presented in lower-case form, irrespective of grammatical rules (hence *istria*, *italian* etc.). This is the array in the program itself, also in order to eliminate possible confusion while referring to acronyms or when presenting terms in different languages with different capitalization rules.

Text data (Titles and abstracts)

Preliminary exploratory visualizations were established on broader scopes of research. The 1,043 articles were assessed for those terms, which come about at least 10 times, based on the 60% of the most relevant terms (default setting by the program). The program defined 319 such terms among the total of 29,200 terms. These contexts are shown in three clusters of (inter)related disciplinary research approaches (Figure 1). Two left-hand clusters (A, B) are located closer to each other indicating (inter)related epistemologies and methodologies within natural sciences⁶ (and related sub-disciplines). When the authors (A) designate the site/area in the abstract or title, they often specify it as *istrian peninsula*, although this term in this cluster is less prominent than some specific ones (e.g. *condition*, *species*). In this cluster, Istria features as a site/location of research (as a-matter-of-fact) or as a part of a wider geographical or geological study area (*Adriatic sea*, *basin*, *coast*), and not as the subject matter itself. The distinctiveness and at the same time interconnectedness between the two natural science clusters indicates the different logic of organization and production of knowledge in comparison with social sciences, and art and humanities.

Cluster C is located separately, exhibiting only weak links with research in clusters A and B. This combined 'social sciences and humanities' cluster is markedly more heterogeneous and not distinctive enough for the program to perceive it as two separate ones. We can hypostasize that the result of the presentation agrees with the observations of analysts of epistemologies and methodologies that the variability and heterogeneity of socio-cultural contexts does not allow more confined approaches, which also complicates interdisciplinary research practice. Analytical narrative character goes also on the account of the strong utilization of qualitative methodologies in social sciences and humanities (Cohendet et al., 2014; Aagaard Hansen, 2007). Cluster C therefore contains or combines both basic perspectives of Istria as a subject matter (*identity*, *history*, *century*, *culture*, *church*, *war*, *architecture*), and Istria as

a site (*place*, *territory*, *town*, *Slovenian Istria*, *region*, *land*). Despite the implicit treatment of 'regionalism' that we noticed in the primary full-texts of articles, the notions associated with this broad term are not clear. Our assumption is that the multifaceted notion of region is already a self-evident context of the common socio-cultural framework in Istrian case studies and is not additionally emphasized as a geographically delimited area (site).

As we will explain in more detail below, the two notions of 'social space' (*habitus*) and 'physical space' (site) of Istria well illustrate the epistemological and methodological features of clustering by scientific fields.

On closer observation of topics in each cluster and in accordance with the utilization of the concepts of disciplinary organization of knowledge (Hjørland, 2013) and epistemic cultures (Knorr Cetina, 1999), we tentatively label⁷ the clusters as:

- A – Biosciences (and related)
- B – Geosciences (and related)
- C – Social sciences and humanities (and related)

The maps are dense so not all details can be discerned. Using the utilities of software, we arranged the maps according to optimal principles of a 'broader picture' which invariably entails some trade-offs (limitations). Respectively, analytical interpretation is also limited, so findings may be tentative rather than definitive. The program is, however, dynamic and so we employed the utility of zooming-in and zooming-out in order to show details. The interpretation partly considers this extended possibility. Let us then have a closer look at one exemplary term - *limestone*. (see, the upper left-hand part of the map below Fig. N clusters 10 occ).

The links with physical geography and geology (within B) are self-evident. *Limestone* is also linked with agriculture and biosciences (A), and social sciences and humanities (C) through terms such as *building*, *place*, *Venice*, *Trieste* and *wall*. i.e. places where the limestone from Istria was used. This applies mostly to the architectural part of the humanities where connection, albeit weak, between research treatments of Istria is demonstrated. However, in the 'political and 'social' part of C Istria is essentially a subject matter.

Of course, in all such maps there are also 'generic' or instrumental terms, which are characteristic of research methods and materials in a particular discipline (left-hand clusters: *condition*, *content*, *sample* ..., right-hand cluster: *context*, *century*...). All terms are established by the program, based on the default

6 We reiterate from the introduction section: by 'natural sciences', we refer to agriculture, biology, earth science, materials science, medicine, etc.

7 This is only our exploratory categorization. Even the classification systems in Scopus, WoS, and Frascatti are not always in reciprocal agreement.

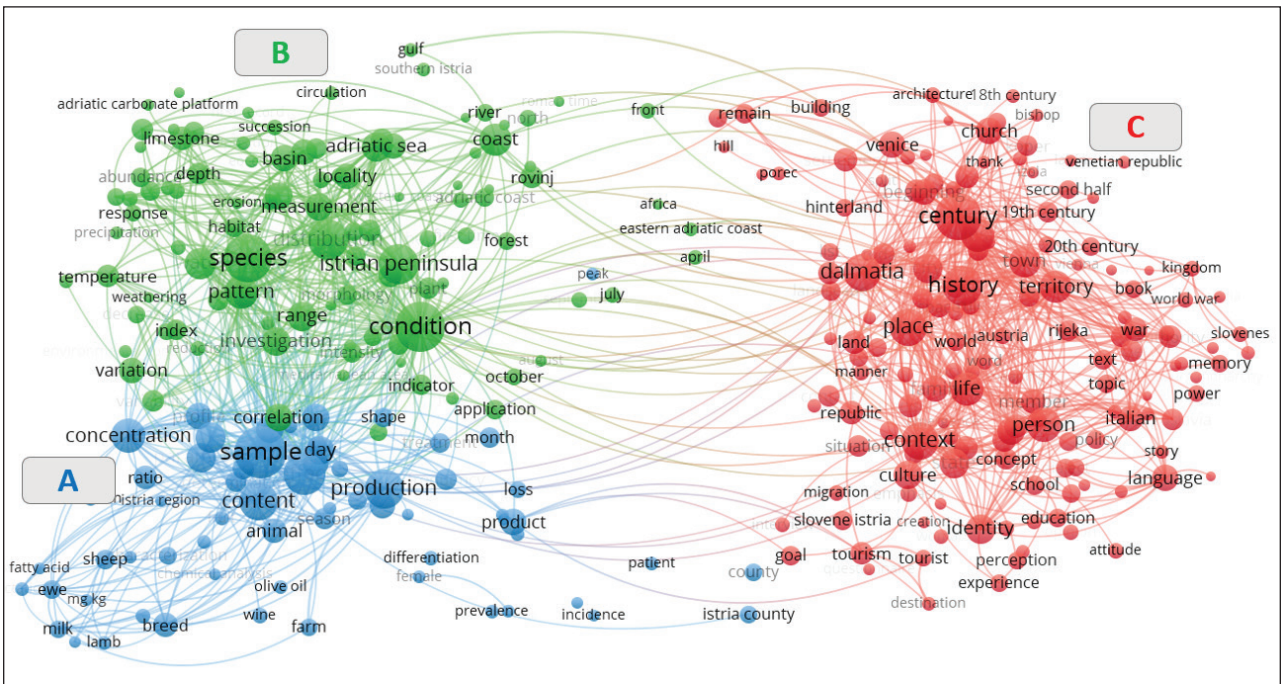


Figure 1: Clusters of related research topics based on higher granulation.

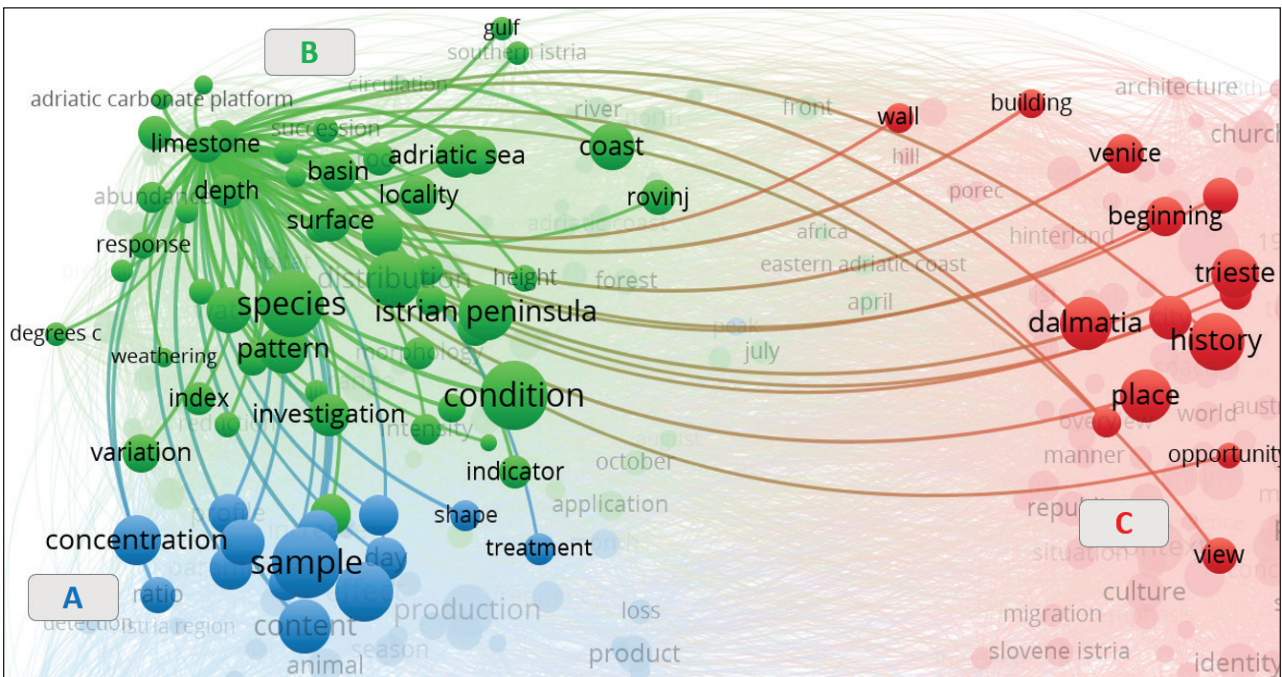


Figure 2: Zoomed-in section of cluster B with the focus on the links of limestone.

inclusion of terms with the weight of at least 10 occurrences. This is a fairly strict condition which yields only a generalized picture.

However, what are then the more detailed research approaches, such as crop-up within the

three general clusters? (Figure 1). To this end, we have changed the tally of ten occurrences to a more detailed count of three occurrences. We were now able to visualize 1,471 more specific terms among the total of 29,000 terms. In this map, some more

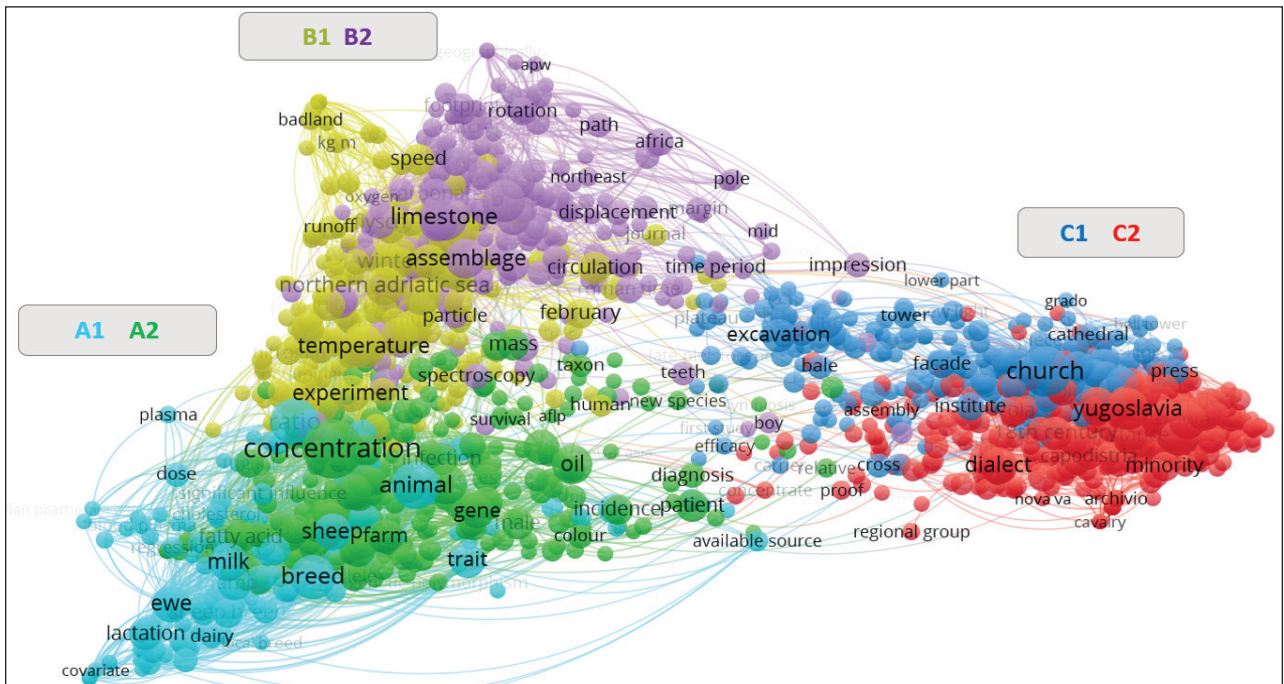


Figure 3: Clusters of related research topics based on detailed granulation.

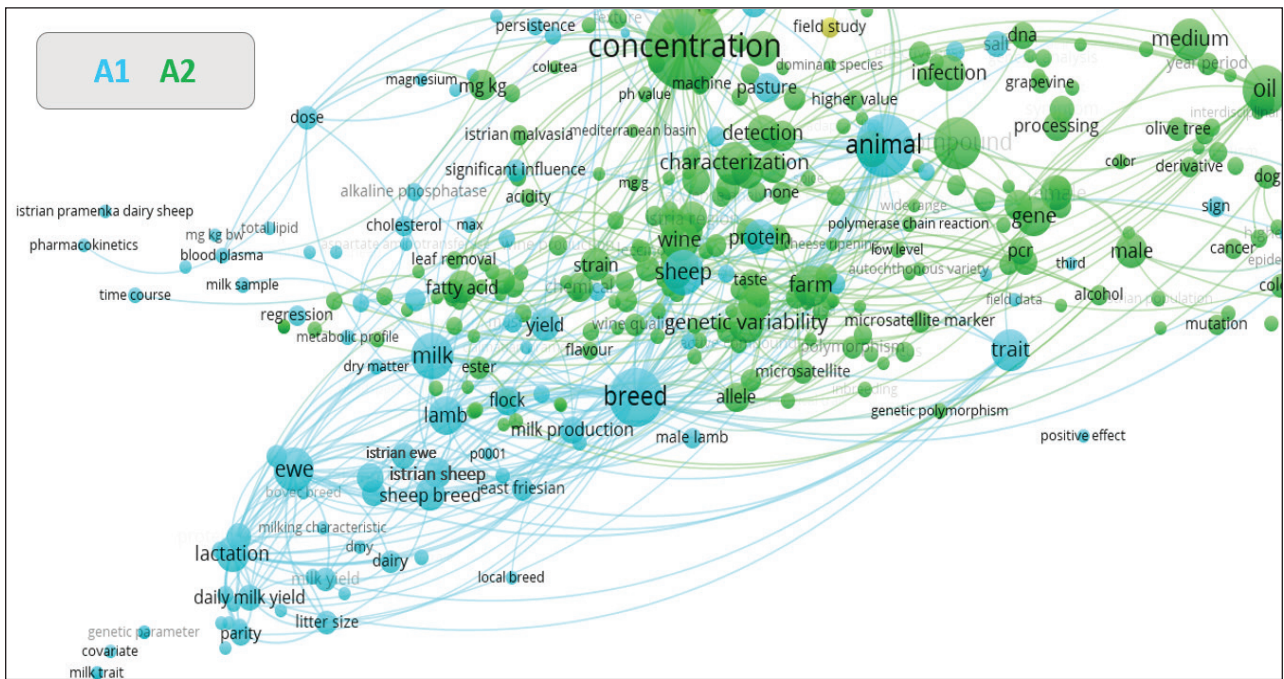


Figure 4: Zoomed-in detail of the Figure 4 (Biosciences).

generic (instrumental) terms are no longer present and are replaced by more specific ones, therefore detailed accents come to the fore (Figure 3).

We can still perceive, largely, the three original principal clusters as in Figure 1. Now, these clusters

are more detailed and rearranged into additional ‘sub-clusters’ (four in natural sciences and two in social sciences and humanities) which also overlap, on account of similar research approaches. Below left, the terms are dispersed in two clusters (A1, A2).

Above, there are also two clusters (B1, B2), as well as in the right-hand part of the map (C1, C2). Some terms are positioned more towards the center of the map, possessing characteristics which are thematically shared among different clusters. Map is very dense given its range of 1,471 terms. Most small and/or overlapping terms are not visible.

Let us now examine more closely each of the clusters by zooming-in central areas of the map. Lower part of Figure 3, now zoomed in in Figure 4 shows strong traits of research in animal production (A1, below: *ewe*, *lactation*, *milk* ...) as well as topics of genetics and plant production (A2, above: *wine*). In this cluster, there are also concepts related to human health and medicine which are located close to the social topics (later, Figure 6). Here we get a more obvious insight into preferred terms across the sciences. We can assume that these could be the topics and approaches that are linked or may possess interdisciplinary potential. Medicine (and public health) is not perceived as a separate cluster. It is connected with biology as in some other studies (Carley et al., 2017) whereas in research involving larger population aggregates (e.g. capitals of nation states) medicine features as a separate cluster (Hočevar & Bartol, 2021). We assume that the elusive character of Istria as a multifaceted vaguely demarcated 'social space' can explain the modest weight of the field of medicine, at least in part. Relatively small urban centers with scattered settlements are administratively tied to the jurisdictions of individual countries, so not much immediate medical research has been linked with Istria.

At the very top, we also note a generic term *concentration* that comes about more frequently in this biological-agricultural cluster but is (methodologically) also strongly linked with the themes of the physical geography and geology above (Figure 5: B1, B2). In clusters A1 and A2, we can note specific names in the context of appellation of origin, with many articles dedicated to the indigenous (autochthonous) Istrian breed of dairy sheep. The pramenka breed (*istrska pramenka* (sl), *istrska pramenka* (hr), in Italian sometimes as *istriana* or *carsolina*) is specifically mentioned in several articles. In the rest, it can be inferred. *Istrian cattle*, *goat*, and *shorthaired hound* are also mentioned in articles although not visible in the Figure 4. Several terms are linked with wine and olive oil.

In Figure 5, there are also two distinctive groups of themes. The themes below (B1) are close to agriculture, hence the contexts of soil science (e.g. *contaminant*, *harvesting*, *nitrogen*). We can observe notes of meteorology (e.g. *degrees*, *precipitation*, *temperature*) and aquatic or marine ecosystems (e.g. *salinity*, *northern Adriatic sea*). The B1 topics then converge towards more geologically themed

issues in B2 such as *flysch* and *limestone*, and finally paleontology (e.g. *dinosaur footprint*, *jurassic*). At the very right-hand part of this map these B2 topics then meet the social sciences and humanities (e.g. *excavation*, *pottery* in Figure 6).

Whereas the A and B clusters are not so clearly separated and show many mutual links, the C group (Figure 6) is quite clearly separated from both, excepting some interdisciplinary research and publication of shared interest. The terms in Figure 6 are also divided into two groups (C1, C2) although very much permeated and linked to each other. The permeation of diverse topics in these two groups shows that the delineation between the social sciences and the humanities does not figure in the same way as in geo- and biosciences (natural sciences), where separate clusters are formed. From the marked difference in the formation of separate clusters for the natural sciences compared to the permeation of topics in the social sciences and humanities, we can conclude that the subgroups of the basic cluster explain more differences in qualitative (C1) and quantitative methodologies (C2) in studying specific subjects. This is in connection with different epistemic cultures, the organization of knowledge, and production and communication of knowledge in publications.

In the very left, C1 approaches geology (e.g. *excavation*). Cluster C1 is also more homogenous. It is strongly associated with historical architecture (e.g. *cathedral*, *church*, *façade*, *museum*, *tower*). Cluster C2 is more diverse. It shows sub-themes of (socio) linguistics expressed in terms such as *bilingualism*, *idiom*, *dialect*, *local dialect*, *speaker* (below) as well as demographic and political history more to the right. At the very right, there are many terms relating to the turn of the 19. century and (post) World War I (e.g. *aspiration*, *Austrian littoral*, *emperor*). Many terms are related to Slovenes, Croats, and Italian minorities, obviously linked to language-issues as well as the more general (political) history.

At this point, we need to put some emphasis on the characteristics of such visualizations. Using this program, only the terms which come about with a certain frequency are shown. If a topic is terminologically very clear-cut and not subject to many adjectival forms then such a topic or term will feature in the map quite prominently. This is the case with the term *church*. On the other hand, terms possessing many adjectives will all be counted separately. This is, for example, the case with the adjective *italian* which is in our map linked to many nouns, such as (*italian* (i.) *authority*, *i. city*, *i. community*, *i. culture*, *i. fascism*, *i. government*, *i. language*, *i. minority*, *i. national minority*, *i. occupation*, *i. population*). Such circles are small and mostly invisible because of overlap. While in this map there is no term *Italians* as such, there are, however, terms *Croats* and *Slovenes* which come about in far fewer

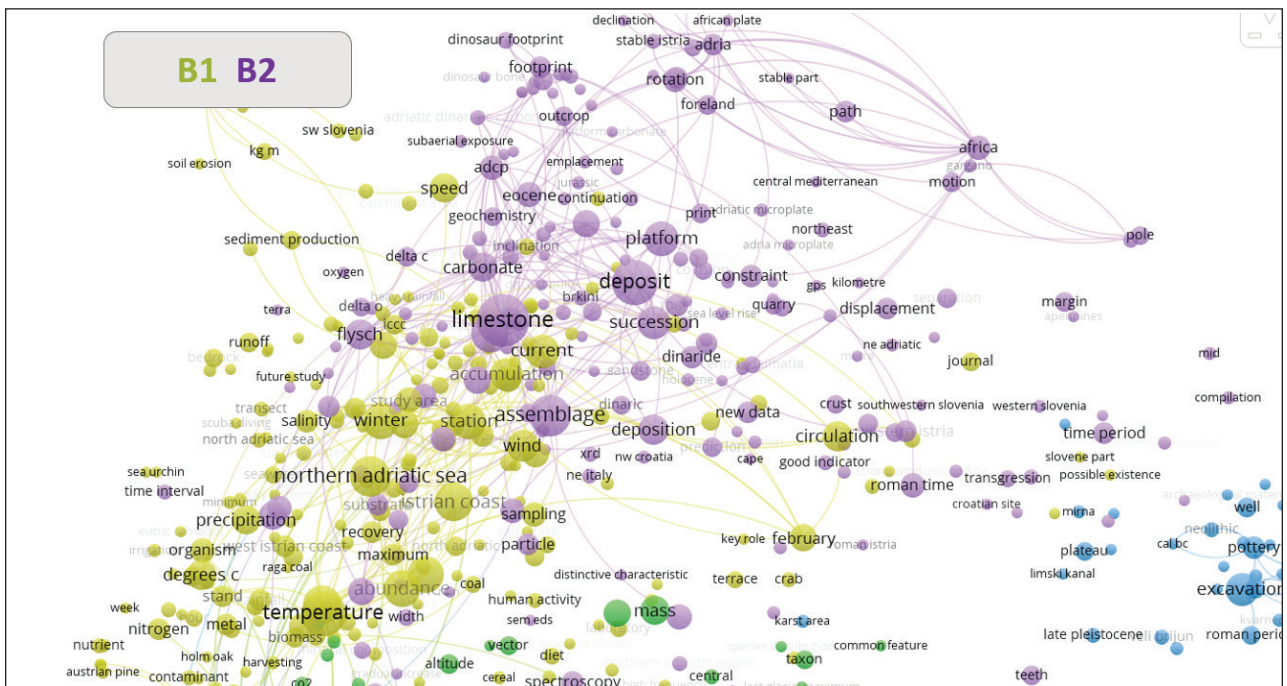


Figure 5: Zoomed-in detail of the Figure 4 (Geosciences).

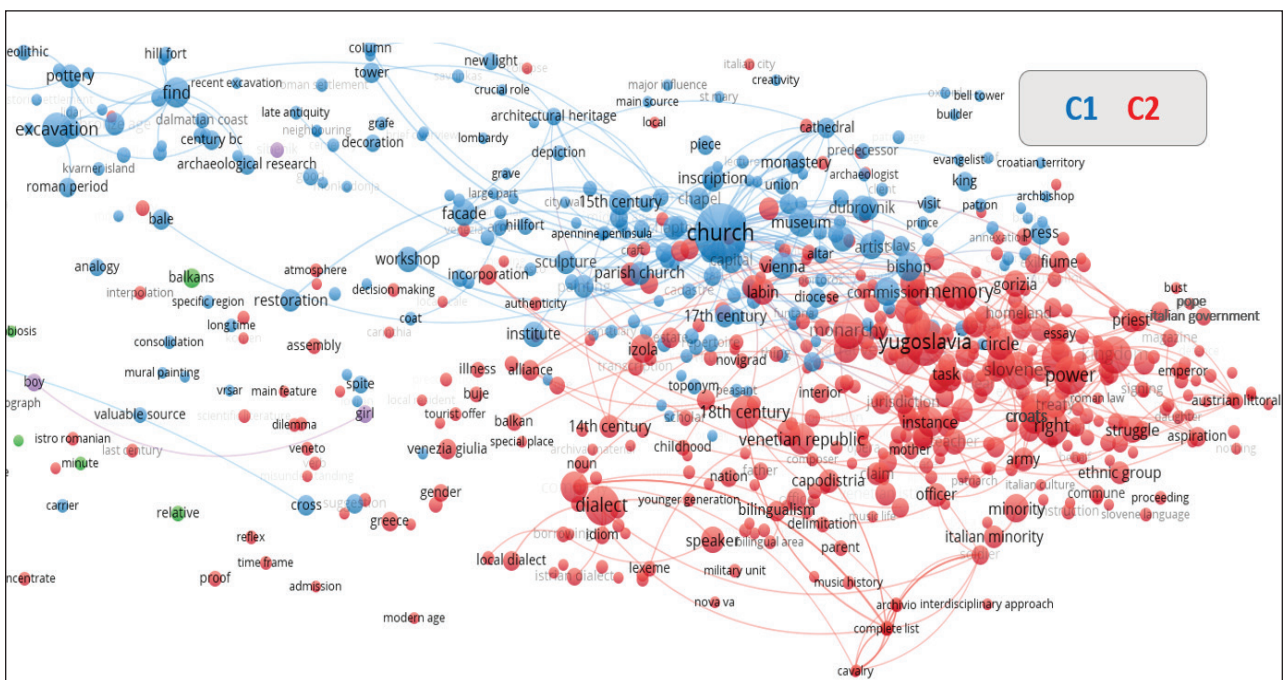


Figure 6: Zoomed-in detail of the Figure 4 (Social sciences, arts and humanities).

adjectival forms (mostly as *Croat language*, *Slovene language*, *Slovenian Croatian border*). For this reason, the circles representing the ‘more streamlined’ *Croats* and *Slovenes* are much larger giving the impression that much less has been published to the end of ‘Italian

topics’ which is not the case. There is an interesting detail. The term *pope* is located at the far end of the ‘political’ part of the map whereas the term *church* is in this map linked with architectural heritage (and art) and not with ecclesiastical polity.

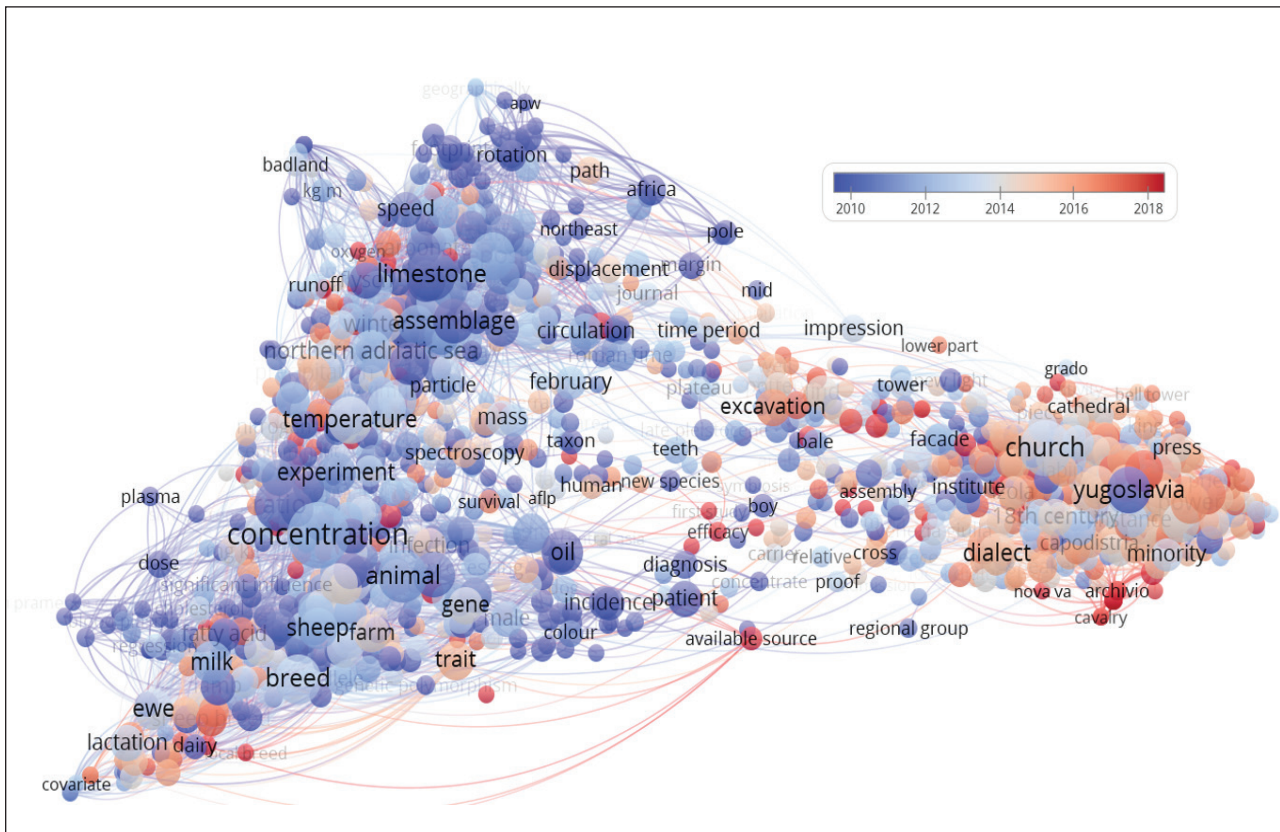


Figure 7: Research topics from Figure 3 presented by average occurrence of a topic in time.

These terminological examples demonstrate the elusiveness of the ‘social space’ of Istria, expressed through a corpus of periodical publications in the social sciences and humanities. Interpretation of cluster visualization in the Vosviewer program therefore requires a considerable amount of general knowledge, as some connections may seem strange or illogical at first glance.

Similarly, the *tourism-* and *tourist-*related terms become much dispersed in detailed maps constructed on thousands of occurrences. Sometimes *tourism* or *tourist* are employed in the same adjectival meaning (e.g. *tourism destination*, *tourist destination*, *tourism product*, *tourist product*). This can skew visualizations as such terms are then represented by small circles giving impression that less has been published to this end. We can enumerate some terms that authors use, as identified by distinct phrasal terms by the program: *agrotourism*, *Croatian nautical tourism*, *rural tourism*, *sustainable tourism*, *tourism destination*, *tourism development*, *tourism experience*, *tourism product*, *tourist board*, *tourist destination*, *tourist offer*, *tourist product* etc.

An interpretation of such maps must not be too emphatic. As already mentioned, it requires some good level of understanding of the granularity of

the topic within Istrian subject matter and the site. In big-data analytics, not every particularity must be decoded. What is important are the generalized patterns of research which are in the case of these maps quite obvious and self-explanatory to a specialist in the subject matter of each of the clusters representing disciplines and fields of science in the many diverse forms.

Let us now complement Figure 3 with an information on what was the average occurrence of these concepts in time (Figure 7). Time analysis shows research weight and trend of a particular research agenda or topic over time.

We reiterate that the map is dense and topics overlap, therefore we enumerate some items, which are not visible. We can note that the topics pertaining to physical geography and geology have somehow matured. This is indicated by colors of the blue palette, which indicate earlier average publication years of such articles. There are nevertheless some very recent research accents in the upper left, for example, *delta-c*, *delta-o*, *oxygen*, *heavy rainfall*, *precipitation*, *surface water*. These accents show that the importance of climatological events is also being reflected in Istrian studies. Certain topics relating to agriculture within biosciences are

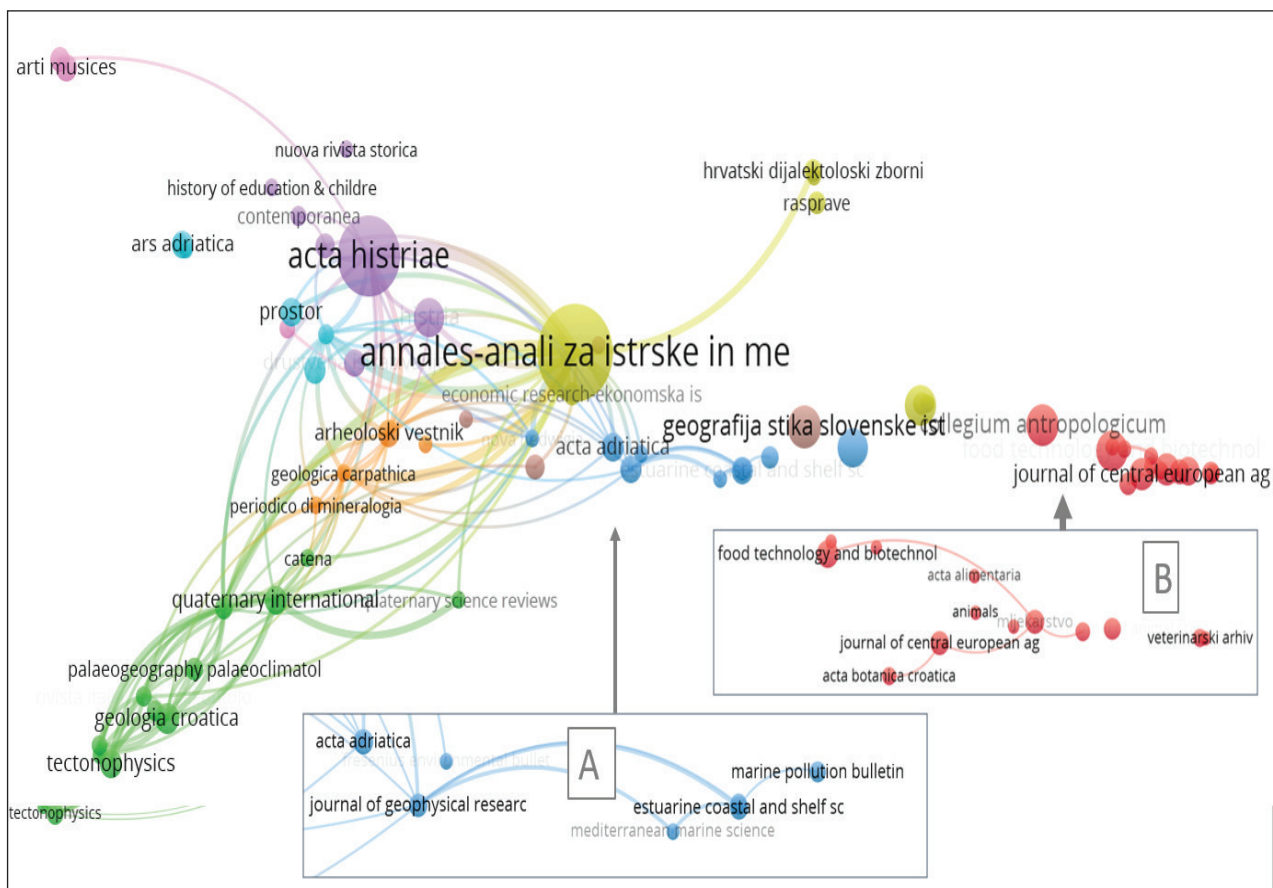


Figure 8: Links and clusters of journals based on references these journals share.

long established, for example, *olive oil* and *wine*. However, there are some topics of recent research contexts in field of animal breeding in genetics, which all exhibit colors of red palette. These are all located at the very lower left bottom: *dairy milk yield*, *dairy trait*, *istrian sheep*, *milk yield*, *protein content*, *sheep breed*, etc.

Social sciences and humanities (right-hand side of Figure 7), on the other hand, display much more recent research flows which are shown in the colors of the red palette. It is also self-explanatory that the studies involving the topic of *Yugoslavia* are past their prime. However, more distant past linked with *Austria-Hungary* is attracting more recent research attention. It is understandable that the dynamic, fluid and indeed elusive character of social phenomena and processes (which are necessarily tied to historic trajectories and events) presupposes a lower degree of predictability of ‘emerging topics’ or ‘hot topics’ in the social sciences and humanities. The occurrence of topics over time is also influenced by other factors: paradigmatic changes, funding policies, networks of researchers, stronger or weaker orientations of research teams or individual researchers

to a particular topic and how prolific they are, etc. (Leydesdorff, 2007; Cohendet, 2014).

We may now recoup the clusters and sub-clusters in Figure 3 as follows:

A – Biosciences

- A1 animal production
- A2 plant production (horticulture, viticulture), genetics, biomedicine

B – Geosciences

- B1 Ecology (*environmental sciences, meteorology ...*)
- B2 Physical geography (*geology, paleontology ...*)

C – Social sciences, humanities and arts

- C1 Art history (*archeology, architecture, art ...*)
- C2 Political & social history (*general history, social history, demographics, linguistics ...*)

We reiterate that the above classification is open-minded. We have mentioned earlier, that in categorization schemes, there are sometimes weak parallels even between Scopus and Web of Science let alone between other classification systems. Some systems,

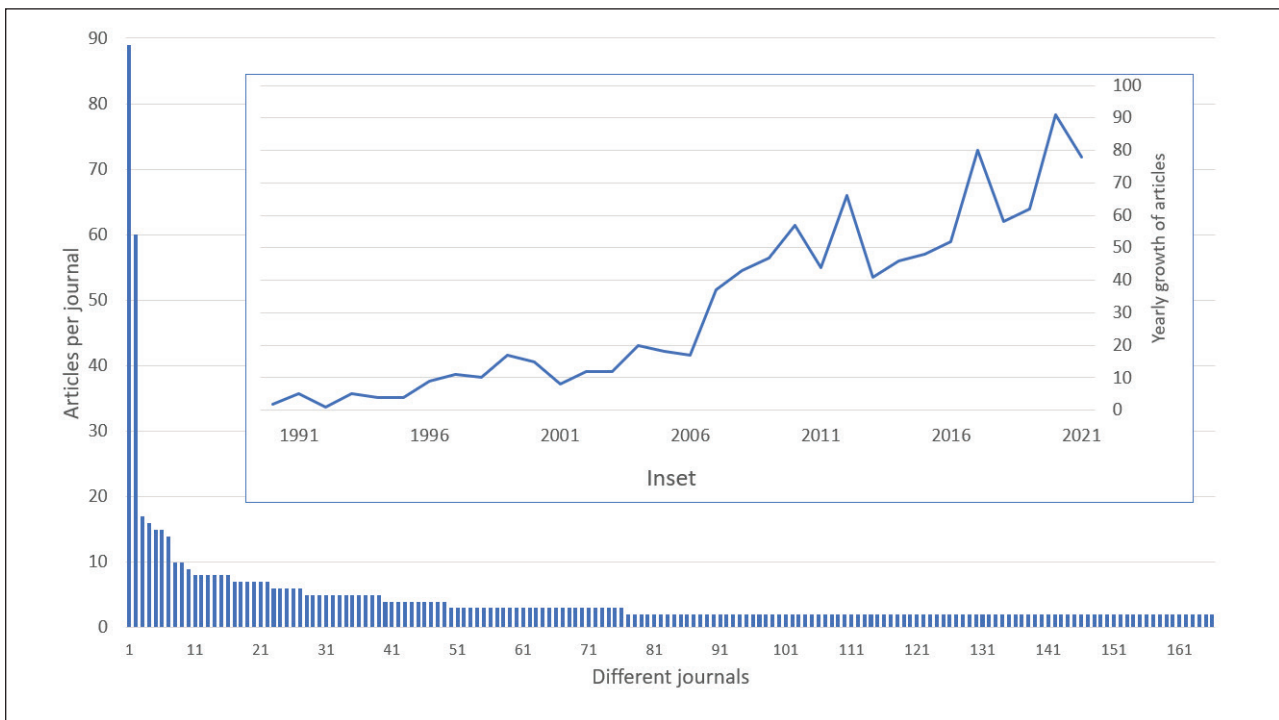


Figure 9: Publication of articles per different journal titles (main part of the figure) and yearly growth of articles (Inset).

for example, place architecture within the Social Sciences and not Humanities.

Journals

In WoS, 1,043 respective original articles (series with ISSN number) were retrieved as of May 2022. The 2021 counts are not yet complete because of a temporary status of some papers (e.g. online first). Figure eight shows visualization of the links between journals as determined based on references these journals share. Only the journals with at least three articles are shown in the map. We can notice clusters of distinctive similarities. Journal *Annales* (Series *Historia et Sociologia*) is located in the central position that attests to its central role in Istrian studies. Journals *Annales* and *Acta Histriae* cover an especially important part of the studies pertaining to social sciences and humanities. There are important links between both journals. Several fields of science share well-defined clusters. Lower-left part of Figure 8 connects geological and paleontological journals (green). In the center (blue cluster), there are strong accents on marine topics. Many of those journals are not visible therefore, we present them in Inset A in more detail. Further to the right, there are biological issues, which meet agricultural topics and respective journals. These are presented in Inset B.

We can note an important share of articles in the national and regional journals from Croatia and

Slovenia. This is to an extent comprehensible given regional significance of the topic. The regional nature of Istrian research is a part of the broader issue of the production and organization of scientific knowledge, which includes publication patterns. In the case of Istria, “regionality as a social process” can be both a geographical and an analytical category (Schroer, 2019). It can be approached in a way that analyzes rather than assumes the boundaries and character of different regional spaces (Finnegan, 2008: 372).

Similar patterns have also been observed in other studies addressing publications of regional significance (Bartol et al., 2022). While the proximity between coauthors (Apolloni et al., 2013) is important, the national (regional) journals have even higher significance in Central European countries on account of the common historical background (Jokić et al., 2019). In addition, scientific output also depends on the surface area and number of inhabitants of a region (Abramo et al., 2014). Some authors therefore suggest that bibliometric studies offer remarkable possibilities to chart the diverse and complex intellectual structure of regional studies (Mehmetcik & Haksnes, 2022).

It is obvious that the Istrian subject matter and site gained ‘momentum’ with the start of the publication of two key regional journals. Regional production, organization of knowledge and publishing therefore has a critical scientific weight. We assume that without the existence of two journals, *Annales* and *Acta Histriae*,

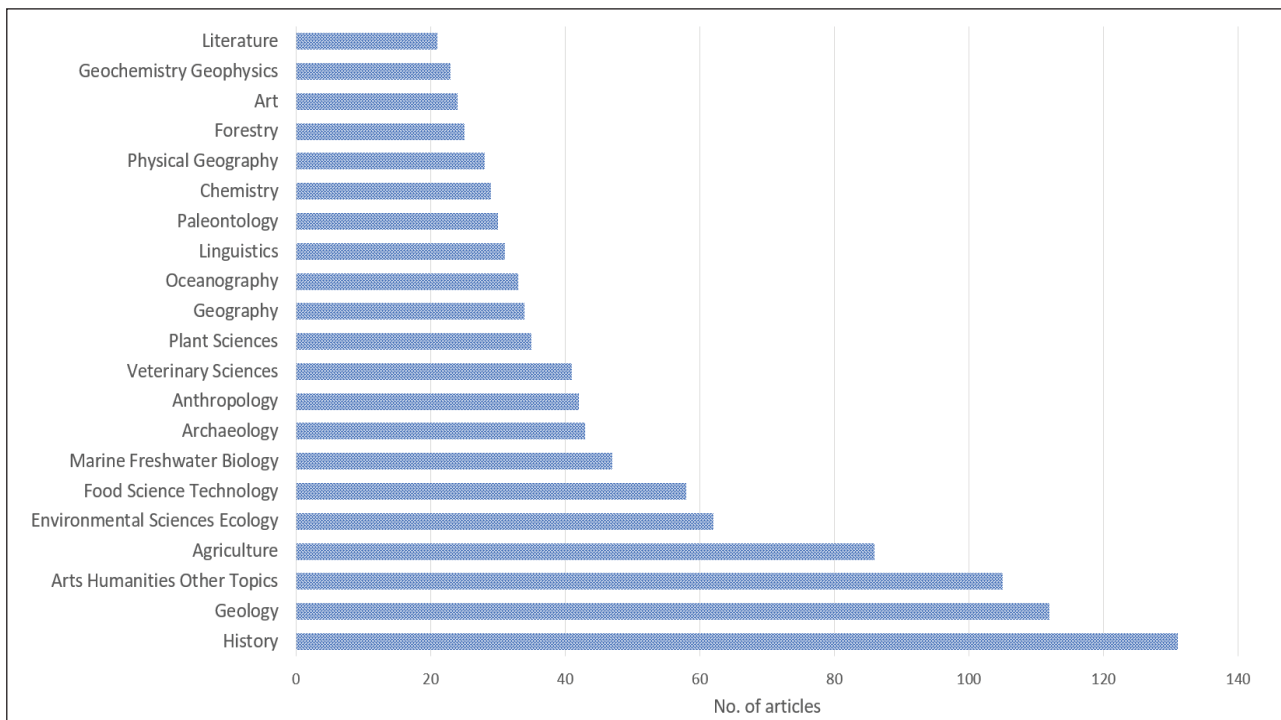


Figure 10: Research areas in WoS in the scope of which at least 20 articles were published.

the total account of social science and humanities articles on Istria would be much lower, also due to the bias or certain 'preferential' criteria of editorial policies of certain international journals of renown.

Nevertheless, many such articles are published outside the regional (three nation states) scope, only that the dispersion is very high and scattered across many journals (Figure 9). High counts of *Annales* and *Acta Histriae* can be clearly seen on the left-hand side of the vertical axis. Figure 9 shows only those journals with at least two articles per journal title (horizontal axis). On top of that, several hundred other journal titles published only one single article. This figure presents a distinctive trait of distributions in bibliographic studies: a long tail of random publications in very diverse journals in many different fields of science follows a core of publications that are central to a particular topic. The Inset in figure shows yearly growth of articles since 1990. Before that period, only a few articles in total count were published. Again, the totals for 2021 are not yet comprehensive given some delay of input in WoS database.

In WoS, all journals are mapped to subject areas, which represent a broad (generalized) scope of a journal so we also wished to ascertain which subject areas the most were frequently assigned to such journals (Figure 10). This figure presents those areas with at least 20 articles. A journal can be assigned to one or more areas therefore; the scores in the figure cannot be sum-

marized. For example, the journal *Annales* is mapped to the research area of *Arts Humanities Other Topics* whereas *Italian Journal of Animal Science* is mapped to *Agriculture* as well as *Veterinary Sciences*, and journal *Quaternary International* to both *Geology* and *Physical Geography*, etc. Again, the principal areas in Figure 10 are followed by a 'tail' of miscellaneous areas, which have also addressed Istria as a site of interest (e.g. *Cell Biology* or *Computer Science*).

Countries of authorship

Regarding the publishing patterns, we also wished to investigate what are the authorship characteristics of articles that address issues related to Istria. To this end, we created co-authorship maps, based on an address that authors provided in their articles (Figure 11). As expected, the countries (nation states) with substantially higher contribution of articles are Croatia, Slovenia and Italy that also exhibit the strongest co-authorship (width of lines). In order to omit only random authors, we included such countries from which authors contributed at least two articles.

There were over 30 such countries. Again, some are not shown because of overlap. On top of co-authorship links, map also shows time dimension of average contribution. Croatian articles are, on average, just slightly 'older' than Slovenian articles. Contributions from Italy are in the middle of the scale. We can note recent con-

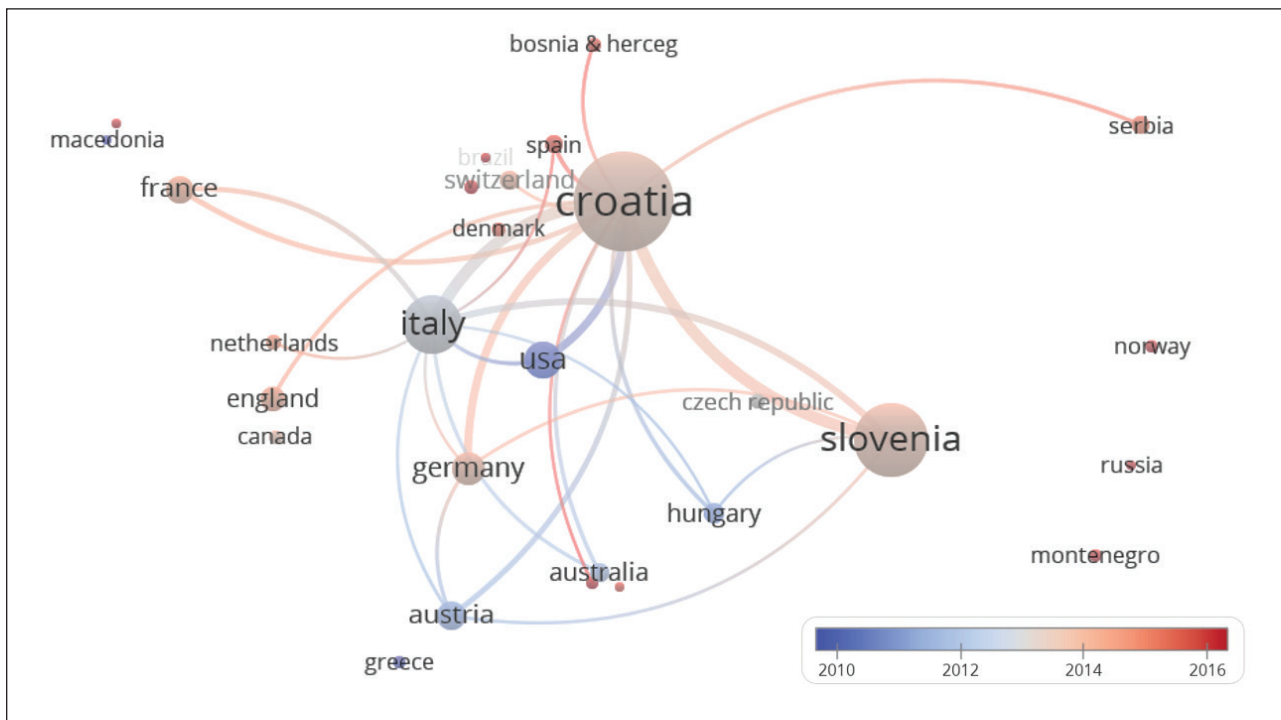


Figure 11: Research areas in WoS in the scope of which at least 20 articles were published.

tributions of countries, which co-authored two or three articles. As said in the beginning, such maps are only telling the situation as it is at the time of this analysis. Given the very vigorous recent yearly growth (inset in Figure 9), the color shades are prone to constant evolution.

With this sub-analysis, we should mention analytical limitations. We encountered a couple of errors in the Web of Science database. On just a few occasions, a country was not assigned correctly to a city. Such errors cannot be discounted in big-data analytics, as researchers cannot be expected to physically double-check thousands of individual pieces of data in downloaded files. We can also refer to a particularity of the Web of Science database, which counts England, Scotland, Wales and Northern Ireland as separate entities. Challenges of geographical retrieval and geographical representation are also an issue in Scopus database (Hočevar & Bartol, 2021).

To wrap up our analysis, we can summarize the most frequent scales of the occurrences of the many Istrian epistemic contexts and methodological approaches to the subject matter and site of Istria in articles. Istria can be one of many components in a wider research scope (1), whereas in some other articles only a narrower and specific Istrian topic or agenda is investigated (2). In addition, the examination of Istria can possess national or country-specific accents (3). Finally, Istria can encompass the many facets of multicultural, cross-boundary, contact-area and similarly

designated themes. In this analysis, we refer to them as regional, in the context of long-term socio-cultural processual logic of integration and autonomy dynamics (4). Whereas the first three approaches are relevant in all fields of science, the last one is characteristic only, or for the most part, of the social sciences and humanities. Roughly, and in a general 'bourdieusian' socio-cultural explanatory perspective, we can say that the first three scales refer to the physical space and the fourth to the social space (habitus) of Istria.

Wider contexts (1)

Describing Istria as a place or topic of research, both as a noun *Istria* and adjective *Istrian*, authors use many different concepts. Istria as a research element of wider zones is contingent on, among others, biotic or physiographic traits that go beyond Istria. We enumerate a few examples where the authors refer to Istria and nearby regions:

Gulf of Trieste and the coast of Istria, Istria and the Croatian Littoral, Istria as contact area of the northwestern Dinarides and Adriatic foreland, Istria and northern Adriatic islands or, alternatively, Istria and Kvarner islands, Veneto-Friuli and Istrian coast, Croatian karst (in Dalmatia, Istria, Gorski Kotar), Istria and coastal Croatia, a part of North Adriatic area of Croatia.

Some other contexts: Istria is mentioned among the Mediterranean areas of Croatia or in the frame of tectonic subsidence from the Gulf of Trieste to the Dalmatian coast. In many such studies, the perimeter of Istria not an issue as the characteristics under observation (for example, geological and meteorological phenomena) overlap with adjacent zones. In such, it would not be correct to refer to Istria as a transborder region. It features merely as one of approximate geographical units, which share characteristics in a certain strip of land. In terms of using the terms *area of Istria* or *region of Istria*, there is not much difference between the various disciplines.

Narrower contexts (2)

While the above examples present references to Istria in wider contexts, other studies; by comparison, focus on narrower units, for example: *specific coastal areas of Istria, rural parts of Istria, inland Istria, south-eastern, southernmost part, north-eastern Adriatic region*. The detailed areas are more frequently investigated in the scope of natural and physical sciences, or geography:

Istrian karst, flysch area of Istria, drainage area of a stream, landslides in Istria, White, Gray and Red Istria, etc.

In terms of shoreline, the authors opt for adjectives either littoral or coastal, although littoral is more frequently used as a noun in a territorial sense (Austrian Littoral, Slovenian Littoral (Primorje)).

Country-specific contexts (3)

Research can address a country-specific part what can also be permuted:

Southeastern part of Slovenian (also Slovene) Istria, Slovenian region of Istria, Istrian region of Croatia, Croatian region of Istria, region of Istria in Croatia.

It is interesting that in the contexts of Slovenia the notion of Slovenian Istria is much more frequently emphasized than Croatian Istria as if it were somehow accepted that 'the Istria' is mostly represented by Croatia and that the Slovenian part must be especially underlined. In Croatian contexts, Istria is usually only supplied with Croatia, in parentheses. Croatian contexts can also outline a county (županija), in administrative contexts. But the consistency is again lacking. The texts refer to the *County of Istria, Istria County, Istrian County*. These minor issues may impact the retrieval of such documents by less cognizant authors wishing to investigate Istria.

Regional-specific: multi-cultural, cross-boundary, supranational contexts (4)

Istria is also investigated, in a wider sense, in the social sciences and humanities, for example, in archeology and history, as a 'contact zone' in prehistoric or Venetian period, or a 'contact area' between Croats, Italians, and Slovenes, also linked to the migration of laborers from diverse ethnic backgrounds to coastal cities. These contacts intensified after the fall of Venice and the short-lived Illyrian Provinces when the entire area (including Trieste and far beyond) was conferred to Austria. In related contexts, women migrating traders from rural hinterland of Istria (Savrinkas; hr, sl: Šavrinke) are frequently mentioned, in such cases often in relation to selling goods in Trieste (hr, sl: Trst, it:Trieste, de:Triest). In many such settings, the multicultural (multilingual) nature of rural Istria is mentioned, sometimes with accents also on urban areas, traumatic episodes in the 20th century notwithstanding. In the more recent period, Istria is here circumstantial. Namely, the contact area for migrating (commuting) laborers transpires along the entirety of the Slovenian-Italian border with Istria representing only a share.

This part of the Upper Adriatic has always been very complex (Bufon, 2009). To mitigate possible conflicts, cross-border cooperation is now promoted also within the expanded European Union (Kropej, 2013). Such cooperation can, for example, also focus on the conservation of nature where political issues are left aside (Mackelworth, Holcer & Lazar, 2013).

Finally, we must refer to the limitation of place names in information retrieval. In Istria, there are quite a few medium-sized towns. Sometimes, the authors will refer to such towns, in the titles of articles or abstracts without ever mentioning Istria. The slight Italian area (Muggia) is hardly ever investigated in the context of Istria. If at all, it is referred to just as Muggia, without Istria being mentioned. And there is also the topic of Trieste (Trst) and Rijeka (Fiume), two larger cities frequently mentioned along with Istria, although not being located in Istria but just outside its historic (as well as geographic) area, at exactly opposite sites. Our research has not been expanded with those cities if Istria was not specifically mentioned. Such limitations are inevitable in many studies that focus on geographical units, especially cities (Hocevar & Bartol, 2021).

CONCLUSION

We approached the evaluation and interpretation of published knowledge on the subject of Istria and the site/area of Istria in an interdisciplinary manner. We employed science mapping, visualization, evaluation, and analytical interpretation of research- and

review-articles in journals. The data were extracted from the WoS database. We used quantitative visualization (VOSviewer). The occurrence and distribution of terminology used by authors in titles and abstracts allowed us to provide tentative explanation about the context of topics and agendas in the corpus of Istrian research. In addition to the emergence of concepts, we also examined bibliographic indicators of where articles are published and the countries in which authors are located. Conceptually, we based our analytical interpretation of the visual representations on two epistemological starting points: first, the site-specific or regional nature of knowledge production and organization, and second, the assumption of different epistemic cultures that are discipline-specific, especially when it comes to the many different approaches to the subject matter of Istria. We hypothesized that these two starting points are particularly appropriate for the elusive sociocultural and spatial character of the “Istrian entity.”

The concepts given as topics and agendas were found to be distributed among three basic clusters of related disciplinary research approaches. Roughly speaking, the subject matter of Istria is distributed fairly evenly between the natural sciences, on the one hand, and the natural sciences and humanities, on the other. The formation of two distinct clusters within the natural sciences (biosciences and geosciences), and only one but conceptually heterogeneous cluster in the social sciences and humanities clearly indicates differences in research approaches (epistemologies). A more detailed analysis of the distribution of knowledge in clusters shows granulation, including how concepts (topics, agendas) are connected: into four sub-clusters within the natural sciences and two within the social sciences and humanities. Analysis of average occurrence by topic over time reveals further disciplinary characteristics. While natural science topics are already established and show earlier average publication patterns (with the exception of animal genetics and climate-related topics), research streams in the social sciences and humanities are much younger.

This indicates that journal articles are playing an increasingly important role in the social sciences and humanities - as a “pathway” for disseminating research results. The journals *Annales* and *Acta*

Histriae cover a particularly important portion of studies primarily related to the social sciences and humanities, although many articles, especially in *Annales*, also reflect broader and comprehensive research interests with interdisciplinary links to the natural sciences.

At the otherwise elusive regional scale Istria, culture has been instrumental in shaping scientific endeavors. In turn, scientific practices have also been instrumental in the formation of new sociocultural identities. In Istria, “regionality as a social process” can be both a geographical and an analytical category. It can be approached in a way that analyzes rather than presupposes the boundaries and character of place. Significantly, the effect observed in the co-authorship maps is based on an address that the authors provided in their articles. As expected, the countries (nation states) with a much higher contribution of articles are Croatia, Slovenia and Italy, which also have the strongest co-authorship.

With a detailed analysis of the terms in the clusters, we have confirmed, at least preliminarily, our assumption about the nature of the Istrian subject matter and the site. Istrian studies diverge in their examination of characteristics of physical space (place) and social space (habitus). Mutual permeation or interpenetration, albeit limited, is evident in the connections between concepts and, more generally, between disciplinary approaches.

The main finding of this study is that the epistemic contexts of Istria and the methodological approaches to the subject and site of Istria manifest themselves at four contextual levels or scales. First, Istria may be one of many components in a broader (“non-Istrian”) field of research. This is characteristic of the natural sciences. Second, the scope of narrower and specific topics or agendas involving only some specific sites in Istria is also a characteristic of the natural sciences and only partially of the social sciences and humanities. Third, the study of Istria that includes one of the three national or country-specific emphases is a feature of all disciplines. Fourth, Istria also encompasses numerous and heterogeneous facets of multicultural, cross-border, contact zone, and similarly designated themes, most of which belong to the social sciences and humanities.

ISTRA KOT KRAJ IN KOT PREDMET OBRAVNAVE V PRODUKCIJI IN ORGANIZACIJI REGIONALNEGA ZNANJA: BIBLIOMETRIČNA IN SOCIOLOŠKA ANALIZA

Marjan HOČEVAR

Univerza v Ljubljani, Fakulteta za družbene vede, Kardeljeva ploščad 5, 1000 Ljubljana, Slovenija
e-mail: marjan.hocevar@fdv.uni-lj.si

Sanja BOJANIĆ

Univerza na Reki, Akademija uporabnih umetnosti, Center za sodobne studije jugovzhodne Evrope, Slavka Krautzeka 83, 51000 Reka, Hrvaška
e-mail: sanja.bojanic@uniri.hr

Tomaž BARTOL

Univerza v Ljubljani, Biotehniška fakulteta, Jamnikarjeva 101, 1000 Ljubljana, Slovenija
e-mail: tomaz.bartol@bf.uni-lj.si

POVZETEK

Študija pregleda in analitične interpretacije objav o Istri (z bibliometrijskimi/scientometrijskimi poudarki in rabo vizualizacijskega programa VOSviewer) je interdisciplinarno naravnana in se osredotoča na znanstvene članke v revijah (periodiki), indeksirane v bazi podatkov Web of Science. Pojme, njihovo pojavnost, razporeditev in povezanost v gruče (grozde) smo privzeli kot teme oz. pristope. Z naslonitvijo na koncepta o „epistemskih kulturah“ (Knor-Cetina, 1999, 2007) ter „organiziranosti in produkciji znanja“ (Hjørland, 2013) smo analitično ovrednotili kvantitativne kazalce. Najbolj splošna ugotovitev je, da večplasten in tudi ‚izmuzljiv‘ regionalni značaj znanstvene produkcije so-oblikuje proces specifične družbeno-kulturne entitete. Konkretnije ugotovitve izhajajo iz grafičnih prikazov (vizualizacije). Teme/pristopi se po disciplinarni sorodnosti razporejajo v tri osnovne gruče: dve naravoslovni področji (v širšem smislu) na eni strani ter družboslovje/humanistiko na drugi. Področje naravoslovja predstavlja bio- in geološka skupina. Družboslovje in humanistika izkazujeta medsebojno prežemanje s hkratno pojmovno heterogenostjo. Analiza granulacij kaže na razlike v raziskovalnih pristopih med in znotraj disciplin, tudi časovno. Medtem ko so naravoslovne teme ‚starejše‘ oz. uveljavljene (z izjemo novejših genetike in podnebnih tem), družboslovje/humanistika izkazujeta za razgibano rast objav ter raziskovanje novejših fenomenov in procesov. Avtorji družboslovnih in humanističnih ved torej vedno pogosteje objavljajo tudi znanstvene članke. Reviji Annales in Acta Histriae pokrivata pomemben del družboslovja in humanistike, Annales pa je tudi vir naravoslovnih in interdisciplinarnih vsebin, kar se nakazuje z osrednjim položajem v mreži. Tematike lahko analitično uvrstimo v preučevanje fizičnega prostora/območja (naravoslovje) in družbenega prostora/habitusa (družboslovje in humanistika). Podrobnejša analiza pokaže tudi disciplinarna prekrivanja in odstopanja. Epistemski konteksti in metodološki pristopi k predmetu preučevanja in območni umeščenosti Istre se manifestirajo na štirih ne nujno hierarhičnih kontekstualnih ravneh in se deloma prekrivajo. A: Istra kot tematika širšega konteksta, kar je značilnost naravoslovja (npr. Istra in severni Jadran, Istra in Kvarner). B: kot predmet obravnave v specializiranem kontekstu (npr. istrski kras, obala). C: kontekst (treh) nacionalno (državno) specifičnih poudarkov, kjer je ‚slovenska Istra‘ posebej poudarjena, kar pri ‚hrvaški Istri‘ ni značilno, ali pa se tam povezuje s pojmom županija. D: zadnji kontekst, ki obsega številne in heterogene vidike večkulturnih, čezmejnih, kontaktnih in podobnih tem, pretežno v družboslovju in humanistiki (npr. večkulturnost).

Ključne besede: regija Istra, organizacija znanja, regionalno znanje, kartiranje znanosti, bibliometrija, epistemske kulture

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