The academics of Intangible Cultural Heritage - knowledge map analysis based on CiteSpace (2003-2019)

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ABSTRACT

Previous research in the academic field of intangible cultural heritage has mainly focused on qualitative research from the macro-perspective, and quantitative methodology has seldom been used to explore the relationship between the research trajectory and resulting literature from the micro-perspective. Based on the Web of Science database and CiteSpace bibliometric analysis software, this paper analyses 1,097 papers on intangible cultural heritage produced between 2003 and 2019 from the co-citation network (author, research institution and journal), the scientific field, and the dominant or hot topics[1], and reveals the evolution and distribution of publications in the field of intangible cultural heritage across the globe. This paper describes global trends in academic research on intangible cultural heritage, leading to the shared innovation of cross-cultural horizontal communication and the sustainable exploration of vertical inheritance.[2]

Keywords

CiteSpace, Web of Science, cross-cultural communication, vertical inheritance, knowledge maps, hot topic.

Introduction

As the essence of traditional culture, intangible cultural heritage is a powerful embodiment of a country's 'soft power' and an important form of cultural communication. The recognition of intangible cultural heritage is also part of a nation's identity. In the development of human society, culture grows from tradition, promoting the development of rich heritages of literature, art, technology and scientific innovation.

With the advance and development of economic society and digital technology, intangible cultural heritage has been increasingly impacted by modern civilisation and faced with the problem of survival. Internet technology subverts and reconstructs the pattern of social information dissemination. Nonetheless, intangible cultural heritage needs to move in the direction of digital innovation for its survival. Based on a scientific 'knowledge map', this paper analyses the academic field of intangible cultural heritage and extracts related knowledge. Differing from previous studies based on the macro-perspective, this study constructs a network of knowledge about research on intangible cultural heritage with a heterogeneity, diversity and loose organisational structure, allowing the acquisition of more accurate and convenient information. It gives an international perspective on the research and protection of various countries' intangible cultural heritage, and provides references and inspiration for scholarly research.

1. Literature review

The concept of intangible heritage stems from UNESCO's basic definition, initiated with the establishment in 2001 of the programme for the *Proclamation of Masterpieces of the Oral and Intangible Heritage of Humanity* conceived as an immediate measure to raise awareness about intangible heritage and enhance it's importance throughout the world. Proclamations in 2001, 2003 and 2005 identified 90 forms of cultural expression and cultural spaces from 70 countries which received this distinction. Since then 'intangible heritage' has received a great deal of attention as a concept and UNESCO has continuously revised the definition of intangible heritage. In 2002, Intangible Cultural Heritage (ICH) became a legal term and was further defined as *the various practices, performances, forms of expression, specified knowledge, groups, and occasionally, individuals, skills and related tools, objects, crafts, and cultural sites.* The *Convention* was adopted by UNESCO's general conference in 2003 and finally came into force in late 2005 after the final proclamation.

While drawing from Asia's experience of protecting cultural heritage, Europe has led the world in its management. The research of each country has its own focus: British scholars focus on the relationship between music [Roberts et al.: 2014], festivals [Ferdinand et al.: 2013], and cultural heritage; Spanish scholars discuss the protection of healthy lifestyles and intangible cultural heritage from the perspective of cultural factors [Bach-Faig et al.: 2011]; Italian scholars take the castle of Leda Aosta as an example for a multi-standard analysis of their complex cultural heritage [Oppio et al.: 2015].

The cultural heritage of the United States relates to American folklore and contains many cultural elements such as family, race, religion and geography. American scholars have discussed the interaction of art, politics, and identity with UNESCO's international safeguarding of intangible cultural heritage and the privileges of the States Parties to the *Convention* [Lixinski: 2011]. This has provided some recommendations for policy and practice, including how to define the value of heritage and how to locate intangible heritage [Kaufman: 2013], how to integrate human rights issues into the assessment and management of World Heritage sites [Silberman: 2012], how to protect cultural diversity through the perspective of women's rights, and in depth examination of the *Convention for the Safeguarding of Intangible Cultural Heritage* itself [Moghadam et al.: 2010].

By compiling the research results from countries around the world, we can understand the changes in research topics and research methods within the academic field of intangible cultural heritage. However, it is difficult to fully describe the academic field based solely on qualitative descriptions. Therefore, this paper uses CiteSpace citation space analysis software, through statistical analysis, to produce a 'knowledge map'[3] of the current state of the academic field of ICH. The next step would be to lay the foundation for the study of the digital communication of cultural heritage.

First, this paper produces a descriptive analysis of the relevant literature on intangible cultural heritage in the Web of Science database, and performs statistical analysis by date of publication and geographical region of the topic to provide a basis for further research. Next, it analyses the academic field of intangible cultural heritage from the co-citation network (author, research institution and journal), the

scientific field, and identifies the dominant topics referenced in literature.

2. Research data and methods

Research tools

CiteSpace V was used as a tool to analyse the data with 'Time Slice' (time span setting and length of a single time interval); 'Category' (co-occurrence analysis function for interdisciplinary analysis); 'Centrality' (indication by size of the importance of nodes in the map; nodes with an intermediary centrality of more than 0.1 are called key nodes); 'Density' (density of the network, indicating the strength of the connection between nodes); 'Minimum Spanning Tree' (an algorithm which simplifies the network); 'Cluster' (a set of data objects generated by algorithms; objects in the same cluster are similar to each other and different from other clusters); 'Silhouette' (an index to measure the degree of similarity within clusters; a silhouette is a decimal number between 0 and 1. The larger the value, the higher the similarity).

Data source

The paper's data source is the Web of Science Core Collection Database. The keywords 'intangible cultural heritage', 'non-material cultural heritage' and 'non-physical cultural heritage' were used for subject retrieval. The keywords were linked with 'OR' and the time was all in years. 1,838 pieces of a literature were retrieved. After eliminating documents such as minutes of meetings, reviews and editorials, only a core collection of published articles was retained, and the refined database contained 1,097 documents. The last update was on September 30, 2019.

3. Statistical analysis of the data

Descriptive statistical analysis

Distribution by period

Before 2003 there were few studies on the subject of intangible cultural heritage worldwide. Following the adoption of the *Convention for the Safeguarding of Intangible Cultural Heritage* at the 32nd session of the UNESCO General Conference in 2003, procedures were established to inventory and inscribe the existing intangible cultural heritage by all State Parties to the *Convention*. From 2009 to 2012, the line on the graph of international research on intangible cultural heritage was relatively flat, fluctuating slightly, but gradually rising. From 2013 (the 10th anniversary of the *Convention*) to 2019 there was explosive growth, but still no more than 200 studies were published each year [see Figure 1].

Distribution by place

The ten countries that have conducted and published the most research on intangible cultural heritage are the United States (87 articles), China (80 articles), Britain (70 articles), Spain (70 articles), Turkey (66 articles), Australia (62 articles), Italy (46 articles), Brazil (43 articles), France (32 articles) and Canada (25 articles), as shown in Table 1.

Table 1
Countries publishing the most research on ICH.

No.	Frequency	Centrality	Country
1	87	0.13	USA
2	80	0.02	PEOPLES' R OF CHINA
3	70	0.27	BRITAIN
3	70	0.23	SPAIN
5	66	0.00	TURKEY
6	62	0.00	AUSTRALIA
7	46	0.15	ITALY
8	43	0.04	BRAZIL
9	32	0.10	FRANCE
10	25	0.00	CANADA

Countries have been researching ICH for a comparatively short time and the geographical distribution of this research is therefore very uneven, mainly concentrated in European countries, North America and other developed countries.

Co-citation analysis of ICH

Co-citation analysis by author

To understand the co-citation of intangible cultural heritage, The 'Time Slice' was set at one-year intervals; 'Category' was selected as the analysis

object, and 'Top 15' (the top 15 of the most cited documents in each time slice) was selected as the screening standard. The 'Minimum Spanning Tree' algorithm was used to prune the knowledge map, and the results were obtained after running CiteSpace [see Figure 2].

The density of authors in the total knowledge map is only 0.0287, and the structure is relatively loose, but several authors are cited frequently, respectively: UNESCO, Anonymous (i.e. online literature), Laurajane Smith, Richard Kurin, Barbara Kirshenblatt-Gimblett and Janet Blake. Of these, Laurajane Smith has the highest centrality, 0.65, as shown in Table 2.

Table 2
Ranking of the most frequently cited authors.

Rank	Freq.	Cent.	Author
1	284	0.35	UNESCO
2	227	0.18	Anonymous – i.e. on-line
3	128	0.65	Smith, L
4	77	0.47	Kurin, R
5	70	0.21	Kirshenblatt-Gimblett, B
6	51	0.18	Blake, J

Co-citation analysis by research institution

To understand the citation of ICH research institutions, the same steps as those in the 'author's co-citation map' were adopted, the screening standard was 'Top 10', the analysis object was changed to 'Institution', and CiteSpace V software was run to obtain the citation map of intangible cultural heritage research institutions [see Figure 3].

The research institution's co-citation has a density of only 0.0049 and the structure is very loose. In this cluster, the mean silhouette value is 0.1905, so the topics of the clusters are not similar and the research content is quite diverse. The most frequently cited research institutions are the University of Gazi, the University of Córdoba, the National University of Malaysia, the University of Seville and the University of Melbourne, as shown in Table 3:

Table 3
Ranking of most frequently cited research institutions.

Rank	Freq.	Centrality	Research Institute
1	12	0	Gazi University
2	7	0	University of Cordoba
2	7	0	Ankara Haci Bayram Veli University
4	6	0	University of Seville
5	5	0	University Kebangsaan Malaysia
5	5	0	University of Melbourne

Co-citation analysis of periodicals

To understand the citation of ICH journals, the same methodology was repeated, the screening standard was set as 'Top 10', the analysis object was changed to 'Journal', and CiteSpace V software was run to obtain the citation map of intangible cultural heritage journals [see Figure 4].

The total cited density of journals is 0.0438, and the structure is also relatively loose. The five most-cited journals were *Museum International, International Journal of Heritage Studies, Annals of Tourism Research, Tourism Management* and the *Journal of Cultural Heritage*. The mean silhouette value is 0.6318 and the cluster is relatively clear. The cited journals are similar to the research fields, mainly concentrated in the field of humanities and social sciences, covering museum science, cultural heritage science and tourism research as shown in Table 4.

Table 4
Ranking of the most frequently cited journals.

Rank	Freq.	Cent.	Journal
1	148	0.36	MUSEUM INTERNATIONAL.
2	147	0.71	INT. J. OF HERIT. STUDIES
3	102	0.19	ANNALS OF TOURISM RESEARCH
4	74	0.01	TOURISM MANAGEMENT
5	67	0.02	J. OF CULTURAL HERITAGE

The scientific field of ICH

The distribution of the intangible cultural heritage science field was obtained through the analysis of the Web of Science data using CiteSpace. The period was

set from 2003 to 2019. 'Time Slice' was set at the time interval of one year. 'Category' was selected as the analysis object, and the screening standard was 'Top 20'. The 'Minimum Spanning Tree' algorithm was used to prune the map. After running CiteSpace V software, the co-occurrence map of scientific fields in intangible cultural heritage was obtained [see Figure 5].

Currently, the main research fields in intangible cultural heritage are arts and humanities/other topics, humanities, social science/other topics, folklore, social science, hospitality/tourism industry, environmental science and ecology, art, science and technology/other topics and anthropology. The two areas with the highest centrality were humanities (0.37) and science and technology (0.37). The frequency, centrality and fields are shown in Table 5.

Table 5
Main areas of research in ICH.

No.	Frequency	Centrality	Field
1	359	0.06	ARTS & HUMANITIES - OTHER TOPICS
2	261	0.37	HUMANITIES
3	163	0.11	SOCIAL SCIENCES - OTHER TOPICS
4	98	0.03	FOLKLORE
5	86	0.31	SOCIAL SCIENCES
6	74	0.18	HOSPITALITY
7	54	0.05	ENVIRONMENTAL SCIENCES & ECOLOGY
8	44	0.08	ART
9	43	0.37	SCIENCE & TECHNOLOGY–OTHER TOPICS
10	41	0.24	ANTHROPOLOGY

The dynamics of hot topics in ICH research

Hot topics of ICH research

To analyse and summarise the keywords related to intangible cultural heritage research in recent years, 'Time Slice' was set at an interval of one year, the sort was by 'Time', the analysis object was set to 'Keywords', and the screening standard was set to 'Top 30' for the co-occurrence analysis. The results are shown in pg. 192, Figure 6.

In addition to intangible cultural heritage, 'cultural heritage', 'intangible heritage' and 'heritage' were taken as the main keywords; the literature mainly focuses on the discussion of UNESCO, tourism, authenticity, identity, culture and management, with the frequency, centrality and keywords shown in Table 6.

Table 6
Keywords used for this study.

No.	Frequency	Centrality	Keyword
1	153	0.11	Intangible Cultural Heritage
2	121	0.29	Cultural Heritage
3	89	0.22	Intangible Heritage
4	70	0.20	Heritage
5	66	0.17	UNESCO
6	52	0.16	Tourism
7	43	0.46	Authenticity
8	39	0.35	Identity
9	37	0.22	Culture
10	21	0.11	Management

Evolution of 'hot topics' in ICH research

To study the evolution of 'hot topics' in the field of intangible cultural heritage, the research was divided into three periods, 2003-2008, 2009-2014, and 2015-2019, and the changes in the most popular research topics were analysed. The time interval was set as 'Time Slice' (every year) and sorted by 'Time'. 'Keywords' was set as the 'Analysis Object', and 'Top 50' was set as the screening standard for the co-occurrence analysis. Using the 'Minimum Spanning Tree' algorithm, the map was trimmed, and CiteSpace V software was run to assemble the multi-stage keyword co-occurrence map (see Figure 7 to Figure 9).

The period between 2003 and 2008 represents the initial stage of research into ICH. The overall research volume was small, and the keywords were 'Cultural Heritage', 'Japan', 'Heritage', and 'the United Nations' (see Table 7). The research focused on the field of arts and humanities, including the definition of related ICH and the impact of ICH on urban development. Simultaneously, scholars began to pay attention to the role of intangible cultural heritage and environmental

science and ecology, mainly focusing on the sustainable development of ICH.

Table 7
List of the most commonly used keywords cited in ICH research 2003-2008.

No.	Frequency	Centrality	Keyword
1	2	0.00	Cultural heritage
2	2	0.00	Japan
3	2	0.00	Heritage
4	2	0.00	UNESCO

From 2009 to 2014, the amount of research on intangible cultural heritage rose steadily. The main research keywords were 'Intangible Cultural Heritage', 'Intangible Heritage', 'Cultural Heritage', 'Authenticity', 'Heritage', 'Tourism', 'the United Nations', 'Culture', 'Identity' and 'Memory' (see Table 8). The research still focused on the field of arts, humanities and related fields, but expanded to cover folklore, anthropology, archaeology and in other directions. In the field of management, scholars began to pay attention to the process of integrating traditional cultural heritage and 'creative tourism'.

Table 8
List of the most commonly used keywords in ICH research 2009-2014.

No.	Frequency	Centrality	Keyword
1	30	0.05	Intangible Cultural Heritage
2	29	0.31	Intangible Heritage
3	19	0.14	Cultural Heritage
4	12	0.28	Authenticity
5	11	0.19	Heritage
6	10	0.16	Tourism
7	10	0.21	UNESCO
8	7	0.18	Culture
9	7	0.36	Identity
10	7	0.21	Memory

From 2015 to 2019, the main research keywords were 'Intangible Cultural Heritage', 'Cultural Heritage', 'Intangible Heritage', 'Heritage', 'United Nations', 'Tourism', 'Identity', 'Authenticity', 'Culture' and 'Conservation' (see Table 9). Compared to the previous periods, the research keywords had not changed much, and the research field remained dominated by the humanities and related fields. However, scholars had explored ICH in many other disciplines, including computer science, spectroscopy, geography, chemistry and other fields. Case studies on the important role of digital technology in the transmission and conservation of ICH began to appear.

Table 9
List of the most commonly used keywords in ICH research 2015-2019.

No.	Frequency	Centrality	Keyword
1	123	0.14	Intangible Cultural Heritage
2	100	0.09	Cultural Heritage
3	60	0.08	Intangible Heritage
4	57	0.11	Heritage
5	54	0.08	UNESCO
6	42	0.20	Tourism
7	32	0.21	Identity
8	31	0.23	Authenticity
9	30	0.06	Culture
10	21	0.13	Conservation

4.Characteristics of the academic field and changing trends in ICH

Characteristics of the academic field

The unstructured nature of ICH research

Intangible cultural heritage was a latecomer to the field of culturology. There have only been 1,000 core articles since 2003, and the most cited pieces of literature are not academic journals, but books and online articles. The second most cited documents are those related to basic concepts. The *Convention for the Safeguarding of Intangible Cultural Heritage* issued by UNESCO and other documents relating, for example, to ICH Domains also feature quite frequently in scholarly articles.

Although ICH has been extensively explored in communication, literature, the arts, and humanities, there is no deep theoretical support for its study.

Numbers of research papers on ICH are increasing year by year, but their geographical distribution is uneven. The top ten countries producing research on ICH are mainly in Europe, the United States and other developed countries. The list only includes three developing countries, namely China, Brazil and Turkey, all countries that have had relatively fast economic development in recent years.

At present, the research methods are still mainly based on qualitative research field investigations, case studies and records, sustainability and protection (safeguarding); quantitative research is relatively rare. There is not much cooperation between research teams in the academic field of ICH, and the networks of research institutions are relatively unstructured, with almost no connection between them. Research results are mostly about personal achievements and there is almost no cooperation between countries. There is, therefore, still a long way to go before the discipline of intangible cultural heritage becomes scientific and systematic.

Large differences in the digital exploration of different categories of ICH

Digital technology creates new opportunities for the safeguarding and application of intangible cultural heritage. In the field of computing, research on ICH mainly focuses on digital transmission and demonstration, especially in relation to traditional performances and traditional craftsmanship.

Digitisations of traditional performances, using motion capture technology, provide users with intuitive gesture control and a unique user experience that can promote the acquisition of knowledge [Volioti et al: 2018]. Some scholars have proposed using a multi-entity Bayesian network (MEBN) as the ontological framework for dance analysis to improve the accuracy of choreography, dance movements and rhythmic synchronisation [Chantas et al.: 2018]. Traditional theatre and performance can also be encoded into digital projects, and art exhibitions can be delivered using visual systems [Lombardo et al.: 2016]. Additionally, 'Kinect' (a line of motion-sensing devices produced by Microsoft and first introduced in 2010) can be used to transform traditional theatre, and users can use their own body movement data to create digital animations [Fengmin: 2007].

The protection of intangible cultural heritage is a human-centred and dynamic process. Compared with other categories of ICH, the digitisation of traditional performances can involve aesthetic imagination and narrative, offers the advantages of visualisation and practice, and such performances are relatively easy to record and preserve. Digitisation also adds to scholars' exploration of such intangible elements in a unique way.

Trends in the academic field of ICH

Interdisciplinary development and intangible cultural heritage education

The protection and transmission of ICH is no longer confined to the humanities. The extensive attention to intangible cultural heritage in different scientific fields has created the potential for collaborative interdisciplinary research.

The interest in ICH in the field of science and technology is increasing by the year, and its research has branched into fields including computer science and computer theory and methods. Currently, the article numbers are still relatively small, however, according to the centrality ranking of scientific research in the field of ICH, it is now on a par with the humanities in terms of the amount of research being carried out.

Multi-disciplinary and interdisciplinary links between ICH and computer science, environmental science and materials science are gradually being established and interdisciplinary research between the arts and sciences has become more prominent. These interdisciplinary studies provide comprehensive and multi-faceted experiences and references for the dynamic transmission of intangible cultural heritage in different regions and categories.

The needs of different types of users in ICH education are being met through the creation of digital platforms [Katsouli et al.: 2017]; these may be addressed through supporting and implementing collaborative design and planning innovative learning and teaching activities based on digital networks [Ott et al.: 2015]. The development of digital technology has also opened up innovative solutions in the field of public education and conservation.

Shared innovation in cross-cultural communication

In the cross-cultural communication of ICH, it is necessary to understand the context of local heritage to enable the audience to have a full understanding of the interaction between global cultural policies and local traditions. We should fully promote the commonality, coexistence and sharing of world culture.

Cross-cultural communication about ICH is mainly divided into local sharing and network sharing. Local sharing often means the vigorous development of the cultural tourism industry by countries with rich cultural heritage resources. Indigenous people frequently use ICH to attract tourists and interact with them at tourism venues [Quinn: 2007].

The spread of intangible cultural heritage is a process of continuous appreciation. In the era of artificial intelligence, using different digital media for network sharing can disseminate information about ICH to different regions in a real-time, efficient and convenient way. Furthermore, the value and effectiveness of the cross-cultural communication of ICH have become increasingly prominent. However, there remains a need for more effective ways of sharing intangible cultural heritage.

Exploration of sustainability in inheritance and transmission

A deep awareness of culture is often required for the interpretation and transmission of intangible cultural heritage. Subjective experiences and the identity of the audience members can contribute to the establishment of an inclusive concept of ICH [Su: 2018].

With modernisation and globalisation, socio-economic changes are taking place, challenging traditional cultural practices and the community's concept of what these comprise. Measures are being taken to maintain cultural identity and traditional customs to retain their relevance and viability for younger audiences [Lees: 2011]. They promote a more creative exploration of ICH and its continuous innovation - the sustainability of intangible cultural heritage requires dynamic initiatives.

It is important to safeguard and disseminate intangible cultural heritage through digital archives. In the field of ICH, the formation of digital collections that integrate terminology, documentation and databases promotes the visualisation of intangible cultural heritage and provides a variety of knowledge services like intelligent retrieval (finding information relevant to users needs) and intelligent recommendation (a tool used by developers to predict recommendations tailored to user preferences).

5. Discussion and conclusions

The research on intangible cultural heritage is based on the systematic construction of disciplines. The adjustment of the system structure will inevitably produce an updated perspective on research. With the impact of globalisation and new technologies on social structure, knowledge styles, physical experiences and cultural forms, the expression and dissemination of ICH tends to be done with communication tools and by carriers of digital technology. Based on the characteristics of this new research structure, this study has conducted a comprehensive attribution and analysis of the academic field of global ICH research through scientific knowledge maps, identifying the characteristics and models of ICH research globally and analysing the characteristics of the research in different regions. The dynamic development of research on ICH is shown in a series of tables and diagrams and we suggest ways in which this research could be developed. This study provides scientific, standardised and systematic data for this research and promotes the construction of related theoretical systems.

Nonetheless, there are limitations to this paper. The data used in this article is obtained through retrieval. A restricted number of search terms was used, and the literary database, the Web of Science, was the sole source for the quantitative analysis of the current state of research on ICH. Only papers written in English were analysed, although a great deal of research is conducted in other languages by scholars from culturally rich countries such as China, Spain, Turkey and other countries, which would repay analysis and could form the basis for future research.

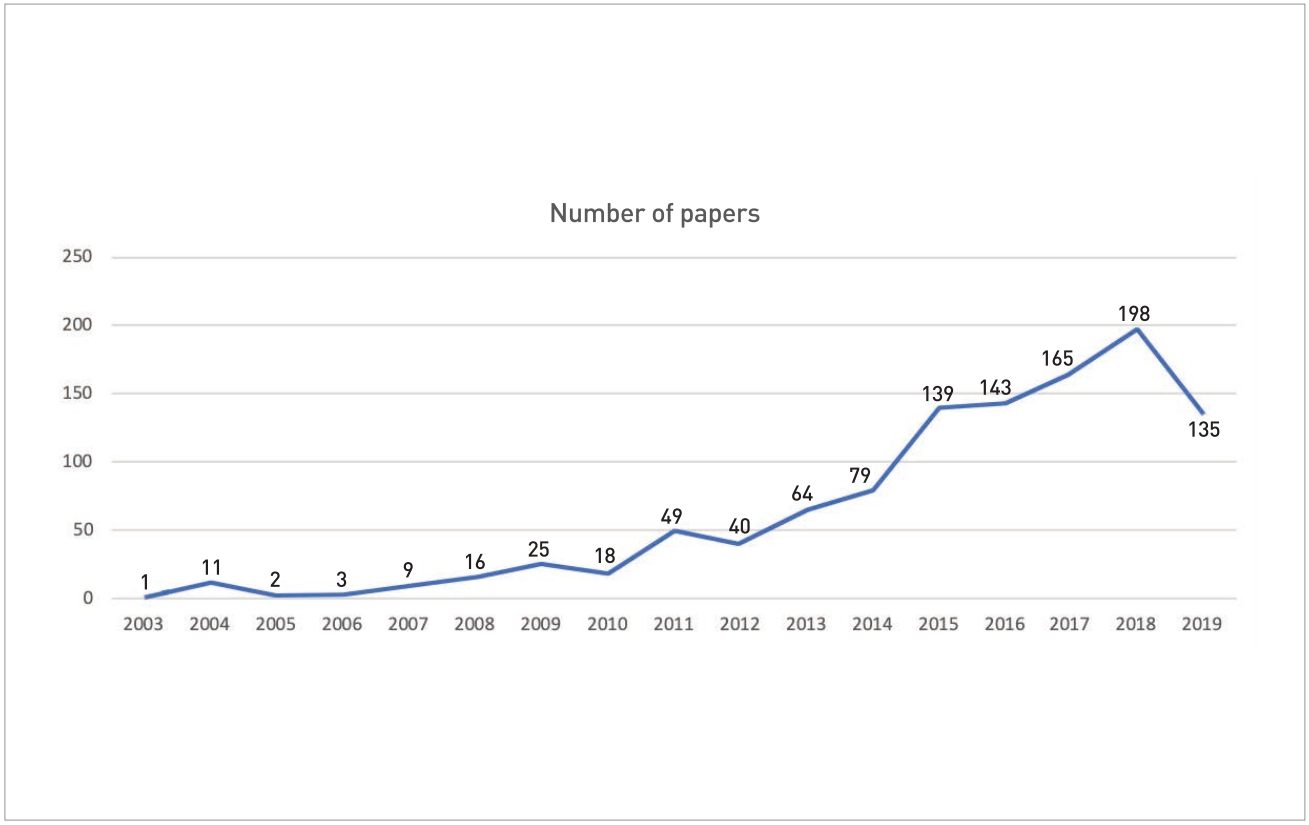


Figure 1
Changes in the number of research papers on ICH 2003-2019.

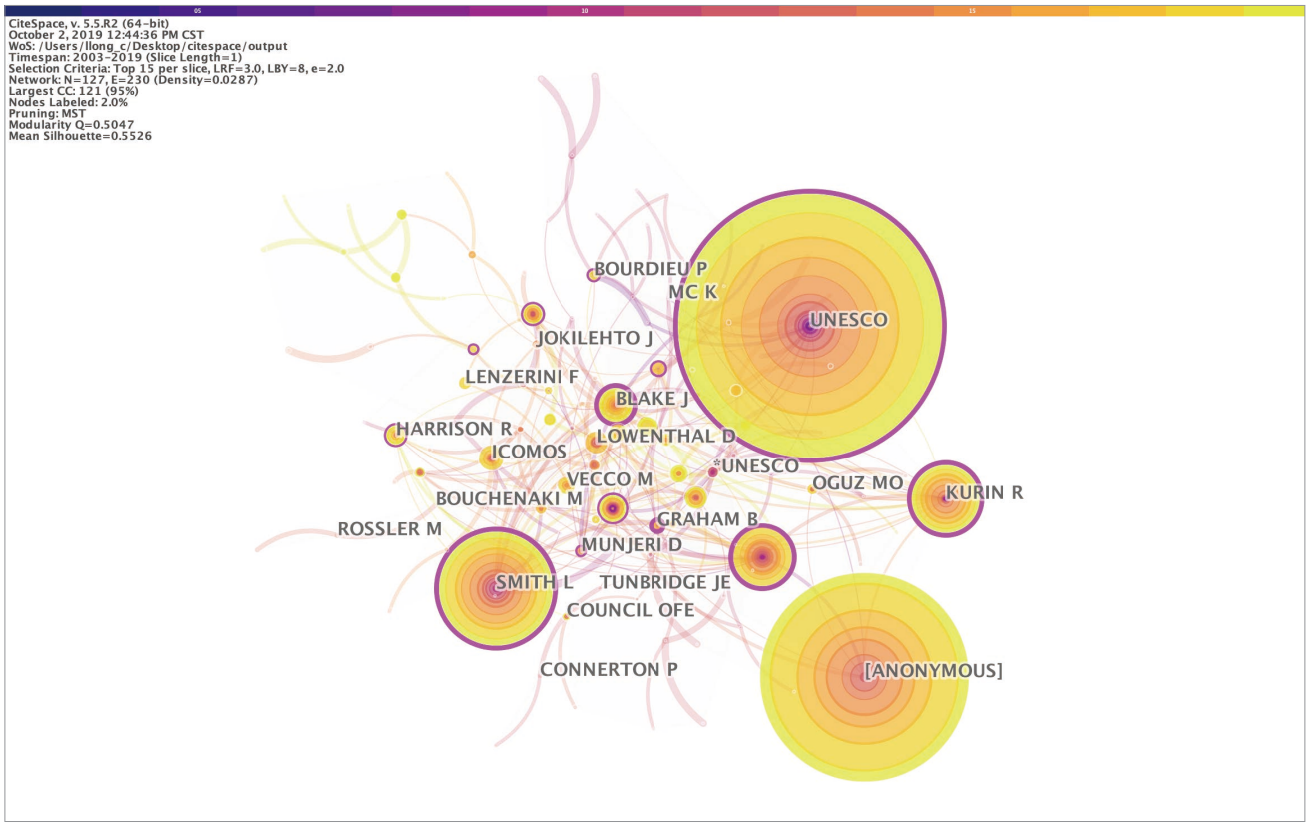


Figure 2
Co-citation knowledge map of authors.

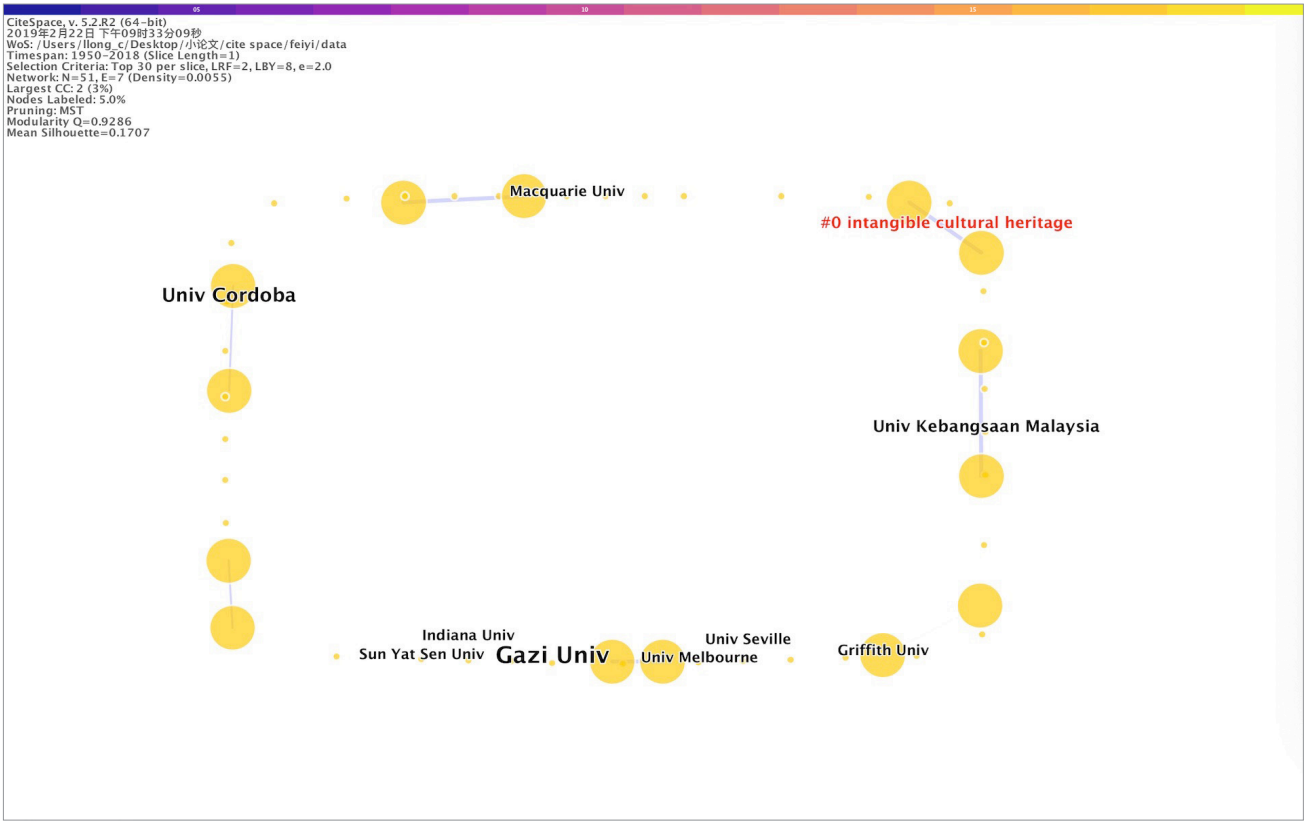


Figure 3
Co-citation knowledge map of research institutions.

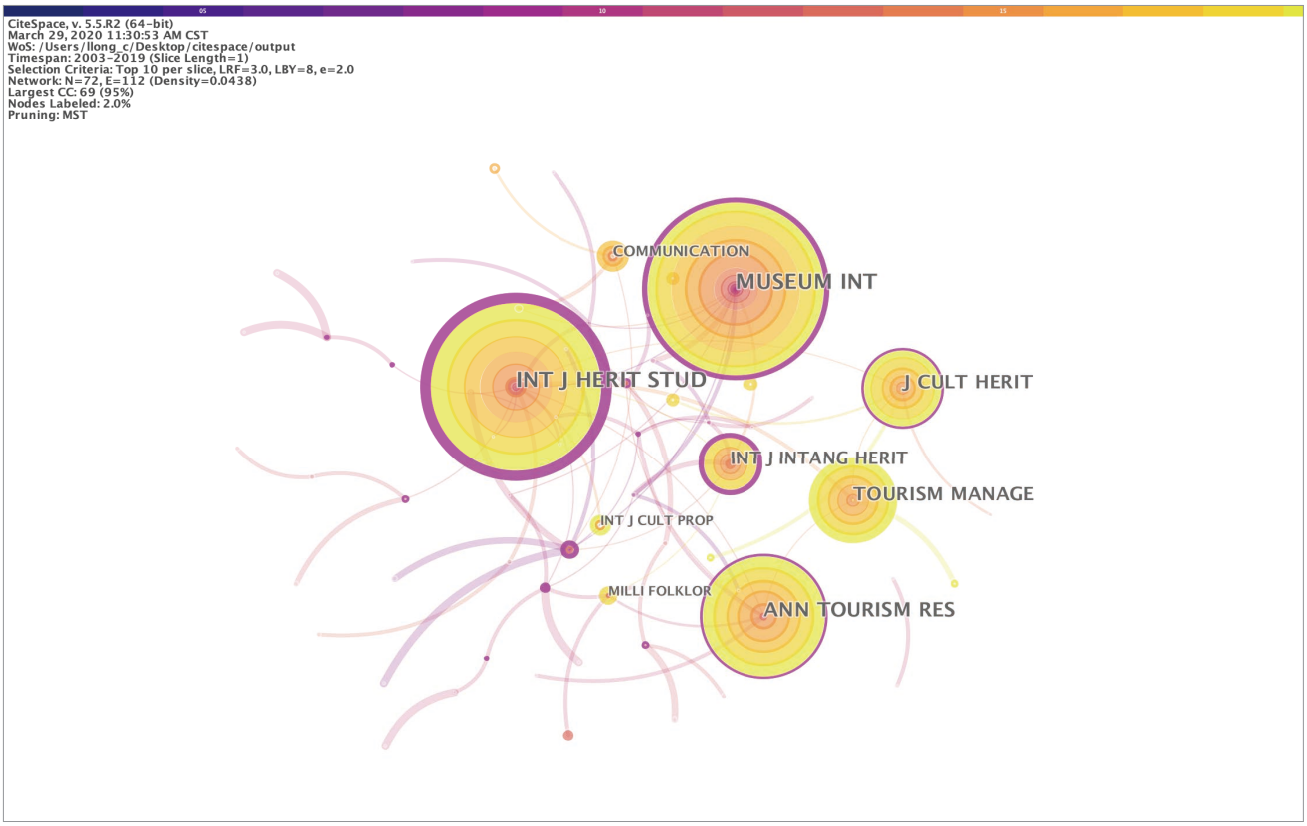


Figure 4
Co-citation knowledge map of journals.

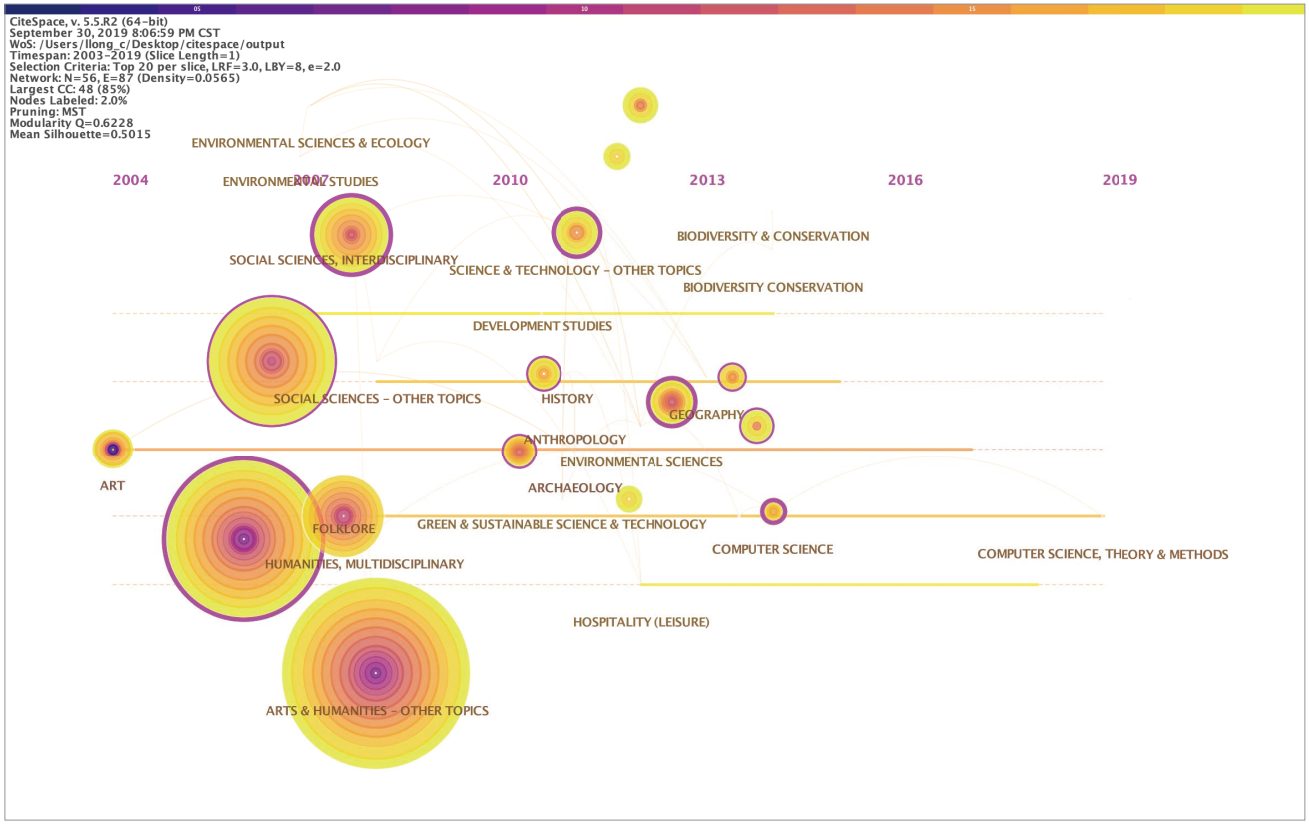


Figure 5
Scientific co-occurrence map of ICH.

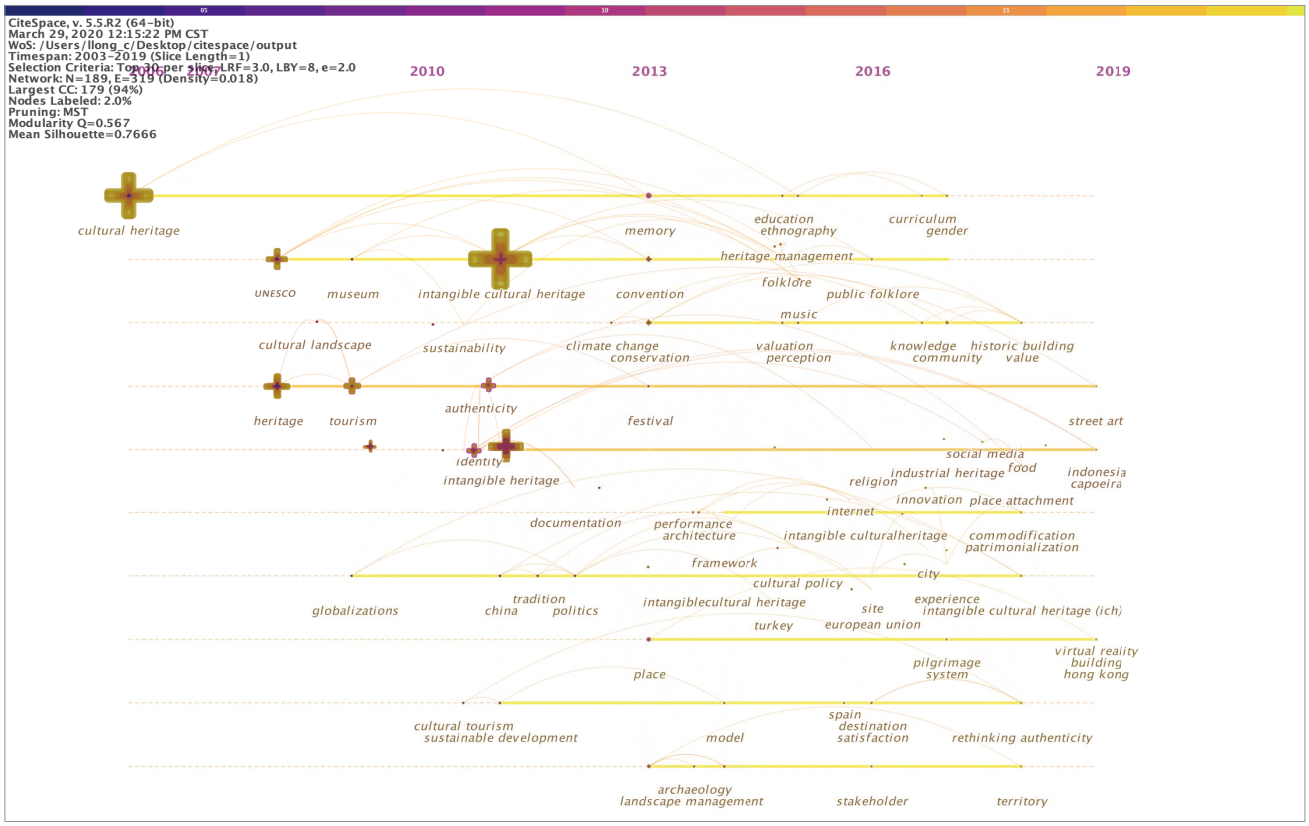


Figure 6
Analysis of the co-occurrence of keywords in ICH research.

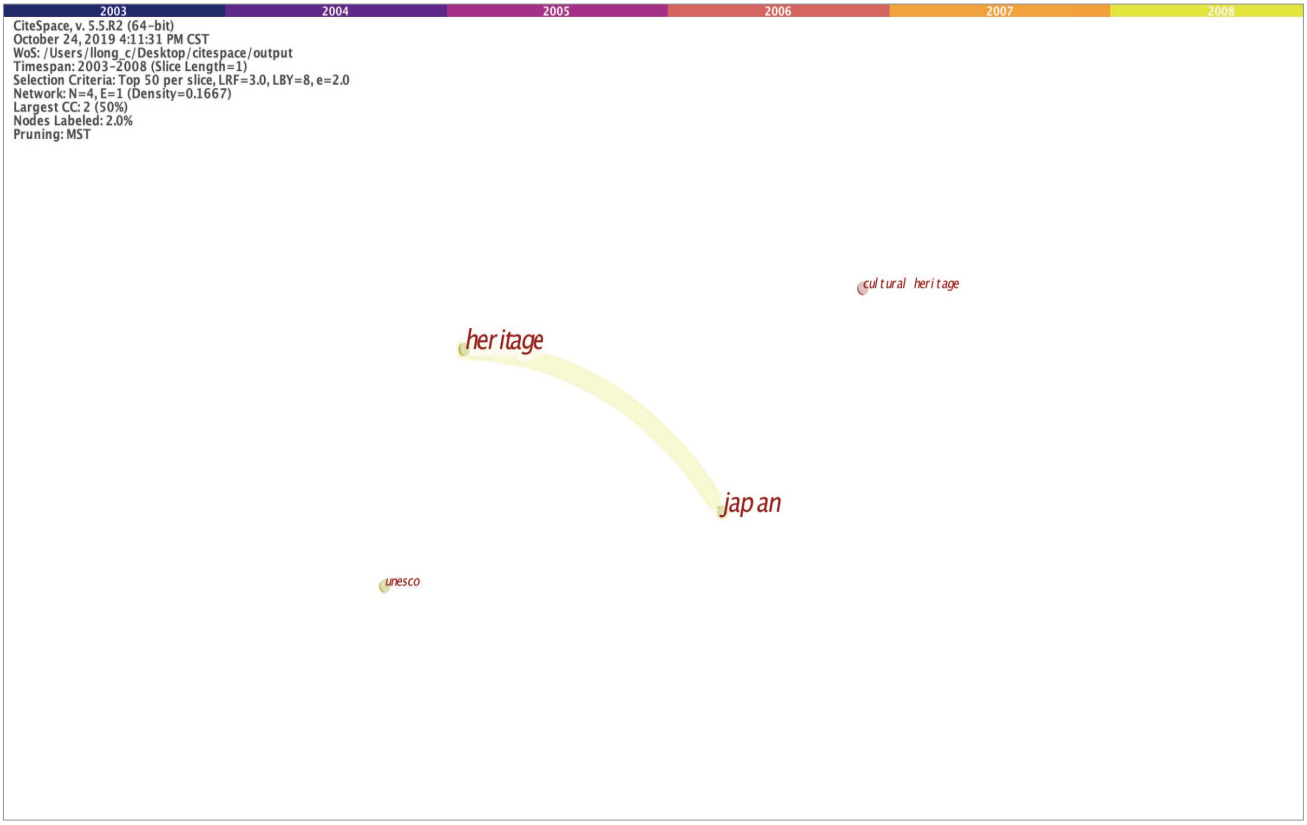


Figure 7
Analysis of the co-occurrence of keywords in ICH research 2003-2008.

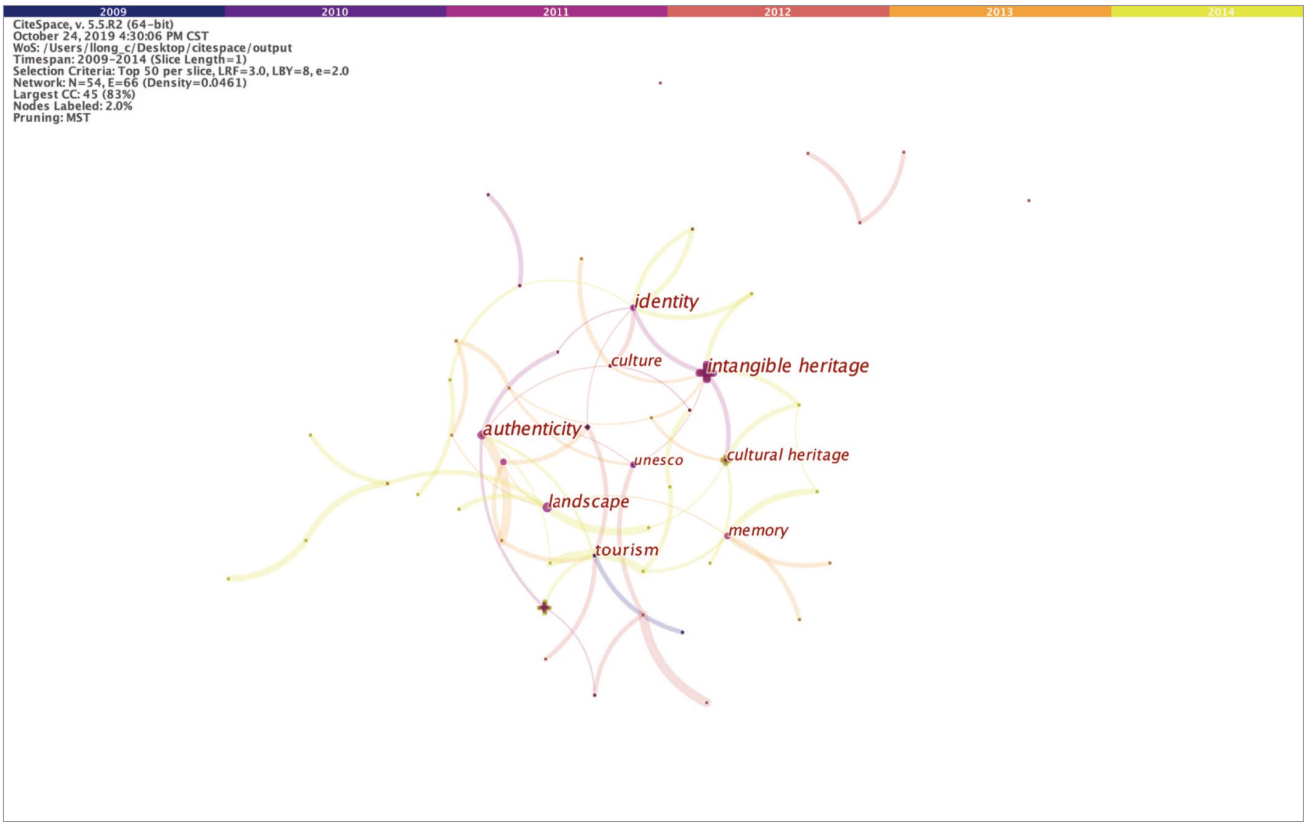


Figure 8
Analysis of the co-occurrence of keywords in ICH research 2009-2014.

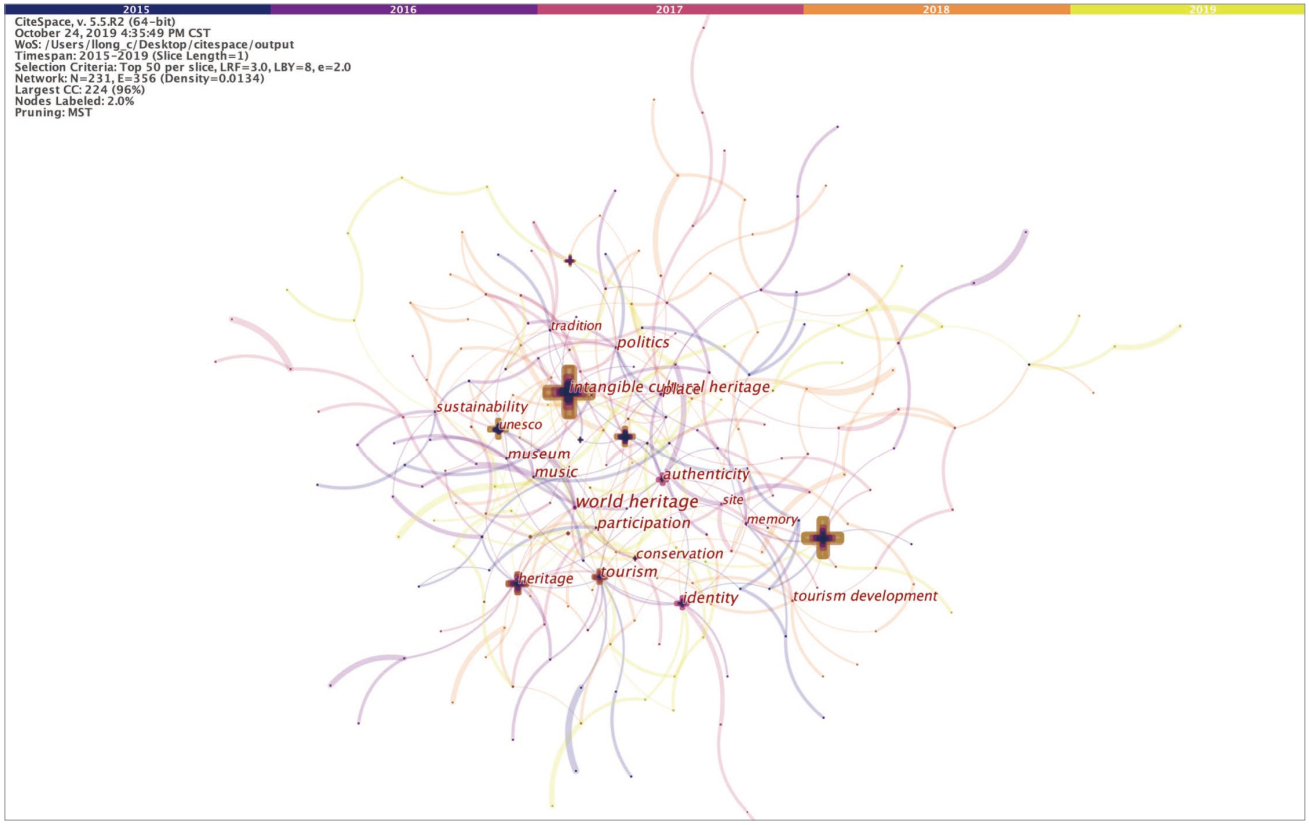


Figure 9
Analysis of the co-occurrence of keywords in ICH research 2015-2019.

ENDNOTES

1 'Hot topic' refers to the emergence of popular subjects as a result of recent research.

2 'Vertical inheritance' is the term used for the transmission of genes from parent to offspring; in this context it refers to the recognised process of intergenerational transmission in the field of ICH.

3 'Visualisation technology' is used to describe the knowledge resources and their carriers. These resources and their interrelationships are mined, analysed, constructed and displayed in the form of a 'knowledge map'.

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