Literature review using scientometric methods in the field of copyright

Ionela Maria Bârsan
Assistant, PhD
Transilvania University of Brașov
E-mail o.barsan@yahoo.com

The literature review is the most important step in achieving scientific research. The large amount of information can be analyzed using scientometric methods. It was downloaded a database of scientific production published in the last five years in the Clarivate Analitycs database — Web of Science - in the field of copyright. The downloaded database is analysed with VOS Viewer, scientometric analysis software. The subject analysed is used in many areas of research, as well as pure copyright, but also associated with the fields of medicine, nanoelectronics, genetics. The method used can be multiplied for any topic or domain.

Keywords: copyright, Web of Science, VOS Viewer, scientometry, literature review

1. Introduction

The literature review requires the presentation of previous research on a particular subject, focusing on what is known, but also on what is not yet known. This allows future directions of research to be established. The literature review should include all themes and main sub-themes identified in the general topic chosen for the study. (Andrew, 2013)

The traditional review of scientific literature is often random and may lead to biased conclusions, often analysing studies with non-representative samples in a non-systematic and non-critical manner. On the other hand, systematic analyses hinder the natural tendency of researchers to be influenced by prejudices. Authors often cite other authors simply because their studies support their own results, not because the study would necessarily be reliable. (Petticrew, 2006)

Of course, researchers find it increasingly difficult to keep up to date with the latest research due to the explosion of scientific studies in the last 20 years. Finding information is not difficult, but identifying relevant and reliable information is really a challenge. (Chalmers, 1993)

Systematic analyses of literature are a method of research that allows understanding large bodies of information and mapping areas of uncertainty and identifying subjects that have not been sufficiently studied and require further research. In addition, systematic reviews also point to the directions in which there is abundant false certainty, in thke sense that we believe we know more than we know, but in reality there is little convincing evidence to support our beliefs. Research can only be understood in context, and a key element of this link is the results of other studies testing the same hypotheses on a similar population. (Petticrew, 2006)

Systematic literature review is defined as “a review of evidence of a clearly formulated question using systematic and explicit methods to critically identify, select and evaluate relevant primary research and extract and analyse data from studies that are included in the review.”(Systematic review, 2021) The systematic literature review aims to provide a comprehensive and impartial synthesis of many relevant studies (Aromataris, 2014) on a specific topic. (Moler, 2016)This involves applying a special methodology similar to, to a certain extent, sociological research to test a single hypothesis or related impotezes. *Meta-analysis* uses a specific

Revista Română de Biblioteconomie și Știința Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 · Volume 17 Issue 2 2021 pp. 43-51
https://doi.org/10.26660/rrbsi.2021.17.2.43

2. Methodology

As a representative sample of the population of scientific works in *the field of copyright*, the *Web of Science* database was chosen. Using the bibliographic data from this database, this paper tries to identify current and future directions of *copyright research*. The search was carried out on 28 September 2021 and 441872 documents were identified. It should be noted that in addition to articles and volumes of conferences, other types of documents are indexed in the *ISI* database, such as editorials, notes, bibliographies, reviews, etc., which have not been taken into account. Thus, the resulting works were refined according to the type of deocuments, with only the scientific articles and works published in the conference volumes being selected, resulting in 416467 works. We have refined the research for the last five years, 2018-2021, resulted in 27227 scientific papers that were included in the scientometric analysis.

Primary data has been downloaded as *plain text files* from the *Web of Science database — WoS*. The results were analysed using *VOS Viewer software* version 1.6.16, (VOS Viewer, 2020) which allows scientific mapping to analyse the content of titles and summaries of scientific publications. Thus, the term identification function of the VOSviewer program was *used* to systematically identify the key terms in the database (*co-word analysis*) and to organise the large text catastrophes in a semantic map, ignoring the elements relating to the structure of summaries and copyright statements that could be included. Key topics in academic publications are usually phrases formed by nouns followed by another noun or adjective. Subsequently, a threshold for the occurrence of the term was applied, so that a term must appear in at least 25 different articles to be taken into account for inclusion in the semantic map. This threshold is implicit in the program and helps to ensure reliable placement of relationships between terms in the map, eliminating nouns that include possible spelling mistakes or meaningless.

3. Analysis and interpretation of scientometric research data

A total of 485 authors contributed to the writing of the 27238 works in the 5 years analysed. The main authors are presented in Figure 1 according to the number of publications. The results revealed that although in the sample resulting from the application of filter 2 (18.646 works), the most productive author is Wang, Y. with 114 works.

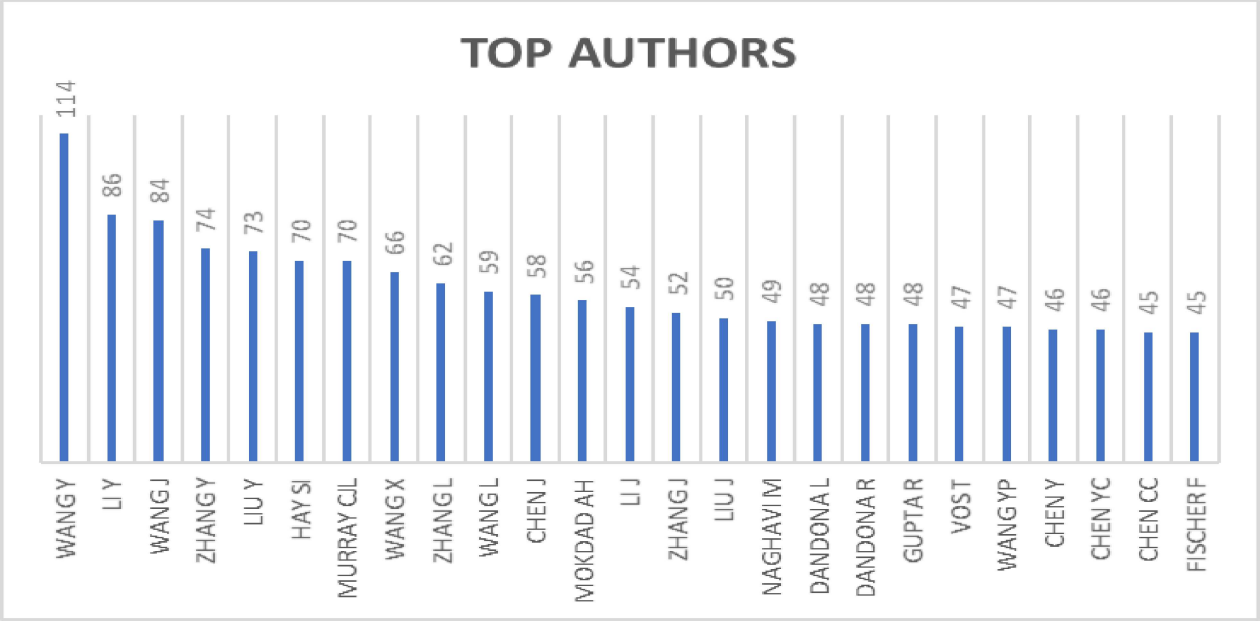

Figure 1: *Copyright Top Authors*

Following the analysis of the contribution of different countries to the development of Copyright in 2018-2021, it is noted that publications belong to authors from 185 countries, therefore the field has developed considerably in different regions of the world. The countries that contributed the most are presented in Figure 2.

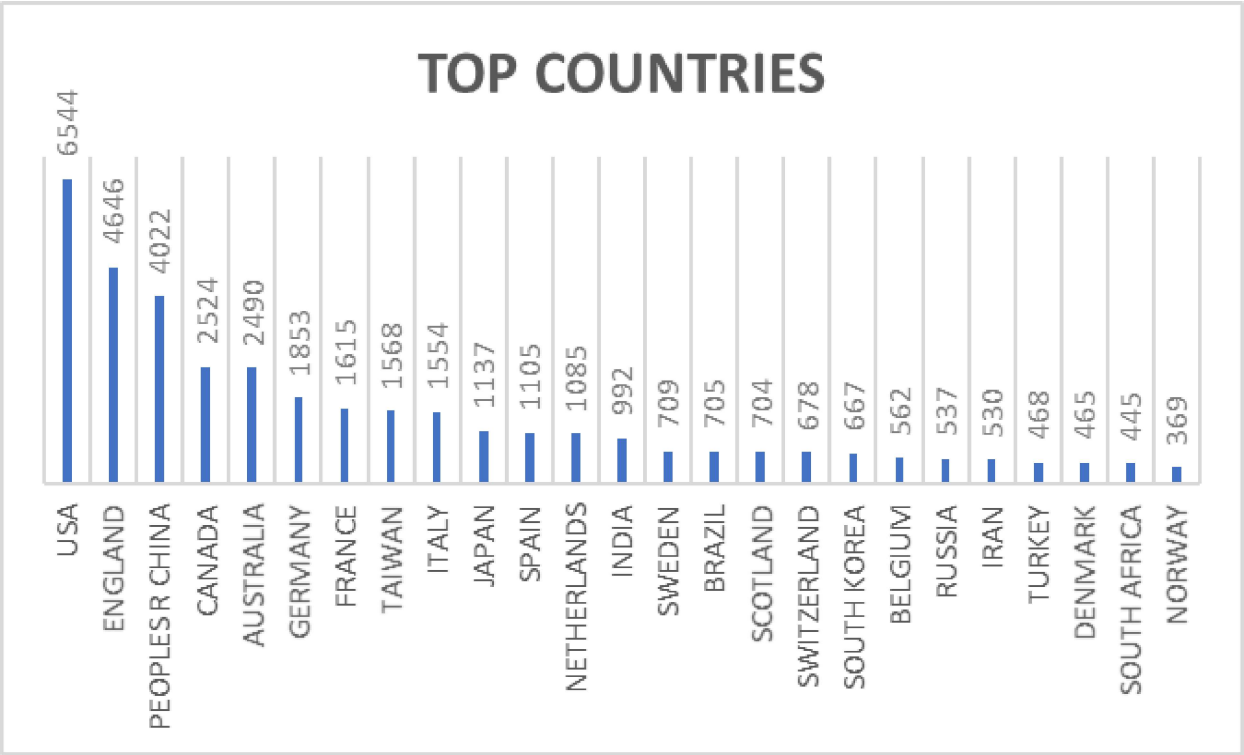

Figure 2: *Top countries in the field of Copyright*

It is interesting that the results show that 14 countries account for 95.3 % of the total scientific output in the sample analysed, while the remaining 117 countries hold 50.87 %. Therefore, there are many international collaborations, with authors from different countries working together on a single paper.

The vast majority of the works included in the sample are written in English because academic journals usually impose this requirement and, at the same time, publication in an international language ensures a wider target audience and greater chances that the work will be cited and have an impact in the academic community. As can be seen in Table 3, 46 works in Spanish, 47 works in Russian and 47 works in the Turkish language are included in the selected sample. This will in no way influence the scientometric analysis, as all articles published in a language other than English include the title and the summary also in English.

Table 2: *Linguistic distribution of works*

Language	Number of documents	% of 27238
English	26996	99.134 %
Spanish	46	0.3 %
Russian	47	0.1 %
Turkish	46	0.1 %

VOSviewer version 1.6.16, a software tool for building *and* viewing bibliometric networks, was used to map the results of scientometric analysis. These networks may include: individual journals, researchers or publications and may be built on the basis of citation, bibliographical coupling, co-reading or co-author relationships. *VOSviewer* also provides text mining functionalities that can be used to build and view networks for co-appearance of important terms, keywords or descriptors, extracted from a text of scientific literature.

A relational map was created based on bibliographic data downloaded from *WoS*. For the analysis of the co-authors, we selected as an analysis unit "authors", ignoring documents with more than 25 authors. The minimum number of documents for an author has been selected to be three. This resulted in 8155 authors, of which only 424 authors had a minimum of three documents. The resulting map is illustrated in the figure below. There are 147 authors, distributed in 17 groups, linked to each other. These links consist of 291 links, with 500 references being quoted jointly. The closer the authors are in representation on the map, the stronger the bond. This analysis is very useful for researchers, because when studying a particular subject, they can see which authors have studied this issue before and have a greater influence in the academic community.

Comparing the data with those in Figure 3, it is noted that the authors with the most works are not necessarily the most influential, except for the first 2, namely Nicolaide, K.H. and Myer Landon.

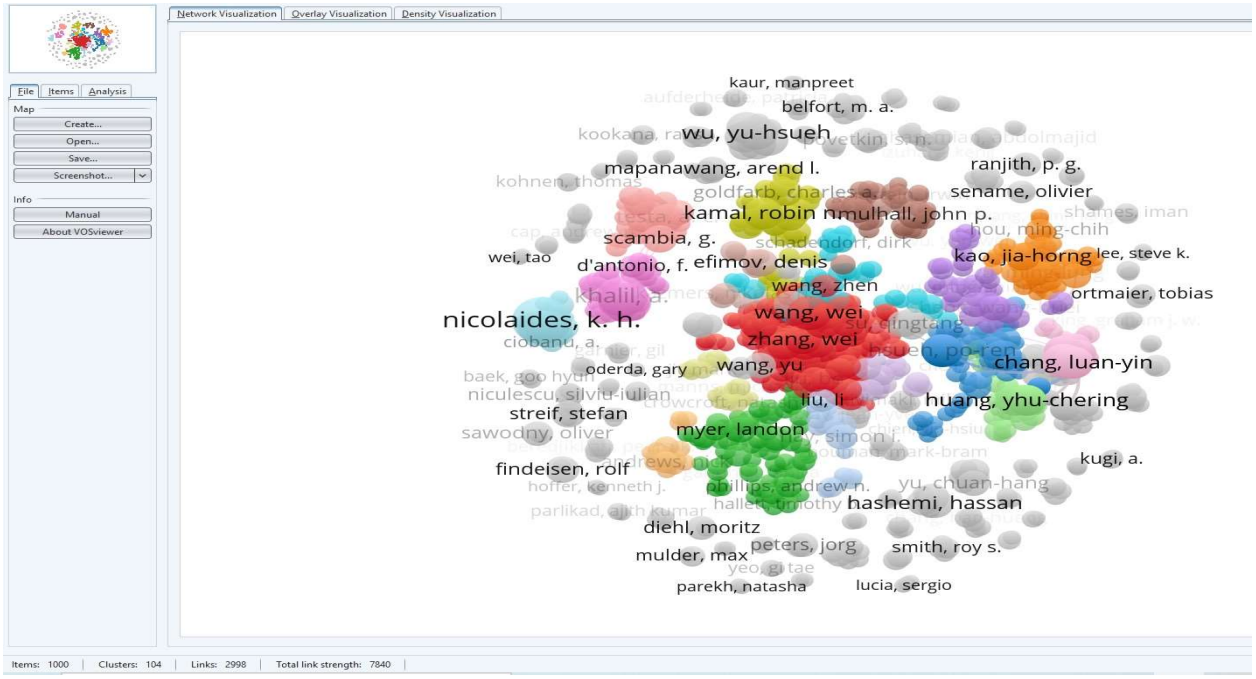

Figure 3: *Collaboration between authors in the field of Copyright*

In the following figure we have the same visualisation map, but overlapped. It highlights the period (average year calculated by the programme) during which the authors published. Of the authors who have published more recently and have a greater influence are Nicolaides K.H, Wang Wei, Huang Li-Min.

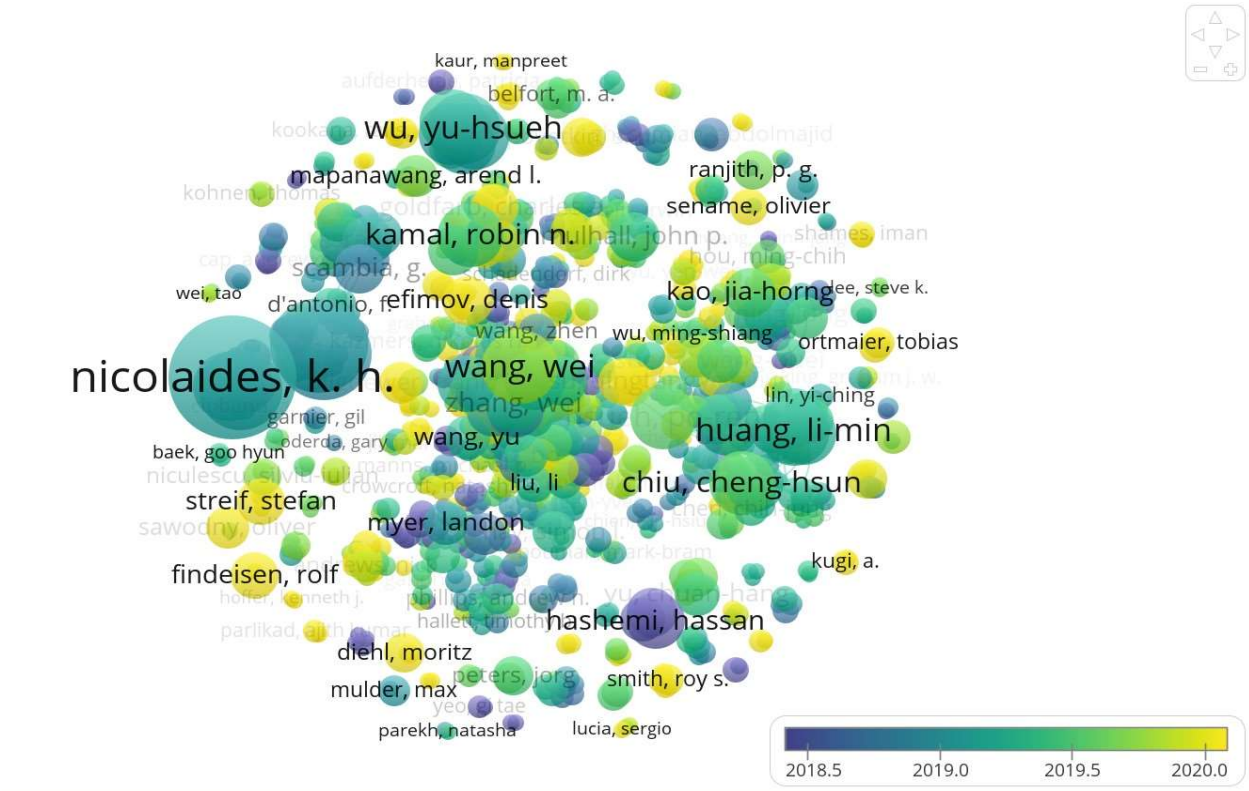

Figure 4: *Superimposed static map — collaboration between authors and average publication Period*

The next step was to create a semantic map based on the co-appearance of terms in the summaries and keywords of the works downloaded from the Web of Science. Finally, VOSviewer grouped 695 terms, resulting in a semantic map of five thematic groups (clusters), with 119142 links between the terms. The location of terms on the map is determined by the program's mapping algorithm, which minimises the difference between the strength of the association and the distance between two terms so that the terms that tend to co-approve in the analysed content are placed closer to each other.

The program offers four different map views, each providing different information.

Figure 5 illustrates an overlapping view of the semantic map, which allows us to identify trends, but also topics that are not necessarily of interest anymore. Given that the analysis is carried out for a recent period of only 5 years, we can say that, in fact, all the issues addressed are still present. However, the topics that are most recently dealt with are marked in dark orange and red. It should be noted that the year of publication included in the legend is a calculated average value, taking into account all the articles in which the term is found.

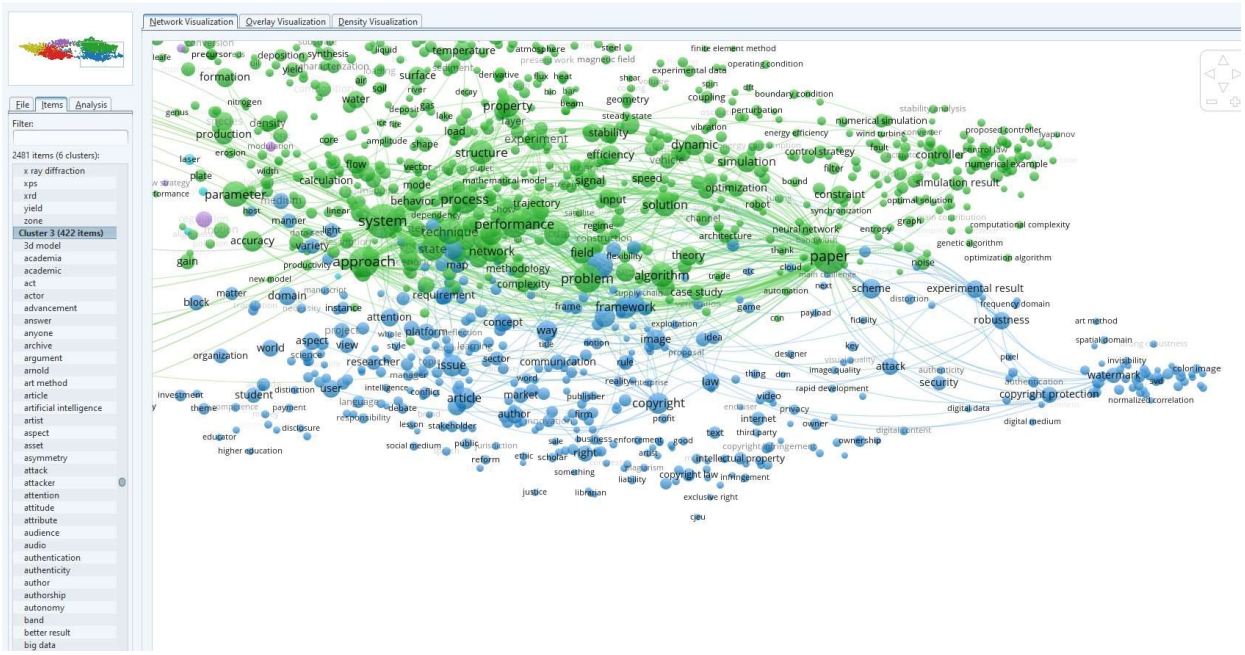

Figure 5. Overlapping view of semantic map

In the density view map (Figure 6) colours range from yellow blue, indicating the number of scientific papers associated with topics in a given space on the map. Yellow indicates highly studied subjects, while green and blue indicate a lower intensity of research and therefore there may still be unresolved or under-researched aspects.

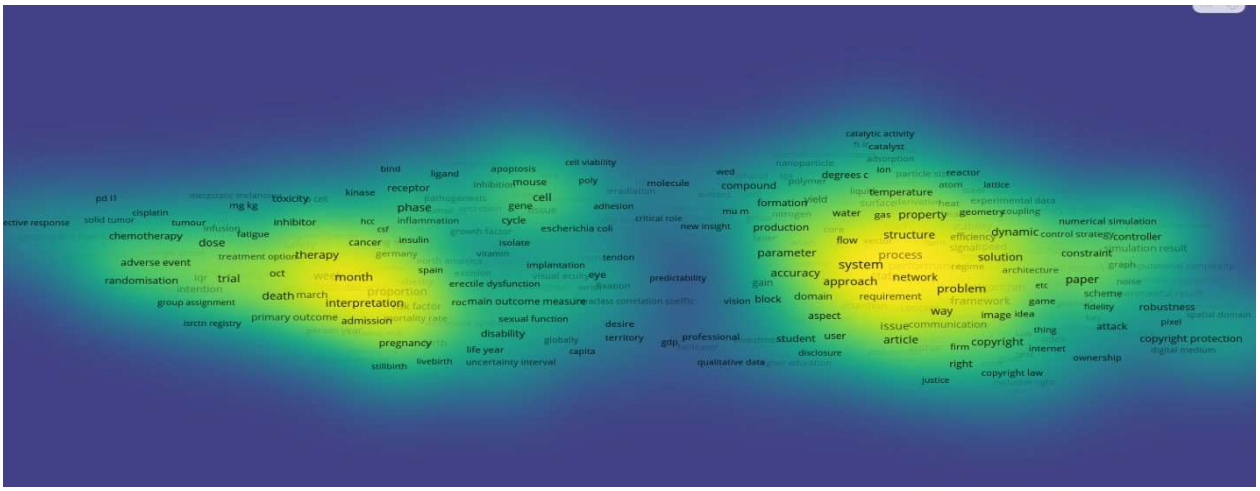

Figure 6. *Semantic density visualisation map*

Another analysis that has been carried out is that of the co-appearance of keywords. Only keywords that appeared at least five times were considered. Thus, out of 10.694, 1.140 met the established condition. Depending on the strength of the links established by the VOSviewer program, only the first 1000 keywords were included. This analysis resulted in 6 thematic groups.

Another new group was formed following the division of the thematic group 3 from the previous analysis, including only the terms related to copyright, article. (Figure 7)

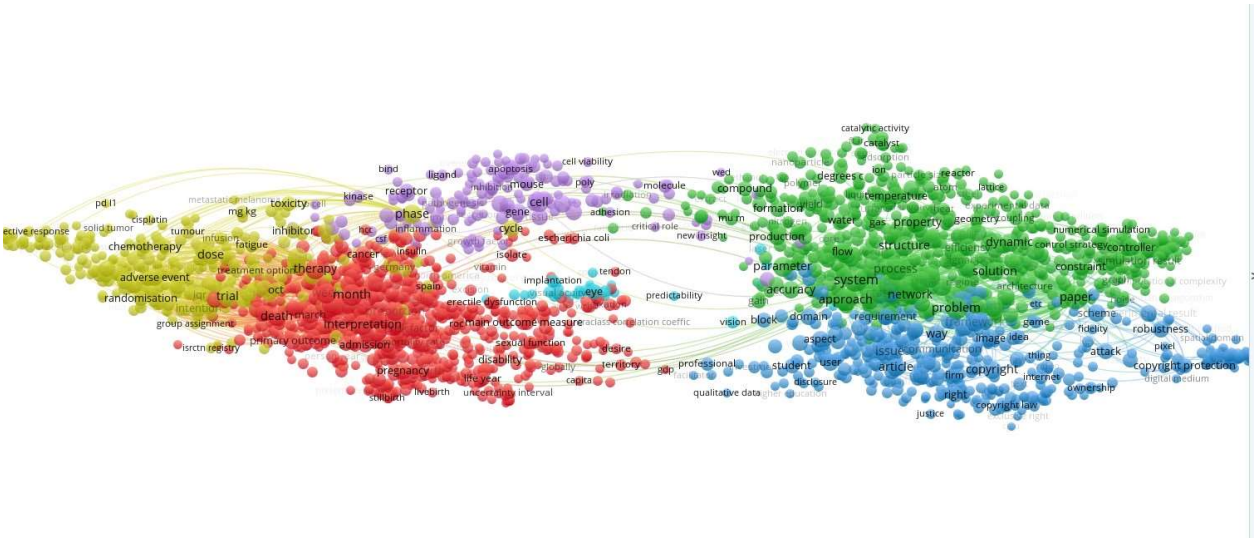

Figure 7. *Semantic map view of keyword co-appearance*

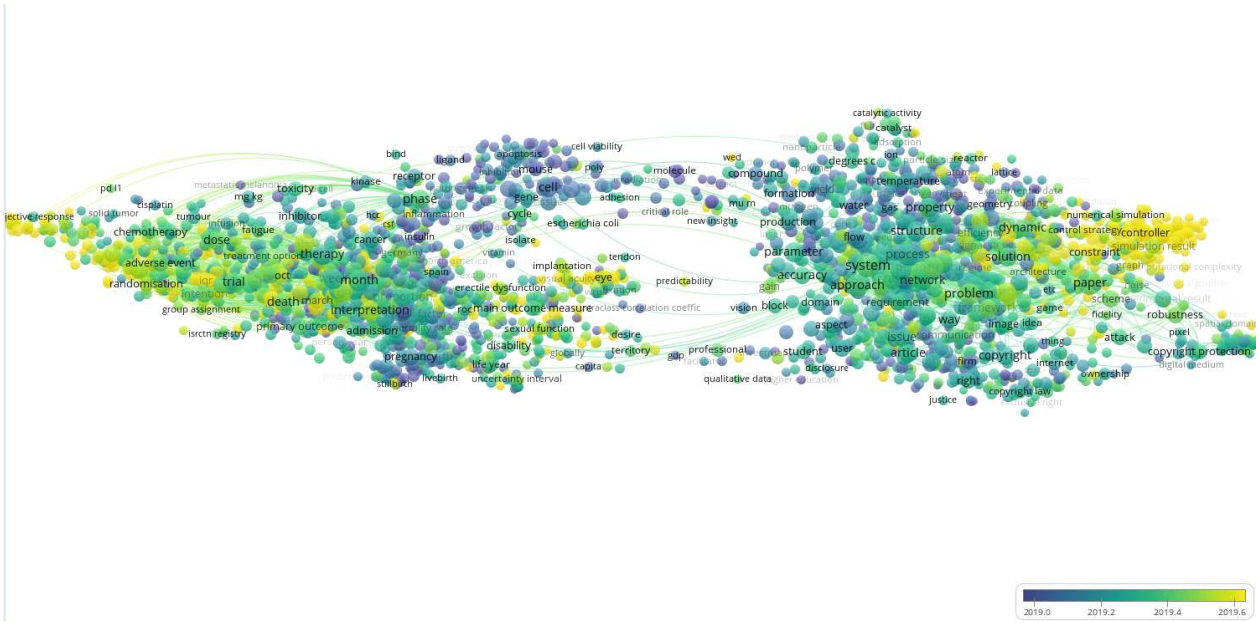

Figure 8. *Semantic trend visualisation map according to the co-appearance of keywords*

4. Research limits, conclusions

Scientometric analysis should be interpreted taking into account the limits of research. First, the results are limited to publications (articles and papers presented at conferences) published in 2016-2020 and indexed in the Web of Science database. Second, only one researcher evaluated the studies. The set of documents selected for scientometric research in this book might be different if other sampling strategies are used. For example, an alternative strategy would have been the manual review of all articles in all legal or related journals and the identification of those who met certain criteria. Such a process could have included other articles which did not meet the criteria for inclusion of this research, but the selection process would have been subjective and would have taken much longer.

However, this scientometric analysis has enabled us to identify the main actors and directions of research in the field in recent years. The results of the research show that many of the previous interests in the field of Copyright are up to date today.

References

Andrew S. Denney; Richard Tewksbury; "How to Write a Literature Review" in the Journal of Criminal Justice Education, 2013 Vol. 24, No. 2, p. 218.

Petticrew, Mark; Helen Roberts; Systematic Reviews in the Social Sciences: a practical guide, Blackwell Publishing, Oxford, 2006, pp. 5-6.

Chalmers, I.; Murray Enkin; Marc J.N.C. Keirse, "Preparing and updating systematic reviews of randomised controlled trials of health care", in The Milbank Quarterly, Vol. 71, Nr. 3, 1993, pp. 411-437.

Systematic Review vs. Literature (Narrative) Review, available at https://guides.temple.edu/c.php?g=78618&p=3879604

Aromataris, Edoardo; Alan Pearson, "The systematic review: An overview", in American Journal Nursing, Vol. 114, Nr. 3, 2014, pp. 53-58.

Møller, A.M., P.S. Myles, "What makes a good systematic review and meta-analysis?", British Journal of Anaesthesia, Vol.117, Nr.4, 2016, pp. 428-430.

Mark Petticrew; Helen Roberts; op.cit., 2006, p. 10.

VOSviewer version 1.6.16, free software from https://www.vosviewer.com/, downloaded on December 11, 2020.