Research on digital culture (cyberculture) – knowledge domain analysis based on bibliographic data from the Web of Science database[1]

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Abstract

Purpose/Thesis: The author's aim was to assess the state of research on 'digital culture / cyberculture' by analysing the knowledge domain. The second aim was to compare the results obtained through a simple analysis of bibliographic data from the Web of Science database with the results of data mapping and visualisation in CiteSpace.

Originality/Value: The knowledge domain 'digital culture / cyberculture' is relatively new. Research in this field is conducted mainly within the humanities, social sciences, and information technology.

Results and conclusions: A relatively small group of researchers makes noticeable contributions. However, different methods of analyzing the same set of bibliographic data lead to different conclusions. Research based on bibliographic data can only be a foundation of a complete analysis of the knowledge domain.

Keywords

Digital culture. Cyberculture. Knowledge domain analysis. Bibliographic data. CiteSpace. Web of Science database.

1. Introduction

For several years, the number of scientific publications on digital culture, also called cyberculture, has been steadily growing. However, as Stacey Koosel has observed, the digital culture research community has not yet developed a unified

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[1] This article presents the second part of research on methods for identifying the state of digital culture research. The first part of the research is described in the article: Zbigniew Osiński, Application of knowledge domain analysis to recognize the state of research on digital culture. Possibilities and problems as exemplified by Scopus database, "Przegląd Biblioteczny", 2022, no. 4.

coherent discourse or a paradigm, nor a standard research methodology (Koosel, 2011). Digital culture is studied within many different disciplines, with methodologies drawn from fields as far apart as computer science, humanities, and social sciences. The issues related to digital culture are addressed by representatives of the arts, philosophy, ethnography, psychology, cultural anthropology, media semiotics, sociolinguistics, as well as computer science. In these circumstances, it is a real challenge for scientists to keep up to date with research on digital culture (cyberculture). The first obstacle to forming a comprehensive assessment of the current scholarship is the multidisciplinarity of digital culture as a research field. The other is the relatively fast increase in the number of scientific publications. Fortunato et al. estimate that, on average, the volume of scholarship doubles every 15 years (Fortunato et al., 2018). Keeping track of scientific publications related to any topic becomes increasingly difficult. International and multidisciplinary bibliographic databases come to aid – the Web of Science and Scopus, which have been functioning for years, as well as the relatively new Dimensions Digital Science. These databases allow scholars to obtain selected bibliographic data of publications related to any research issue.

Methods based on bibliometrics and data visualization can help to assess the state of research on digital culture. The research presented in this article may be useful both to researchers interested in the subject of digital culture and to science managers. Both groups might be interested to realize that the same bibliographic data may suggest a different state of research on a given topic, depending on the adopted method of analysis. Science managers reading the article will find insights that may help them revise their approach to the use of bibliographic data in evaluating the systems of scientific institutions and their employees. To the best of the author's knowledge, no bibliometric analysis of the interdisciplinary knowledge domain "digital culture / cyberculture' has been carried out so far. Nevertheless, it is worth mentioning that a thematically similar knowledge domain, i.e. intangible cultural heritage, was analysed basing on the data obtained from the Web of Science database (Su et al., 2019). The authors used the visualisations generated by the CiteSpace software to investigate co-citations, distinguish thematic clusters, and establish networks of scientific collaboration.

Embarking on an analysis of any interdisciplinary knowledge domain, the researcher faces a significant challenge: how to acquire up-to-date and reasonably thorough knowledge of the state of research when it is very likely that the recent publications are scattered across books and journals devoted to diverse, often distant scientific disciplines? A partial solution is to refer to a multidisciplinary and worldwide bibliographic database, Web of Science, which facilitates access to information on scientific publications. It is well-known that this database includes only a part of 'academic production', and that in the humanities and social sciences, this fragment is relatively small (compared with, for example, medicine or science). A study

conducted by Philippe Mongeon and Adele Paul-Hus has proved that, compared with Ulrich's database (the most complete list of journals and serial publications worldwide), Web of Science indexes only a dozen percent of journals in the humanities and social sciences. The other global and multi-domain database, Scopus, offers a very similar set of bibliographic data, while worldwide specialised bibliographic databases in the humanities and social sciences do not exist (Mongeon & Paul-Hus, 2016). To analyse any knowledge domain in the humanities or social sciences, one has to assume that the data retrieved from the Web of Science (or Scopus) database capture at least the global, dominant trends in scholarship, thanks to selecting the most representative and influential publications. The author is aware of these databases' limitations, but he remains convinced that currently there is no more complete bibliographic database which would collect the data concerning the subject of digital culture / cyberculture. The choice to make the Web of Science the source of the data used in the study described in this article has been determined by the choice of the CiteSpace program for bibliographic data analysis. The data format processed by CiteSpace is based on the format of the data downloaded from the Web of Science. In addition, this database is reputed to provide more complete references, indexes, and links than other bibliographic databases (Su et al., 2020).

The article consists of several parts. The first part sets out the different definitions of digital culture and the methods for analyzing this knowledge domain. The second part presents the objectives and methods of the conducted research. The following sections present the results of the research and the conclusions.

2. Defining cyberculture and digital culture

The term 'cyberculture' appeared in scientific publications in the 1980s as a part of wider discussions concerning so-called cyber-themes, such as: cybernetics, computerisation, digital revolution, the cyberization of the human body, hacker subculture, cyberpunk, new media, as well as human activity in the Internet in general. This term has been used to describe the cultural and civilizational aspects of a social and cultural formation based on computer technology, known as information society, as well as cultural practices and lifestyles related to information and communication technologies (Macek, 2005). The term is closely related to the development of the Internet and electronic media. Some definitions of cyberculture emphasize the foundation of its development, i.e. cyberspace. Lev Manovich, a researcher in this field, argues that cyberculture should be understood as social phenomena connected with the Internet and network communication, such as e.g., online communities, collaborative online games, manipulation of identities in online reality, use of e-mail and mobile phones, and virtual erotic life (Manovich, 2001). Confronted with the multi-faceted nature of cyberculture, authors of major

publication on the concept refrained from providing an exhaustive definition. Instead, they described a number of phenomena occurring in cyberspace, which they considered to be elements of cyberculture, e.g. artificial intelligence, Linux, netiquette, matrix, wiki, virtual reality and others (Bell et al., 2004).

Departing from the description of cyberculture as a set of phenomena, David Bell claims that cyberculture is a way of thinking (and related practices) about the interaction of people and digital technologies, the impact of these technologies on people's lives, and life in cyberspace (Bell, 2007). Bell's definition represents the second trend in defining cyberculture, which emphasizes the role of the human in the development of cyberculture as more significant than its technological aspects. Definitions in this trend assume a much broader understanding of cyberculture. For example, David Silver describes cyberculture as a reality combining sets of cultural products and practices functioning or made available on the Internet with social reflection on these products and practices (Silver, 2000). Polish researcher, Piotr Zawojski, claims that cyberculture can be understood as a specific set of practices relating to the use of digital media in order to create a new model of culture based on the synergy of what is online and what is offline. This approach extends the scope of phenomena classified as cyberculture to include digital practices taking place outside the Internet. Zawojski treats cyberculture as a new cultural paradigm arising from the development of new technologies, primarily digital, which will definitively reformulate all aspects of social structures in a world dominated by computer technologies (Zawojski, 2018, 101, 113).

In the last decade or so, the term 'digital culture' has been used more frequently. According to Charlie Gere, techniques and technology constitute only one of many factors that have contributed to the development of digital culture. Other factors include technoscientific discourse on information and information systems, avant-garde artistic practices, countercultural utopianism, critical theory and philosophy, and even subcultural formations such as Punk. In his opinion, these phenomena contributed to the emergence of the paradigm of abstraction, codification, self-regulation, virtualization and programming that underlies digital culture – they became the foundations of cyberculture, just as much as the computer and the Internet. Gere challenges two popular beliefs about digital culture. First – that it represents a decisive break with what preceded it; second – that digital culture derives from and is determined by the existence of digital techniques and technology (Gere, 2008). Gere implies digital culture is a result of complex interactions and dialectical engagements between the aforementioned phenomena. This article will claim that digital technology and techniques are products of digital culture, and not the other way around. The article will argue that digitality as a cultural phenomenon refers not only to the affordances of a given technology – it defines and encompasses the ways of thinking and acting which are embodied in that technology and enable its development.

Mark Deuze defines cyberculture as a set of values, practices, and expectations regarding people's behaviour and interactions in today's network society. He states that digital culture is an expression of an increasingly individualised society in a globalised world. Deuze sees digital culture as a phenomenon consisting of three components: networked participation, remediation, and bricolage (Deuze, 2006). Stacey Koosel views digital culture as derived from the technological development of interactive and social media, which enable Internet users to create online communities, establish relationships, and construct and perform digital identities. Furthermore, we may also consider 'digital culture' as referring to the study of information age culture, including online cultural heritage. It is used to refer to the complex field known as digital humanities, which encompasses research in any discipline of the humanities, if it is related to computers and the Internet (Koosel, 2011). Tula Giannini and Jonathan P. Bowen, on the other hand, state that the digital revolution has created a cultural cyberspace, blurring the boundaries between real and virtual life and between real and digital culture (Giannini & Bowen, 2019). Another researcher in this field, Vincent Miller, associates cultural change with the development and innovation of new media and their consumption. Digital culture, in Miller's view, is both a phenomenon co-creating the information society and its product (Miller, 2020).

The newest definitions of digital culture return to the emphasis on technology in shaping culture. Nelson Chuquihuanca, Soledat Pesantes and others argue that digital culture refers to the circumstances in which technology and the Internet significantly shape the way in which individuals act, behave, think and communicate. Thus, digital culture is a product of the presence of technologies (virtual reality, the internet, mobile devices, and others) in society (Chuquihuanca et all., 2021).

This overview of definitions allows us to conclude that the area of research known as cyberculture or digital culture has no clear boundaries, as it is subject to constant evolution. The development of cultural, social and technological reality calls for ever newer interpretations of both terms. Therefore, an important task for academics researching cyberculture is to systematically monitor the state of scholarship.

3. Definition of knowledge domain analysis

The above-mentioned task can be accomplished by taking advantage of the possibilities offered by the knowledge domain analysis.

When explaining the analysis of knowledge domains, reference should be made to Birger Hjørland and Hanne Albrechtsen, who defined the knowledge domain as a community for exchanging ideas on a specific topic and a scientific sub-discipline with a specific way of organising knowledge, structure, patterns

of collaboration, forms of language and communication, and criteria for relevance (Hjørland & Albrechtsen, 1995). Hjørland thought that knowledge domains might be studied using bibliometrics (Hjørland, 2002). Richard P. Smiraglia proposed a different understanding of knowledge domain analysis: a scientific methodological paradigm that allows the ontological basis of a specific research problem to be discovered. This method is also used to systematically analyse the evolution of scientific communities and includes, e.g., bibliometric mapping (Smiraglia, 2015).

Following Olle Persson, there is a view in the literature on the subject that the knowledge domain describes the time-varyig body of knowledge extending between research fronts (the current state of knowledge in each specialty represented by collections of the latest papers which cite other texts) and intellectual bases (collections of articles cited by texts forming a research front) (Synnestvedt et al., 2005).

Undoubtedly, the basis for the analysis of knowledge domains is the acquisition, processing, and analysis of bibliographic data. According to Veslava Osińska, maps of science are produced by transforming bibliographic data into an exploratory space that allows the structure and dynamics of scientific knowledge to be discovered (Osińska, 2021). A similar approach is presented by such researchers as Chaomei Chen and Katy Börner. Chen calls science mapping the process of analysing and visualising scientific domains, disciplines, sub-disciplines, and research fields (Chen, 2017). Börner claims that the purpose of science mapping is to depict the structure and evolution of scientific knowledge. Maps of science are intended to help researchers navigate and communicate within the dynamic and changing structure and resource of science (Börner, 2010). In scientometrics, science mapping refers to the process of acquiring bibliographic data, visualising it and analysing it comprehensively (Osińska, 2021).

Science mapping is a method that can be applied to knowledge domains analysis.

The author's methodology in this study draws on Birger Hjørland and Jenna Hartel's claim that the study of knowledge domains should take into account the complex interaction of ontological (conceptual domain structure), epistemological (ways of interpreting reality) and sociological (researchers, research centers, journals participating in the discourse) influencing the development of fields of knowledge (Hjørland & Hartel, 2003). However, one should be aware that bibliometric research allows to determine only the sociological and ontological factors. The study of epistemological factors requires reading a selected group of scientific publications. The results of bibliometric analysis presented in this article provide the information necessary to select publications relevant for research on digital culture / cyberculture. This allows us to obtain an answer to the question – which publications will provide us the material that will become the basis of our assessment of epistemological factors forming the domain of knowledge digital culture / cyberculture.

4. Research objectives and methodology

A review of the scholarship on the use of bibliographic data prompted the following question: what methods should be used to analyze the data in order to accurately assess the state of research on a specific issue? What are the limitations of each method? Digital culture, being the author's primary research interest, was selected as the field to be examined.

The aim of this study is to establish the state of research on "digital culture / cyberculture" by analyzing the domain of knowledge in its sociological and ontological aspects. The second aim is to compare the results obtained through a simple analysis of bibliographic data from the Web of Science database with the results of data mapping and visualisation in CiteSpace.

The bibliographic database Web of Science Core Collection constituted the source of the data analyzed. Bibliographic data had to meet the following criteria:
(1) Search terms: 'Digital Culture', 'Cyberculture' – data as of 24.11.2021;
(2) Search within: Article title, Abstract, Author Keywords, Keywords Plus; Document Type: Article, Proceedings Paper, Book Chapter, Books.

Two sets of data were subsequently prepared for analysis:
(1) A summary table (see Appendix 1) for each search term, which included the following: the number of documents; the annual increase in the number of published documents; ten authors with the most publications; five scientific disciplines with the most publications; ten journals, collective works or conference proceedings with the greatest number of published documents; five institutions given as affiliations for the most documents; ten texts with the most citations.
(2) Complete bibliographic data sets obtained for each search term separately – Format: Plain Text File; Range: Full Record and Cited References.

Data from the tables were used for a simple bibliometric analysis in order to answer following questions:
– When did the study of digital culture (cyberculture) originate? Can periods of more intense development be distinguished?
– In what fields is classified the highest number of works related to both search terms?
– In what journals or collective publications have such works been published?
– What authors and research centres are at the forefront (most published works, most cited works) of research into digital culture (cyberculture)?

Complete bibliographic datasets were employed to develop knowledge maps using advanced analyses carried out in the CiteSpace programme (https://citespace. podia.com/). This application allows the user to visualise and analyse bibliographic data downloaded from scientific databases. Based on the bibliographic data of different scientific texts and the list of citations included therein, CiteSpace generates

interactive visualisations of networks of links from which various patterns, as well as the structure and dynamics of the knowledge domain, can be inferred. The analysis of such visualisations may provide answers to questions such as:

– How has the knowledge domain developed over time?
– Have there been any 'turning points' in the development of the knowledge domain?
– What works are gathered in clusters representing the research front and the intellectual base of the domain?
– What scientific works and what authors form these particular clusters?
– What texts experienced periods of increased research interest and when?
– What issues were the focus in the papers included in each cluster?

The study has already demonstrated that knowledge domain analysis will provide answers to these questions by visualising and exploring co-citation networks, turning points, construction, and development of clusters; the suitability of CiteSpace and its algorithms for this purpose has also been demonstrated (Chen et al., 2010).

In the next stages of the analysis, the following information sets and visualisations generated by CiteSpace were used: networks of document co-citation, accounting for their period and citation frequency; topic clusters and their contents; 'bursts' (rapid rise) in citations of scientific papers – an indicator based on Kleinberg's burst detection algorithm (Kleinberg, 2002), and timelines of cluster development. The information sets and visualisations were interpreted to answer the research questions listed above. The strategy of co-citation analysis of document titles rather than author names was adopted as it enables patterns to be noticed with more detail and accuracy, and allows for less ambiguous interpretations (Cen et al., 2010). It also circumvents the problem of multi-author texts, as CiteSpace considers only data of the first author. The foundation for clustering in CiteSpace is provided by the analysis of noun phrases extracted from the bibliographic data of documents (document titles, keywords, abstracts) and the analysis of the co-citation network of these documents (Chen, 2020).

5. Results

5.1. Analysis of simple compilation of data

A simple compilation of bibliographic data downloaded from the Web of Science database (Appendix 1) give us a picture of the current developments in the field of digital culture/ cyberculture. The search term 'digital culture' yielded (on 04.11.2021) 1,411 bibliographic records, while the term 'cyberculture' brought only 440. However, neither number is significant when compared with more than 79 million documents indexed in the WoS Core Collection. This indicates that the

study of digital culture /cyberculture is of limited interest. It is a relatively new area of research – all publications up to the late 20th century were authored by a single researcher (see Fig.1 and Fig. 2).
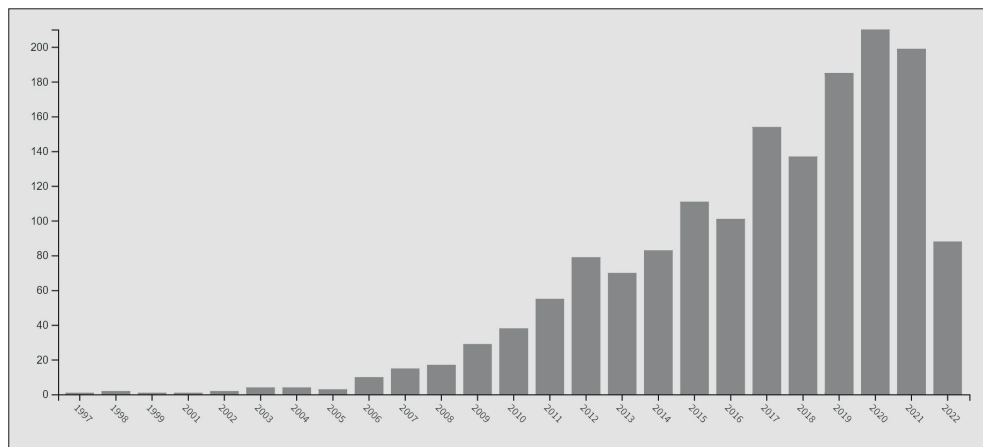

Fig. 1. Quantitative growth of publications on 'digital culture'.
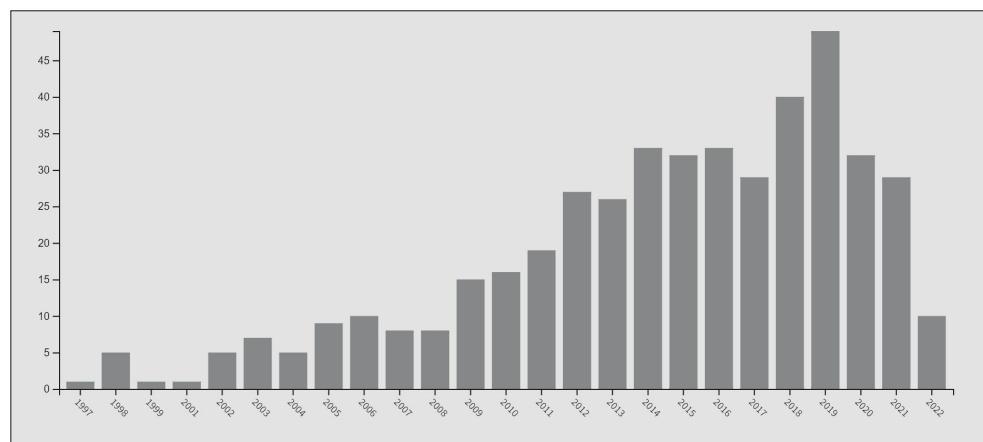
Source: Compiled by the author.

Fig. 2. Quantitative growth of publications on 'cyberculture'.

Source: Compiled by the author.

The Web of Science database provides a list of scientific disciplines with which digital culture/cyberculture research is associated. The users may find the list thanks to two functionalities from the menu 'Refine results' – WoS Categories and Research Areas. These two sets of information (the lists vary slightly) suggest

that the research on these topic is associated with the disciplines of Communication, Educational Research, Information and Library Science, Cultural Studies, and Computer Science.

Although publications on digital culture/cyberculture have been produced by scholars affiliated with more than two hundred universities, only a few made significant contributions (at least about 1% of all publications yielded by both searches). The WoS data shows that the leading universities are University of London, University of California System (consisting of 10 universities), Universidad Complutense de Madrid, Monash University in Melbourne, Queensland University of Technology, Universidade Federal De Santa Catarina, Universidade do Estado do Rio de Janeiro, Universidade Federal Da Bahia, Universidade Federal De Minas Gerias, Universidade Federal do Rio de Janeiro, and Universidade Federal Fluminense.

Bibliographic data indicate that the number of researchers working on digital culture/cyberculture does not exceed five hundred. With that said, only a dozen or so can be said to constitute the leading group in terms of the number of publications. When it comes to the term 'digital culture', the three most prolific authors are L. Shifman, J.P. Bowen, and T. Giannini. The term 'cyberculture' generated a different set of scholars: J.A.A. Valdez, R. Dos Santos, and L.M.M. Giraffa. The texts by the following authors received the most citations: J. Van Dijck, L. Shifman, S.C. Lewis (for digital culture); R.V. Kozinets, M. Deuze, A. Escobar (for cyberculture; for details see Appendix 1).

The bibliographic data also show which journals publish the largest number of texts related to digital culture/cyberculture issues. If we omit conference proceedings and monograph series, we get a set of several journals that can be considered as leading the research on the subject: *Convergence: The International Journal of Research into New Media Technologies*, *New Media and Society*, *Information Communication and Society*, *Media Culture and Society*, *International Journal of Communication*, *Social Media and Society*.

5.2. Analysis using CiteSpace

Knowledge domains were mapped using CiteSpace with the majority of the settings set to values the programme's developer, Chaomei Chen (2020). The following settings were changed: Link Retaining Factor was set to – 1, i.e., all citations were included; Look Back Years – set to – 1, i.e. no citation age restriction. In the case of the term 'digital culture', out of 1,411 bibliographic records retrieved from the database, CiteSpace included 1,383 from the years 1996 to 2021 (the remaining records were found to be faulty by the programme's algorithms). The programme created a co-citation network containing 781 nodes, i.e., cited documents and 4152 co-citation links connecting them. For the term 'cyberculture', 436 records

out of 440 from 1964 to 2021 were included. The co-citation network included 816 nodes and 3,798 co-citation links.

The first visualisation generated by CiteSpace (see Fig. 3) shows the network of document co-citations for the term 'digital culture' as it developed over time – the darker the colour, the older the citations. The points (nodes) indicate the cited documents, and the lines connecting them are the citation links.
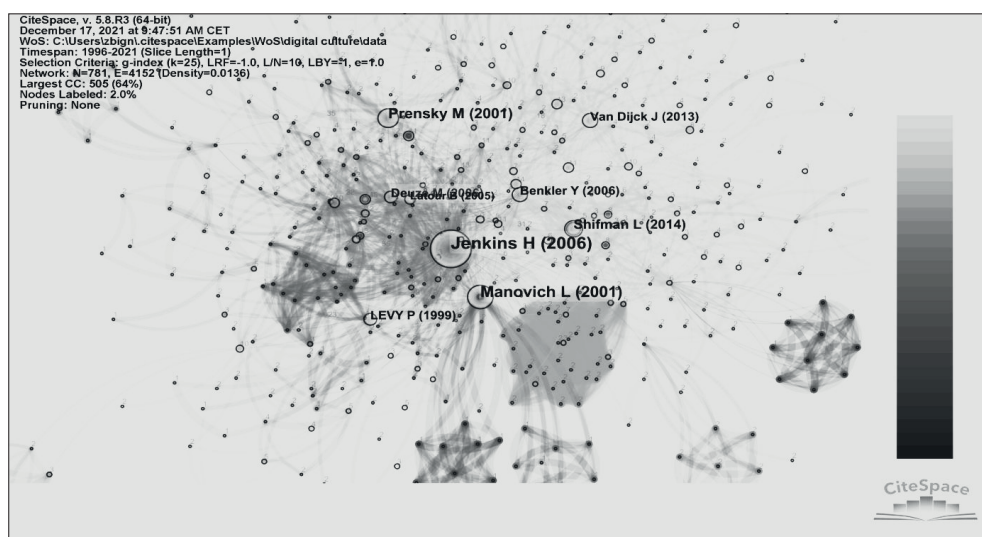

Fig. 3. Co-citation network for the term 'digital culture'.

Source: Compiled by the author.

This visualisation identifies the key papers (critical points) for the development of research on digital culture, linking research fronts and generating networks of co-citation. This group includes the following research papers:

(1) Jenkins H., Convergence Culture: Where Old and New Media Collide. New York: New York University Press 2006;

(2) Manovich L., Language of New Media, Cambridge: MIT Press 2001;

(3) Prensky M., Digital natives, digital immigrants. „On the Horizon", 2001, vol. 9, iss.5, p. 1–2;

(4) Shifman L., Memes in Digital Culture. Cambridge: MIT Press, 2014;

(5) Levy P., Cibercultura. Sao Paulo: Editora 34, 1999;

(6) Deuze M., Participation, Remediation, Bricolage: Considering Principal Components of a Digital Culture. "Information Society", 2006, vol. 22, iss. 2, p. 63–75;

(7) Benkler Y., The Wealth of Networks: How Social Production Transforms Markets and Freedom. New Haven and London: Yale University Press, 2006;

Z. Bauman, L. Manovich, S.G. Jones, M. Castells, A. Appadurai, T.W. Adorno, F. Jameson, D.J. Harway, B. Anderson, C. Hine. Citation links are missing between some clusters. The visualisation indicates the particular importance of two papers:

(1) Levy P., Cibercultura. Sao Paulo: Editora 34, 1999;
(2) Jenkins H., Cultura da Convergencia. ALEPH, 2009.
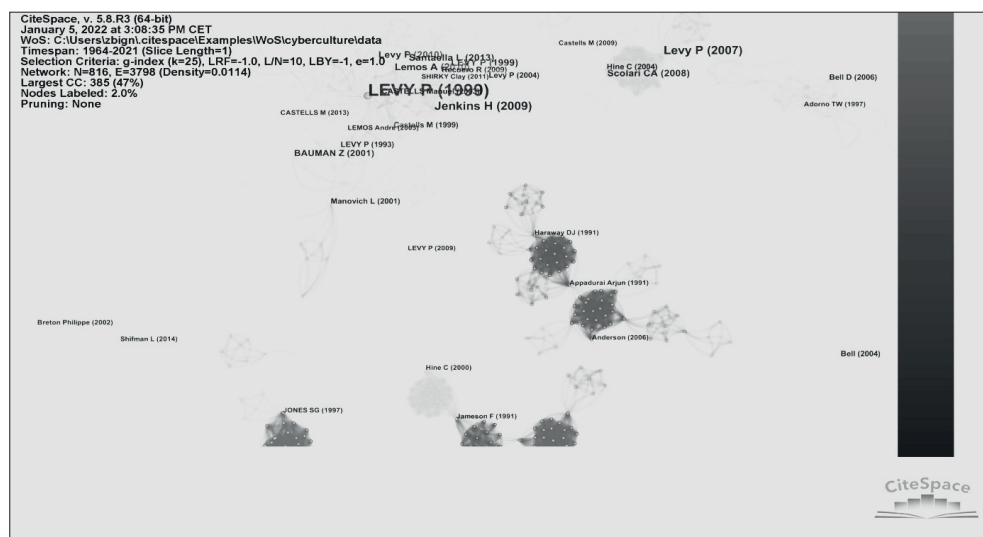
Fig. 5: Co-citation network for the term 'cyberculture'.

Source: Compiled by the author.

Furthermore, the Betweenness Centrality index and the number of citations in the co-citation network (Count) suggest the crucial importance of the subsequent editions of the book by P. Levy for the development of research into cyberculture. If we consider the Centrality index only, we find that the list of scientific publications that connect different thematic clusters, and thus had a significant impact on scholarship, is longer. It also includes researchers such as M. Castells, C. Hine, F. Jameson, M. McLuhan, R. Barthes or B. Anderson (see Fig. 6).

Subsequently, clusters of articles linked by co-citations were identified. For this, the 'Find Clusters' function was used, in combination with the 'Label Clusters' function using the data from Titles + Keywords + Abstracts. The selection criteria set by the creator of CiteSpace were used as a default (Chen, 2020). This method allowed us to distinguish 96 clusters. Each cluster can be characterised according to the following properties:

(1) Number of cited documents (Size)
(2) Network thematic homogeneity (Silhouette) – indicates whether the works within the network share a similar profile

(3) Average year of publication in the cluster (mean/Year) – indicates whether the network is dominated by newer or older papers

(4) Key terms selected by the selection algorithm LLR (Log-Likelihood Ratio), indicating the dominant topic (the creator of CiteSpace suggests that the LLR algorithm yields the best result in terms of uniqueness and term coverage) (Chen, 2020, p.45).

Visible	Count	Centrality	Year	
✔	40	0.28	1999	LEVY P, 1999, CIBERCULTURA, V0, P0
✔	4	0.22	1999	Castells M, 1999, SOC REDE, V2, P0
✔	3	0.21	2000	Hine C, 2000, VIRTUAL ETHNOGRAPHY, V0, P0
✔	3	0.21	2009	LEVY P, 2009, CIBERCULTURA, V0, P0
✔	3	0.20	1991	Jameson F, 1991, POSTMODERNISM CULTUR,
✔	2	0.19	1994	McLuhan M, 1994, UNDERSTANDING MEDIA, V
✔	2	0.16	1977	Barthes Roland, 1977, IMAGE MUSIC TEXT, V0,
✔	3	0.15	2006	Anderson, 2006, IMAGINED COMMUNITIES, V0,
✔	4	0.09	2001	Manovich L, 2001, LANGUAGE NEW MEDIA, V0.
✔	3	0.08	1991	Appadurai Arjun, 1991, RECAPTURING ANTHR
✔	2	0.08	2004	Atton C, 2004, ALTERNATIVE INTERNET, V0, P0
✔	11	0.08	2009	Jenkins H, 2009, CULTURA CONVERGENCIA, V
✔	12	0.08	2007	Levy P, 2007, CIBERCULTURA CULTURA, V0, F
✔	3	0.06	1997	JONES SG, 1997, VIRTUAL CULTURE IDEN, V0
✔	6	0.06	2008	Scolari CA, 2008, HIPERMEDIACIONES ELE, V0

Fig. 6. Key publications for the development of digital culture research.

Source: Compiled by the author.

In the set of 96 clusters, seven clusters are relevant for research purposes as they comprise more than 20 documents (see Table 1).

Table 1. Largest clusters in 'digital culture' topics – data from Web of Science.

Cluster ID	Size	Silhou-ette	Mean (Year)	Top Terms LLR
0	100	0.828	2004	virtual life; digital practice; citizen journalism; cultural citizenship
1	95	0.843	2007	sexualized labour; social media; drag culture; religious populism; popular feminism
2	79	0.81	2003	digital condition; cultural studies; digital game
3	78	0.824	2007	museum professional; media lab; tech culture; entangled media
4	47	0.912	2001	bio-digital bodies; digital humanities; technological progress
5	36	0.993	2005	religious meme; religious identity; entertainment meme
6	29	0.971	2000	data provider; music industry; compulsive creativity; digital literacies

Source: Compiled by the author.

Another CiteSpace functionality for identifying research topics is the Latent Semantic Indexing (LSI) selection algorithm. It draws up a list of noun phrases based on data from all clusters. For clusters based on the WoS data, the following list of key terms was compiled (based on 50 phrases from each cluster drawn from the analysis of titles, abstracts, and keywords of scientific articles): digital literacies, textual content, digital technologies, teacher training, museum professionals, virtual communities, computer games, significant impacts, religious memes, stardom as mythology of the digital age, corporate disclosure, social networking sites, cultural identity, political communication, popular music, resistance strategies, new millennium, digital practices, civic education, digital art, internet literature, virtual social networks, digital sociology, sexualized labour, digital humanities, using communication technology, political participation, religious identity.

Using the Cluster – Cluster Explorer functionality, we obtained data indicating authors who had the greatest impact on the development and subject matter of each cluster. Two lists were created: the first list cited documents included in a given cluster together with the number of citations, thus indicating the intellectual background of the knowledge domain; the second list collected documents citing scientific works included in a given cluster, thus outlining the research front of the knowledge domain (see Table 2).

Table 2. Authors with the greatest impact on particular
'digital culture' clusters (selection by number of citations).

Cluster ID	Most cited documents	Citation count	Documents most often citing other documents from the cluster	Percentage of cited documents from the cluster
1	2	3	4	5
0	Jenkins H. (2006), Convergence Culture: Where Old and New Media Collide. New York: New York University Press	85	Thumim N. (2012), Self-Representation and Digital Culture, Palgrave MacMillan.	15
	Prensky M. (2001), Digital natives, digital immigrants. „On the Horizon", vol. 9, iss.5, p. 1–2	35	Perez-Gonzalez L. (2013), Amateur subtitling as immaterial labour in digital media culture: An emerging paradigm of civic engagement, Convergence, vol. 19, iss. 2, p. 157–175.	10
	Deuze M. (2006), Participation, Remediation, Bricolage: Considering Principal Components of a Digital Culture. "Information Society", vol. 22, iss. 2, p. 63–75	22	Lewis S.C. (2012), The tension between professional control and open participation, Information, Communication & Society, vol. 15, iss. 6, p. 836–866.	10
	Scolari C.A (2008), Hipermediaciones: elementos para una teoría de la comunicación digital interactiva, Editorial Gedisa.	14		

1	2	3	4	5
1	Van Dijck J. (2013), The Culture of Connectivity: A Critical History of Social Media. Oxford Scholarship Online	18	Giles D.C. (2018), Twenty-First Century Celebrity: Fame In Digital Culture, Emerald Publishing.	13
	Dawkins R. (2016), Extended Selfish Gene, Oxford University Press	14	Hearn A., Banet-Weiser S. (2020), The Beguiling: Glamour in/as Platformed Cultural Production, Social Media + Society, vol. 6, iss. 1.	10
	Gillespie T. (2010), The politics of 'platforms', "New Media & Society", vol.12, iss. 3, p. 347−364	13		
	Bruns A. (2008), Blogs, Wikipedia, Second Life, and Beyond: From Production to Produsage. Peter Lang	13		
2	Levy P. (1999), Cibercultura. Sao Paulo: Ed 34	23	Alen-Robertson J. (2013), Digital Culture Industry. A History of Digital Distribution, Palgrave MacMillan.	9
	Latour B. (2005), Reassembling the Social. An Introduction to Actor-Network-Theory. Oxford University Press	15	Srinivasan R. (2012), Re-thinking the cultural codes of new media: The question concerning ontology, New Media & Society, vol. 15, iss. 2, p. 203−223.	8
	Lessig L. (2008), Remix: Making Art and Commerce Thrive in the Hybrid Economy, New York: Penguin Press	12		
3	Shifman L. (2014), Memes in Digital Culture. Cambridge: MIT Press	31	Cook N., Ingalls M.M., Trippett D. (2019), The Cambridge Companion to Music in Digital Culture, Cambridge University Press.	15
	Benkler Y. (2006), The Wealth of Networks: How Social Production Transforms Markets and Freedom. New Haven and London: Yale University Press	22	Thayne M., West A. (2019), 'Doing' media studies: The media lab as entangled media praxis, Convergence, vol. 25, iss. 2, p. 186−208.	11
	Hayles N.K. (1999), How We Became Posthuman, University Chicago Press	11		
4	Manovich L. (2001) Language of New Media, Cambridge: MIT Press	49	Braga D. B., Ricarte I. L. (2005). Letramento na era digital: construindo sentidos através da interação com hipertextos. Revista Da Anpoll, vol. 1, n. 18.	11
5	Anderson B. (2006), Imagined Communities, London-New York: Verso	7	Han S., Nasir K.M. (2015), Digital Culture and Religion in Asia, Routlege.	36
	Campbell H. (2010), When Religion Meets New Media, Taylor & Francis Group	7		

1	2	3	4	5
6	McLuhan M. (1994), Understanding Media. The Extension of Man, London-New York: MIT Press	13	Van Dijck J. (2009), Users like you? Theorizing agency in user-generated content, Media, Culture & Society, vol. 31, iss. 1, p. 41–58.	15
	Jenkins H. (1992), Textual Poachers elevision Fans & Participatory Culture, Routledge	9	Van Dijck J., Nieborg D. (2009), Wikinomics and its discontents: a critical analysis of Web 2.0 business manifestos, New Media & Society, vol. 11, iss. 5, p. 855–874.	12

Source: Compiled by the author.

For the term 'cyberculture' the following results were obtained:

Table 3. The largest clusters in the 'cyberculture' theme (out of 147 detected).

Cluster ID	Size	Silhouette	Mean (Year)	Label LLR
0	101	0.951	2006	critical internet studies; digital culture; critical theory; critical studies
1	48	0.999	2001	political subjectivities; virtual space; study preface; audio-visual consumption
2	46	0.977	1989	virtual transnational community; computer English; marketing research
3	40	0.997	1990	anthropology biological technologies
4	37	0.987	1992	social work; blog; e-social work; thematic virtual community
5	33	0.97	1984	virilio; terminal
6	29	0.997	1994	cyberspace; politics; culture

Source: Compiled by the author.

The list generated by the LSI algorithm (based on 50 phrases from each cluster obtained from the analysis of titles, abstracts and keywords of scientific articles) included the following terms: marketing research, online communities, candomble communities, blog, political subjectivities, computer-mediated communication, electronic capitalism, critical political economy, anthropological theory, digital networks, critical cyberculture studies, public universities, literature courses, critical internet studies, virtual spaces, e-social work, digital narratives, cultural analyses, public policies, virtual class, human societies, anthropological analyses, critical studies.

The Visualisaion – Graph Views – Timeline View function allows the user to see how the clusters developed over time. In addition to the term indicating

the dominant theme in the cluster, it is possible to determine when the cluster developed and when its development was most intensive.

Table 4. Authors with the greatest impact on each 'cyberculture' cluster (according to the number of citations).

Cluster ID	Most cited documents	Citation count	Documents most often citing other documents from the cluster	Percentage of cited documents from the cluster
0	Levy P. (1999), Cibercultura. Sao Paulo: Ed 34;	40	Henriques M.S., Lima L.A. (2014), The publics make the spectacle: protagonism on crowdfunding practices over the internet. "Conexao-Comunicacao E Cultura", vol. 13, iss. 25.	11
	Jenkins H. (2009), Cultura da Convergencia. ALEPH;	11		
1	Levy P. (2007), Cibercultura: informe al Consejo de Europa. Anthropos Editorial	12	Valdez J.A.A. (2019), Cibercultura y nuevas formas de consumo audiovisual en la era de la globalización y la sociedad digital: una aproximación teórica para su estudio. Editorial Unison.	27
2	–		–	
3	–		–	
4	–		Aguilar Idáñez M.J, E-Social Work in Spain: An analysis of the professional blogs, "Cuadernos de Trabajo Social", vol. 32, No 1.	21
5	–		Zurbrugg N. (1999), Virilio, Stelarc and Terminal Technoculture, "Theory, Culture & Society", vol. 16, iss. 5–6, p. 177–199.	26
6	–		Jordan T. (2001), Language and Libertarianism: The Politics of Cyberculture and the Culture of Cyberpolitics, "The Sociological Rewiew", vol. 49, iss.1, p. 1–17.	26

Note: A '–' entry indicates that there are no documents cited at least five times or those citing at least five texts from the cluster.

Source: Compiled by the author.

Using the Visualization – Citation/Frequency Burst History function, a list of documents with a relatively large increase in citations over a short period was created. The papers listed attracted the attention of the scientific community and

thus made a significant impact on the development of scientific research on the topic under study. The CiteSpace programme detects 'bursts' of citations based on Kleinberg's algorithm. Figure 9 presents a list of such documents for the term 'digital culture' and Figure 10 for the term 'cyberculture'.
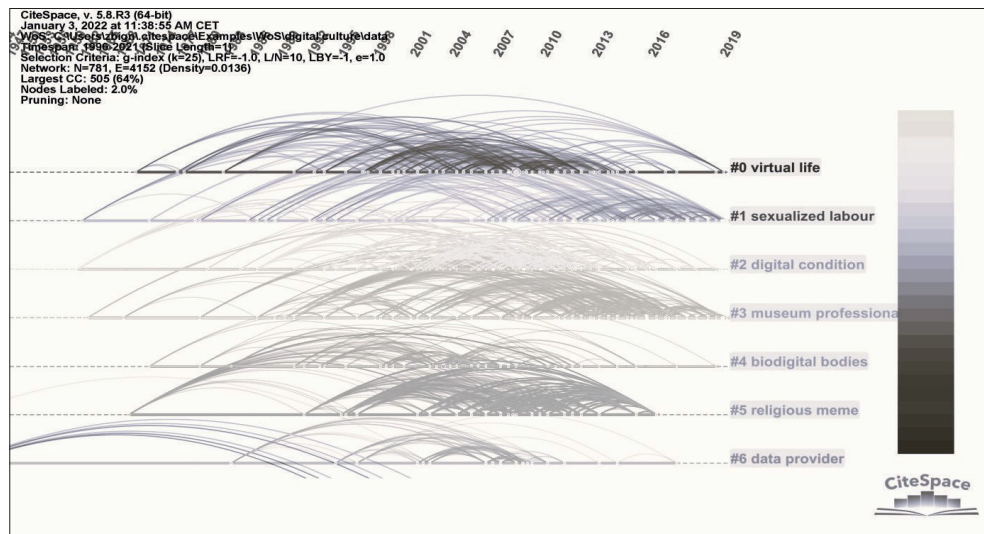
Fig. 7. The development of 'digital culture' clusters over time.
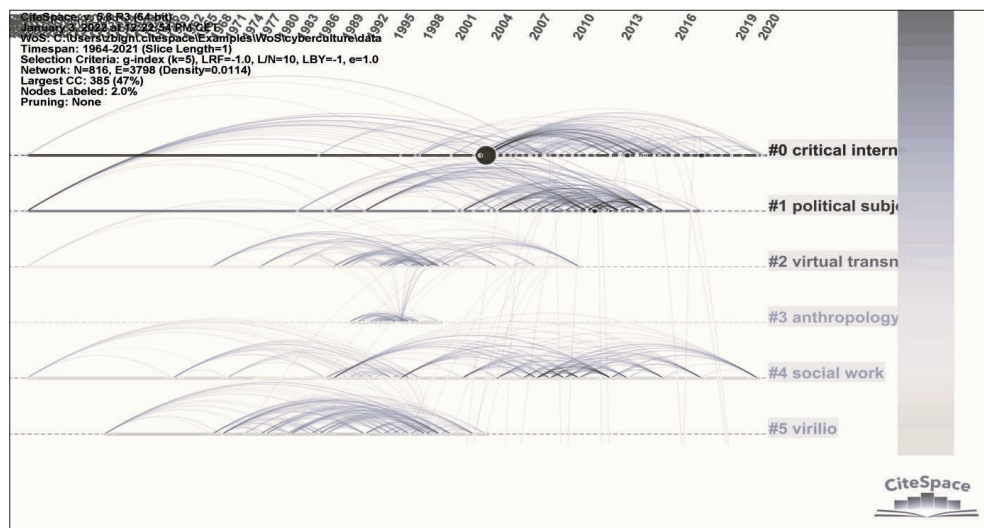Source: Compiled by the author.

Fig. 8. The development of 'cyberculture' clusters over time.
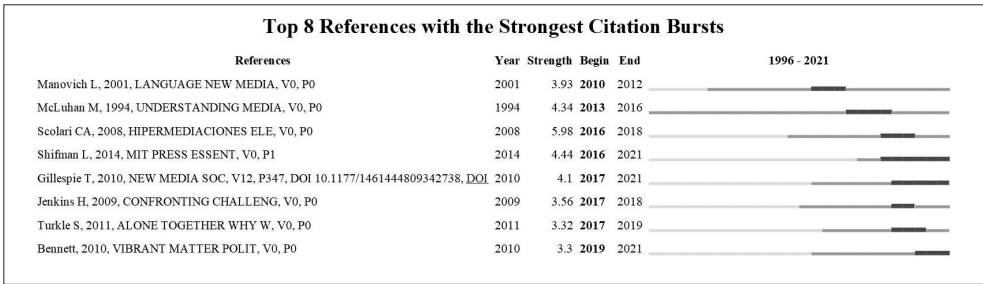Source: Compiled by the author.

Top 8 References with the Strongest Citation Bursts					
References	Year	Strength	Begin	End	1996 - 2021
Manovich L, 2001, LANGUAGE NEW MEDIA, V0, P0	2001	3.93	2010	2012	
McLuhan M, 1994, UNDERSTANDING MEDIA, V0, P0	1994	4.34	2013	2016	
Scolari CA, 2008, HIPERMEDIACIONES ELE, V0, P0	2008	5.98	2016	2018	
Shifman L, 2014, MIT PRESS ESSENT, V0, P1	2014	4.44	2016	2021	
Gillespie T, 2010, NEW MEDIA SOC, V12, P347, DOI 10.1177/1461444809342738, DOI	2010	4.1	2017	2021	
Jenkins H, 2009, CONFRONTING CHALLENG, V0, P0	2009	3.56	2017	2018	
Turkle S, 2011, ALONE TOGETHER WHY W, V0, P0	2011	3.32	2017	2019	
Bennett, 2010, VIBRANT MATTER POLIT, V0, P0	2010	3.3	2019	2021	

Fig. 9. Papers with the highest 'citation burst' rate for the term 'digital culture'.
Source: Compiled by the author.

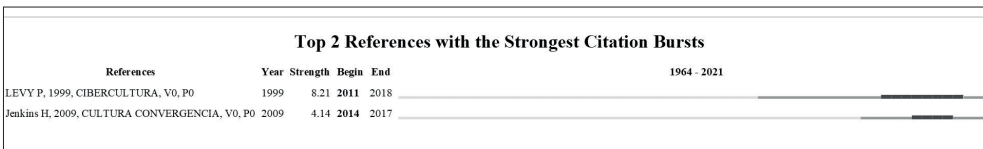| Top 2 References with the Strongest Citation Bursts					
References	Year	Strength	Begin	End	1964 - 2021
LEVY P, 1999, CIBERCULTURA, V0, P0	1999	8.21	2011	2018	
Jenkins H, 2009, CULTURA CONVERGENCIA, V0, P0	2009	4.14	2014	2017	

Fig. 10. Papers with the highest 'citation burst' rate for the term 'cyberculture'.
Source: Compiled by the author.

The CiteSpace algorithms identified two books written on the subject of cyberculture. Both appeared in Fig. 6 as key works for the network, as well as on the list of documents with the highest Citation Bursts index. Surprisingly, neither of these can be found on the list of the 10 most cited books. The first book, 'Cibercultura' by Pierre Lévy (1999) discusses the cultural implications of cyberculture in all its dimensions. He argues against the critiques of cultural phenomena related to people's functioning in the digital sphere and on the Internet. One of the main hypotheses of the book is that cyberculture constitutes a new cultural universe, different from previous forms of culture. Its development is due to the rapidly growing role of information, and information and communication technologies. The author sets out the cultural implications of the development of digital information and communication technologies. He objects to comparing cyberculture to another flood or barbarism. The book was the most popular ('burst of citations') among other researchers between 2011 and 2018.

The second book, 'Cultura da Convergencia' by Henry Jenkins (Spanish translation of Jenkins H., *Convergence Culture: Where Old and New Media Collide*. New York: New York University Press, 2006) concerns the relationship between three concepts: media convergence, participatory culture, and collective intelligence (Jenkins, 2009). The author defines the term *media convergence* as the flow of content between multiple media platforms, collaboration between multiple media markets and the migratory behaviour of media audiences who seek entertainment tailored

to their preferences. He describes participatory culture as a situation in which both producers and consumers influence (unequally) the shape and content of media messages. Consumers interact with media not alone, but rather as a collective intelligence – the sum of the knowledge, experiences, and views of media users. This book attracted the greatest interest from researchers between 2014 and 2017.

If we take the total number of citations as the main index of the impact of a scientific work on the development of science (Appendix 1), the texts that have had the most impact on the development of cyberculture research include, first, two articles by Robert V. Kozinets (1998, 2002). Both are devoted to a method of marketing research called 'netnography'. Netnography is a variation of ethnography, adapted to the study of online communities. As a method, netnography is faster, simpler and cheaper than traditional ethnography, and less invasive than focus groups or interviews. It provides information about the symbolism, meanings, and consumption patterns of consumer groups in the virtual world. The number of citations of the article 'The field behind the screen: Using netnography for marketing research in online communities' is so high because the author conducts research within management sciences. Marketing practices are researched much more frequently and on a much larger scale than cyberculture, and they attract a much larger group of researchers. Hence, there is a much greater chance of obtaining citations.

In third place in terms of the number of citations is an article by Marc Deuze, 'Participation, Remediation, Bricolage: Considering Principal Components of a Digital Culture' (2006). The author argues that digital culture emerged as a result of the computerisation of society. He concludes that digital culture can be seen as an emerging set of values, practices, and expectations about how people (should) act and interact within contemporary networked society. According to Deuze, digital culture can be conceptualised as a practice consisting of participation, remediation, and bricolage.

Identifying the academic works that had the greatest impact on the development of research on 'digital culture' is not as easy as in the case of 'cyberculture'. If we compare the five papers with the highest impact on the co-citation network for the term 'digital culture' and the five with the highest Strongest Citation Bursts index, only two scientific works feature on both lists. The first of these is the book 'Language of New Media' by Lev Manovich (2001). The author presents the theory of new media, pointing to their place in the history of visual and media cultures over the centuries. He discusses their intellectual and aesthetic foundations. He points out the dependence of new media on the convergence of older media types. Manovich draws on concepts from film theory, art history, literary theory, and computer science to develop new theoretical constructs such as the cultural interface and spatial assemblage. His book received a 'burst of citations' between 2010 and 2012.

The second work is a book entitled 'Memes in Digital Culture' by Limor Shifman (2014). The author analyzes the development of internet memes and their

contribution to digital culture. He proposes a novel definition of Internet memes: they are digital units of content with shared characteristics, created with mutual awareness of each other and distributed, imitated, and transformed across the Internet by multiple users. This work received the most citations between 2016 and 2021.

If, on the other hand, we consider the data from the visualisation of the co-citation network for the term 'digital culture' and the number of citations in particular clusters, the scientific works with the greatest impact on the studied domain of knowledge, as the indexes of the works' influence, we will have to consider the first English-language edition of Henry Jenkins' book, 'Convergence Culture: Where Old and New Media Collide' (2006). Two articles also fall into this category. In the first, 'Digital natives, digital immigrants', Marc Prensky claims that the American education system is ineffective in a situation where today's youth differs significantly from their predecessors from before the Internet era. He draws a distinction between 'digital natives', young people born and developing in the world of the Internet, online games and computers, and 'digital immigrants', those representatives of older generations who enter the digital world and virtual reality by painstakingly developing new competences. The brains of 'digital natives' develop differently from those of 'digital immigrants' or the digitally excluded. Hence, the education system should present a different offer to young people than to previous generations of pupils and students. The article also contains a set of proposals for educating the 'digital natives' (Prensky, 2006). Another paper that has had a significant impact on the field is the aforementioned text by Marc Deuze, 'Participation, Remediation, Bricolage: Considering Principal Components of a Digital Culture' (2006).

The book of Yochai Benkler, 'The Wealth of Networks: How Social Production Transforms Markets and Freedom', is also worth mentioning. The author describes the increasing role of information and communication in the age of the Internet and the emergence of a 'networked information economy'. This, according to Benkler, radically changes the economic reality and social relations. Benkler describes how the network environment alters the ways media, the economy, and society function. He indicates the new opportunities for the production and use of information, and the influence of these opportunities on activation of groups and individuals. He concludes that a 'social production of information' has emerged, transforming markets while offering new opportunities to increase individual freedom, cultural diversity, political discourse, and justice (Benkler, 2006).

In terms of the total number of citations for the term 'digital culture', the article by José van Dijck, 'Users like you? Theorizing agency in user-generated content' is at the forefront. The author introduces the concept of the 'engaged user' of online platforms, encompassing not only the user's cultural role as a facilitator of civic engagement and participation, but also his/her economic importance as a producer, consumer, and provider of data, as well as his/her unstable position as a volunteer or aspiring professional in an emerging work market. Using YouTube as an example,

van Dijck shows that the term 'engaged user' refers not only to content creators but also to data providers whose profiled information is capitalised on by online platform owners (Dijck, 2009). In second place is Limor Shifman's aforementioned book, 'Memes in Digital Culture'.

Third place went to the article by Seth C. Lewis, 'The Tension Between Professional Control and Open Participation'. The author reviews the literature discussing the tension observable in the media environment between the principles of professional journalism and open participation in the information process. He focuses on the growing difficulties for media professionals as they negotiate the increasingly contested boundary space between producers and professional control, and content users and openness in the digital environment. Considering the possibilities of digital technologies, the author supports open participation and its ideology (Lewis, 2012).

6. Conclusions

The bibliographic data taken from the Web of Science database allow us to examine the sociological and ontological aspects of the "digital culture / cyberculture" knowledge domain. The analysis of the data provides information about the scholars who conducted research in the field, where they conducted their research, and where their results were published. Thanks to the information on the number of publications and the number of citations, the data also allow to assess the degree of interest in these issues. The ontological aspects of the knowledge domain can be analyzed on the basis of keywords used by the editors of the WoS database or developed by the authors of publications, as well as on the basis of publication titles and their abstracts.

The knowledge domain 'digital culture / cyberculture' is relatively new. Papers in which the terms 'cyberculture' or 'digital culture' are used have begun to be published in the 1980s (with very few exceptions). The term 'cyberculture' appeared first, followed by 'digital culture' a few years later. Thematic clusters developed in the same order – the first to appear were those classified as 'cyberculture'. The visualisations presenting the development of the clusters over time show not only the periods of growth in popularity of each cluster (scientific publications are relatively frequent, which can be proved by the density of points on the timeline), but also the period of decline, and how far back in time they reach with citations (curves from right to left). They show that the 'cyberculture' clusters numbered 1, 2, 3 and 5 (thematic scope in Table 3 and the paragraph below this table) have already ceased develop. The same is true for the 'digital culture' clusters numbered 4, 5 and 6 (thematic scope in Table 1 and the paragraph below this table). It might be observed that publications included in the 'digital culture' clusters mainly cite

relatively recent scientific works – published in 1990s or later. Publications in the 'cyberculture' clusters (especially 0, 1, 2, 3) go back in their citations even to the 1960s.

Nevertheless, it was not until the end of the first decade of the 21st century that scientific texts on this subject began to be published more frequently than once or twice per month on average (considering only papers indexed in the Web of Science database). Until now, cyberculture has been a niche specialisation, not formally affiliated with any scientific discipline. Research in the field of digital culture (cyberculture) is conducted mainly within the humanities, social sciences, and information technology. In terms of the number of publications indexed in Web of Science, researchers from Australia, Brazil, Spain, the USA, and the UK dominate. The main places of publication of articles on the subject are journals such as: *Convergence*; *Information, Communication and Society*; *International Journal of Communication*; *Media Culture and Society*; *New Media and Society*, as well as *Social Media and Society*.

At this point, the following questions arise: to what extent the dominance of specific journals and researchers demonstrated by bibliographic data is a result of the principles behind the Web of Science database resources, and to what extent does it represent the actual state of science? Is the scientific output of the global South and Central and Eastern Europe regarding the subject of digital culture / cyberculture as small as the above-mentioned data would suggest? Unfortunately, answering these questions would require the creation of a bibliographic database indexing papers written in many more languages besides English, Spanish, French and German. Only such a base would fulfill the ideals for the development of science set forth in the book "Knowledge and Global Power. Making New Sciences in the South," which argues for the need of taking into account the theoretical and methodological achievements of the global South (as well as Central and Eastern Europe) (Connell et al., 2019). If scholarship produced in the peripheral zones is to be taken into account, it must first be made visible to academics abroad. As currently no database indexing scholarship in languages of Central and Eastern Europe exists, we are satisfied with the image of the state of research, which is the result of the analysis of bibliographic data from the currently most well-known database.

For each of the explored issues, it is possible to assess which scientific papers had the greatest impact on the scientific community and contributed the most to the development of the research. This is because they generated the largest 'citation burst', gained relatively many citations in the co-citation network, or achieved a relatively high centrality index. It can be said that they constitute the canon of the analysed field. However, the list of such works is not easy to unequivocally determine, even if we rely only on data from the Web of Science database, for it depends on the criteria adopted. If the only criterion is the number of citations, the Top 10 list will be as in Appendix 1 (item: 10 papers with the highest number of citations – in each of the two tables) for the individual terms studied. If, on the other hand,

we are guided by CiteSpace indications, then the list of key scientific papers will be partially different. The difference stems from the fact that the first list shows all citations of a given publication (obviously limited to those works cited that are indexed in Web of Science). In contrast, the citations shown by the CiteSpace programme come only from papers that form a co-citation network for the term 'cyberculture' or 'digital culture'.

The analysis of the clusters and key terms detected by the CiteSpace programme allows us to identify the specific issues that digital culture researchers analyse most often. In the case of academic works related to the term 'digital culture', these will include various aspects of everyday life with equivalents in the virtual world (including sex, drugs, religion, human relations, culture, politics, education), digital cultural practices (including citizen journalism, medialabs, digital museums, archives and galleries, the entertainment industry, digital art and literature, social media, social networks, computer games), digital humanities, digital and information literacy, online communication, and digital information management. The research papers related to the term 'cyberculture' addressed issues such as critical studies, digital narratives, virtual spaces, social networks, political life, online communities, online marketing, online education, anthropological research, the blogosphere, and online communication.

Finally, it should be emphasised that knowledge domain analysis, based on data from the Web of Science database and visualisations generated by the CiteSpace programme, has significant limitations. First, such an analysis does not take into account scientific papers that are not indexed in this database. The conclusions drawn from the visualisations generated by CiteSpace are founded on our trust in its algorithms and the settings recommended by its developer. Furthermore, we conclude that bibliographic data, such as those gathered in Appendix 1, should be a necessary complement to the aforementioned visualisations. The combination of findings from the visualisation analysis and from the simple analysis of bibliographic data gives a more complete picture of the knowledge domain. This is because in the first case the analysis is based on networks of co-cited documents, and in the second case on a compilation of all documents obtained from the Web of Science database in response to the use of the terms 'digital culture' and 'cyberculture'.

Research based on bibliographic data can only be a first step towards a complete analysis of the knowledge domain. The next stage would be the analysis of the content of at least a few key (relatively often cited) publications. This is the only way to describe the epistemological aspects of the domain of knowledge – to determine the researchers' approach to defining a given domain, to the organization and interpretation of knowledge generated within it, as well as their paradigms and methodologies. The analysis of bibliographic data suggests which publications had such a significant impact on the development of digital culture research. An epistemological analysis of these works is a topic to be undertaken in another article.

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Appendix 1

Basic information – „Digital Culture"

Information type	Data obtained	
1	**2**	
Number of documents	1411	
Increase in the number of publications	1996–2021; from the period 1996–2002 only 8; the highest increase (over 20 per year) in 2009–2021	
10 authors with the largest number of publications (+ those who are the authors of as many publications as the tenth from the list)	1. Shifman L. – 10, 2. Bowen J.P. – 9, 3. Giannini T. – 9, 4. Kanai A. – 6, 5. Beavis C. – 5, 6. Fantin M. – 5 7. Márquez I. – 5, 8. Apollon D. – 4, 9. Desrochers N. – 4 10. Gere C. – 4, 11. Johnson N. – 4, 12. Mihailidis P. – 4,	
5 fields of science with the most publications (one publication may be classified into several fields)	WoS Categories 1. Communication – 318 2. Educational Research – 279 3. Humanities Multidisciplinary – 118 4. Information and Library Science – 90 5. Cultural Studies – 89	Research Areas 1. Communication – 318 2. Educational Research – 286 3. Art Humanities Other Topics – 117 4. Computer Science – 117 5. Information and Library Science – 88 6. Cultural Studies – 84
10 journals, multi-author books or conference materials with the highest number of documents	1. New Media And Society – 22, 2. Convergence – 18, 3. Information Communication And Society – 17, 4. International Journal Of Communication – 15, 5. Museums And Digital Culture: New Perspectives And Research – 14 6. Springer Series On Cultural Computing – 14, 7. Educar Em Revista – 13, 8. Media Culture And Society – 13, 9. Revista Edapeci-Educacao A Distancia E Praticas Educativas Comunicacionais E Interculturais – 13, 10. Social Media And Society – 12,	

1	2
5 institutions listed as affiliations in the largest number of documents (+ those with as many documents as the fifth)	1. University of London – 36 2. University of California System – 16 3. Universidad Complutense de Madrid – 14 4. Monash University – 12 5. Queensland University of Technology – 11 6. Universidade Federal De Santa Catarina – 11
10 documents with the highest number of citations	1. Van Dijck, J., Users like you? Theorizing agency in user-generated content, Media, Culture and Society, 2009, 31(1) – 513, 2. Shifman, L., Memes in Digital Culture, 2014 – 446, 3. Lewis, S.C., The tension between professional control and open participation. Journalism and its boundaries, Information Communication and Society, 2012, 15(6) – 367, 4. Deuze M., Participation, remediation, bricolage: Considering principal components of a digital culture, Information Society, 2006, 22 (2) – 241, 5. Shifman, L., Memes in a digital world: Reconciling with a conceptual troublemaker, Journal of Computer-Mediated Communication, 2013, 18(3) – 191, 6. Shifman, L., An anatomy of a YouTube meme, New Media and Society, 2012, 14(2) – 177, 7. Deuze, M., Bruns, A., Neuberger, C., Preparing for an age of participatory news, Journalism Practice, 2007, 1(3) – 167, 8. Beer, D., Social network(ing) sites...revisiting the story so far: A response to danah boyd & Nicole Ellison, Journal of Computer-Mediated Communication, 2008, 13(2) – 152, 9. Van Dijck, J., Nieborg, D., Wikinomics and its discontents: A critical analysis of Web 2.0 business manifestos, New Media and Society, 2009, 11(5) – 149, 10. Duffy, B.E., The romance of work: Gender and aspirational labour in the digital culture industries, International Journal of Cultural Studies, 2016, 19(4) – 134,

Basic information – „Cyberculture"

Information type	Data obtained
1	2
Number of documents	440
Increase in the number of publications	1964–2021; from 1964 and 1965, each 1; a from 1992–2001 – 17; the highest increase (over 10 per year) in 2009–2021

1	2	
10 authors with the largest number of publications (+ those who are the authors of as many publications as the tenth from the list	1. Valdez JAA. – 7 2. Dos Santos R. – 5 3. Giraffa LMM – 5 4. Brock A. – 4 5. Cerutti E. – 4 6. Chumachenko S. – 4 7. Haddouk L. – 4 8. Hahanov V. – 4 9. Litvinova E. – 4 10. Martins C. – 4 11. Santos E. – 4	
5 fields of science with the most publications (one publication may be classified into several fields)	WoS Categories 1. Educational Research – 114 2. Communication – 79 3. Sociology – 40 4. Humanities Multidisciplinary – 35 5. Information and Library Science – 22 6. Social Science Interdisciplinary – 22	Research areas 1. Educational Research – 114 2. Communication – 79 3. Sociology – 40 4. Humanities Multidisciplinary – 35 5. Literature – 32
10 journals, multi-author books or conference materials with the highest number of documents	1. Information Communication And Society – 18 2. Revista Educaonline – 10 3. Educar Em Revista – 9 4. Periferia – 9 5. Revista Ibero-Americana De Estudos Em Educacao – 8 6. Cibercultura Y Nuevas Formas De Consumo Audiovisual En La Era De La Globalizacion Y La Sociedad Digital: Una Aproximacion Teorica Para Su Estudio – 7 7. New Media And Society – 7 8. Societes – 7 9. Texto Academicos – 7 10. Texto Livre-Linguagem E Tecnologia – 7	
5 institutions listed as affiliations in the largest number of documents (+ those with as many documents as the fifth)	1. Universidade do Estado do Rio de Janeiro – 14 2. Universidade Federal Da Bahia – 12 3. Universidade Federal De Minas Gerias – 8 4. Universidade Federal do Rio de Janeiro – 8 5. Universidade Federal Fluminense – 8	

1	2
10 documents with the highest number of citations	1. Kozinets, R.V., The field behind the screen: Using netnography for marketing research in online communities, Journal Of Marketing Research, 2002, 39(1) – 1522 2. Kozinets, R.V., On netnography: Initial reflections on consumer research investigations of cyberculture, Advances In Consumer Research, 1998, 25 – 246 3. Deuze, M., Participation, remediation, bricolage: Considering principal components of a digital culture, Information Society, 2006, 22 (2) – 241 4. Escobar A., Welcome to cyberia – notes on the anthropology of cyberculture, Current Anthropology, 1994, 35 (3) – 181 5. Van Mierlo, T., The 1% rule in four digital health social networks: An observational study, Journal of Medical Internet Research, 2014, 16(2) – 142 6. Rich, E., Anorexic dis(connection): Managing anorexia as an illness and an identity, Sociology of Health and Illness, 2006, 28(3) – 84 7. Wilson, B., Atkinson, M., Rave and Straightedge, the virtual and the REAL: Exploring Online and Offline Experiences in Canadian Youth Subcultures, Youth and Society, 2005, 36(3) – 53 8. Stokes, C.E., Representin' in cyberspace: Sexual scripts, self-definition, and hip hop culture in Black American adolescent girls' home pages, Culture Health & Sexuality, 2007, 9 (2) – 43 9. Simi, P., Futrell, R., Cyberculture and the endurance of white power activism, Journal of Political and Military Sociology, 2006, 34(1) – 41 10. Boler, M., Hypes, hopes and actualities: New digital Cartesianism and bodies in cyberspace, New Media and Society, 2007, 9(1) – 40

Badania nad kulturą cyfrową (cyberkulturą) – analiza domeny wiedzy na podstawie danych bibliograficznych z bazy Web of Science

Abstrakt

Cel/Teza: Celem była ocena stanu badań nad „kulturą cyfrową / cyberkulturą" poprzez analizę domeny wiedzy. Drugim celem było porównanie wyników uzyskanych poprzez prostą analizę danych bibliograficznych z bazy Web of Science z wynikami mapowania i wizualizacji danych w CiteSpace.

Oryginalność/Wartość poznawcza: Dziedzina wiedzy „kultura cyfrowa / cyberkultura" jest stosunkowo nowa. Badania w tej dziedzinie prowadzone są głównie w ramach nauk humanistycznych, społecznych i technologii informacyjnych.

Wyniki i wnioski: Stosunkowo niewielka grupa badaczy wnosi zauważalny wkład. Jednak różne metody analizy tego samego zestawu danych bibliograficznych prowadzą do różnych

wniosków. Badania oparte na danych bibliograficznych mogą być jedynie podstawą pełnej analizy domeny wiedzy.

Słowa kluczowe

Kultura cyfrowa. Cyberkultura. Analiza domeny wiedzy. Dane bibliograficzne. CiteSpace. Baza danych Web of Science.

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