



Article

# The Interplay of Religion and the Visual Arts: A Bibliometric Network Analysis (1991–2023)

Hong Zhang 1 and Cheryl Zhenyu Qian 2,\* 10

- School of Design, Jiangnan University, Wuxi 214122, China
- College of Liberal Arts, Purdue University, West Lafayette, IN 47907, USA
- \* Correspondence: qianz@purdue.edu

Abstract: Since the emergence of digital media in the 1990s, a new realm of interaction between the visual arts and religion has been forged and evolved. The spread of visual media technologies has significantly influenced the study of religious visual art worldwide after the 1990s. Despite this, the field of religious visual art during the digital era is still relatively uncharted, with a notable absence of comprehensive theoretical frameworks. To address this gap, the present paper employs bibliometric methods, conducting a thorough review and analysis of 2544 pieces of international academic literature in the domain of religion and visual arts post-1990s. The analytical framework is structured into three primary sections, each dedicated to answering key questions: (1) what constitutes the inherent relationship in the study of religion and visual art?, (2) what disciplinary context do these interplays occur within?, and (3) in which domains and regions does this interplay predominantly unfold? The outcomes of this rigorous analysis offer valuable insights into interdisciplinary influences and evolving research trends within the realm of religious visual art. These findings stand to benefit art researchers and practitioners, providing a comprehensive overview of potential avenues for the exploration of visual arts with religious themes. Through a systematic investigation, this research endeavors to heighten scholars' awareness of the significance of visual arts in the field of religion and illuminate the interdisciplinary trends at the intersection of religion and visual arts.

Keywords: visual art; religious art; bibliometric analysis; co-citation; research trends



Citation: Zhang, Hong, and Cheryl Zhenyu Qian. 2024. The Interplay of Religion and the Visual Arts: A Bibliometric Network Analysis (1991–2023). *Religions* 15: 481. https://doi.org/10.3390/rel15040481

Academic Editors: Bożena Gierek and Izabela Sołjan

Received: 9 February 2024 Revised: 27 March 2024 Accepted: 7 April 2024 Published: 12 April 2024



Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

#### 1. Introduction

The intertwining of religion and visual arts, extensively documented through centuries of academic discourse (Morgan 1997), has evolved significantly with the rise of digital media in the 1990s (Jenkins 1999). Digital platforms have introduced new mediums for religious expression (Mullins 1996), expanding the scope of interaction between religion and visual media. This expansion has not only diversified the forms and practices involved but also enhanced the analytical capabilities of its observers. Morgan (2005) highlights the pivotal role of media in religious beliefs, suggesting that the advent of digital technologies has transformed the dynamics between religion, visual arts, and media. This transformation necessitates a reevaluation of their interconnected history and ongoing synergy (Poole 1997).

Despite these developments, a segment of scholars within religious studies perceive the exploration of visual art and religion's connection as peripheral, particularly those who prioritize textual and discursive methodologies. They often regard visual elements as supplementary, viewing them as enriching yet not essential for comprehensive analysis of religious phenomena (Uehlinger 2015). Engler and Stausberg (2021) indicate that visual media has not profoundly influenced the academic study of religion, leaving it underresearched and lacking in theoretical development regarding visual culture's role.

In light of this, the present study seeks to delve into the complex relationship between visual arts and religion globally since the 1990s, a period marked by the rise of digital media.

Specifically, the research seeks to uncover the underlying nature of their relationship and elucidate the specific dynamics that have unfolded. Through an analysis of the relevant literature and empirical evidence, the study endeavors to address the following research questions:

- RQ1: What is the inherent relationship between the study of religion and visual art during this period?
- RQ2: What disciplinary context do these interplays occur within?
- RQ3: In which domains and regions does this interplay take place?

To address these research questions, this paper employs bibliometric analysis and visualization techniques to map the interdisciplinary themes, domains, and collaborations between religion and visual arts over the past 30 years. Through a systematic investigation, we aim to raise awareness among scholars in the field of religion regarding the significance of visual arts and shed light on the interdisciplinary trends within the intersection of religion and visual arts.

# 2. The Impact of Digital Media on the Development of Religious Visual Arts

Religion and art share a deep connection, influencing each other profoundly (Elsner 1996; Nasr 2006; Phillips and Steiner 1999). Religious thought significantly impacts artistic creation and the societal role of artists, while visual arts play a crucial role in expressing religious beliefs and rituals, aiding in the spread of religions. Research highlights the essential role of visual images in religious history, offering a unique lens to reflect on religious ideas and values (Goldburg 2004). This visual perspective provides insights into religion's nature and function that are otherwise difficult to achieve, especially in early societies with limited literacy (Uehlinger 2015). The study of religious iconography, evolving over time, underscores the importance of visual images in religion as a means of communication between the human and the divine (Schwabsky 2000). Hans Belting has broadened our understanding of iconology with his anthropological studies, examining how images influence or condition our gaze, whether through the images themselves (Belting 2007) or through specific cultural regimes (Belting 2009). In this context, images help materialize abstract concepts, serve as examples for imitation, or function as educational tools (Morgan 2005).

In the initial stages, the study of religious visual art was mainly focused on analyzing images, establishing a solid foundation for understanding their significance in religion (Gell 1998; Wuthnow 2012). The advancement in mass media and digital technology reinforced the power of visual art in comprehending and conveying religious traditions, cultures (Silva 2006). and discourses, both from historical and contemporary perspectives (Phillips and Steiner 1999). Hoover and Lundby (1997) explored how digital media shapes culture and religion, setting the stage for interdisciplinary research in religious studies. This led to the development of a contemporary focus on religious visual art, which shifted attention towards understanding the communicative aspects of visual expression, moving beyond simple image analysis to examine the conveyed messages and the communication processes between creators and viewers (Belting 2007). This approach allows for a richer understanding of religious content through the cultural patterns created by visual media, enhancing the connection between people and religious visual arts. Unlike the traditional art critique method, this modern approach incorporates insights from anthropology, sociology, media, and communication studies (Morgan 2020).

In recent years, the field of religion and visual arts has seen significant interdisciplinary collaboration, enriching the study through a visual culture approach. This includes partnerships between experts in imagery and those in religious studies, exploring texts, rituals, mythology, and material culture (Morgan 2000; Hosseini 2008). Regarding visual communication, studies have highlighted the emergence of new forms of religion through visual arts, even influencing faith (Wheeler 2003; Shockey 2019). Researchers have integrated artistic perception and cognition into the study of Islamic religious art (Shaw 2019). In addition to exploring the influence of the digital age on religious art (Ahyar 2019), schol-

Religions **2024**, 15, 481 3 of 18

arly exploration includes the examination of artistic issues and authenticity in religious live-streaming (Golan and Martini 2019). Narin (2021) investigates the metaverse's visual communication in a religious context. Additionally, the intersection of religion, art, and popular culture, as well as the influence of media economics on religion, has been examined (Molster 2013; Günzel and Mersch 2014).

While existing research lays a strong foundation and demonstrates the interdisciplinary potential within the study of religion and visual arts, the focus has largely been on examining specific instances and phenomena. This approach has left a gap in the systematic exploration of the broader interplay between these fields. Uehlinger (2015) points out that many scholars in religious studies often come without the necessary systematic training or a deep understanding of the methodologies and theories from closely related disciplines. Despite three decades of advancements in digital media, there's still a significant lack of comprehensive studies that delve into the intricate layers of interaction between visual arts and religion and their collaborative dynamics. This study aims to address the existing research gap by employing an interdisciplinary network analysis, grounded in bibliometric research. Our objective is to elucidate the intricate interactions and prevailing trends at the intersection of religion and visual arts. By doing so, we seek to chart a more defined course for subsequent investigations within these interwoven disciplines. We aspire to heighten scholars' recognition of the significance of interdisciplinary methodologies in religious studies, thereby fostering enhanced collaboration in future research endeavors.

## 3. Method

To address the research questions, we employed the method of bibliometric analysis and knowledge mapping. This approach is based on the existing academic literature on religion and visual arts, constructing an inherent relationship network.

#### 3.1. Literature Search

Research in the field of religious visual art has penetrated various disciplines, spanning humanities, social sciences, and even science and technology, leading us to retrieve articles from the Web of Science (WoS) Core Collection. This Collection offers direct access to Citation Index databases, Science Citation Index Expanded, the Social Sciences Citation Index, the Arts and Humanities Citation Index (all from Clarivate), Citation Index Conference Proceedings Citation Index-Science, Conference Proceedings Citation Index-Social Sciences, Hu the Emerging Sources Citation Index (ESCI), and the Book Citation Index. Combining the humanities, social sciences, and natural sciences provides search results with a more comprehensive insight into the developmental boundaries of religious visual arts.

To examine the global research on the relationship between visual arts and religion since the 1990s, we conducted searches using two keywords, namely "religious art" and "religious visual art", on WoS. The search period was set from 1 January 1985 (the earliest searchable year on WoS) to December 31, 2023. The initial search yielded a total of 2607 documents with the two terms. Upon closer examination, it was identified that "Antiretroviral Therapy (ART)" was erroneously included due to the term "art". After excluding this unrelated content, the refined dataset comprised 2544 documents, with the earliest publication dating back to 1991. We exported the "full records and references" in "txt" format from WoS for further analysis of each item.

# 3.2. Approach and Platform

This study utilizes knowledge mapping theory to visualize information concerning religious visual art. Knowledge mapping, a process that visually links pieces of information, generates new actionable insights (Vail 1999). It facilitates the creation of sustainable domain knowledge, serving as an evolving theoretical knowledge memory that captures and integrates key organizational knowledge. Through the information on the map, new relationships can be discovered and fresh knowledge can be generated (Balaid et al. 2013).

Religions **2024**, 15, 481 4 of 18

The process of knowledge mapping involves acquiring, manipulating, storing, processing, and visualizing data.

To present the visualized network of scientific knowledge, we use Citespace (6.2.R2 Advanced Standard) software for analysis. It is a Java application that combines information visualization methods, bibliometrics, and data mining algorithms in an interactive visualization tool for the extraction of patterns in citation data (Chen 2014). CiteSpace, predominantly used in natural science research, has seldom been applied to scrutinize the research literature on religious visual art. For this study, we compiled a database of research on religious visual arts from 1991 to the present, sourced from the Web of Science (WoS). We then utilized CiteSpace as a tool for knowledge mapping, aiming to outline the knowledge network and identify developmental trends within the field of religious visual art research.

# 3.3. Analytical Approach

To systematically address the three research questions, our approach integrates five computational aspects of bibliometric analysis: co-occurrence, co-citation, citation bursts, centrality, and pennant diagrams. These methods are employed to scrutinize keywords, categories, literature citation networks, author networks, institutions, and countries within the religious visual arts domain. Our objective is to unveil the multilayers of the interplay between visual arts and religion through the analysis of keywords and categories in the literature. By examining literature citations and author collaboration networks, we aim to understand the dynamics of interdisciplinary collaboration. Furthermore, analyzing regional and country-specific data helps us identify the global development trends in the study of religious visual arts (Table 1).

Table 1. Analytical approach.

Research Questions	Analysis Dimensions		
(1) What is the inherent relationship in the	Keywords		
study of religion and visual art?	Categories		
(2) Have done this intermelay accur?	Literature citation networks		
(2) How does this interplay occur? —	Author networks		
(3) In which domains and regions does this interplay take place?	Institutions and countries		

- Co-occurrence Analysis: It is an efficient method for analyzing and describing conceptual relatedness in data. By simplifying the bibliographic data and making sure to visualize the visual patterns, the key information contained in the data is preserved. Measuring the association strengths of terms representative of relevant publications produced, co-occurrence analysis can reveal conditions and trends in a particular field of study. It visualizes the intellectual structure of one specific discipline into maps of the conceptual space of this field and a time series of such maps produces a trace of the changes in this conceptual space (Chen 2014);
- Co-citation Analysis: Examines the formal record of scholarly communication, including author, journal, and keyword co-citation (Small 1973). In the analysis, co-cited frequency measures how many other articles are co-cited with this article. Since the data presented when the threshold value is less than two times is too scattered and the threshold value is more than four times the data is less, we selected articles with a total of more than three citations as the visualization standard;
- Citation Bursts Analysis: A high citation burst node is located at an intellectual transition point in a given research area. It identifies research hotspots and shows associations with a surge of citations (Kleinberg 2002), indicating intellectual transition points and emerging trends (Chen 2006);

Religions **2024**, 15, 481 5 of 18

Centrality Analysis: It measures the percentage of the number of shortest paths in
a network to which a given node belongs. Nodes with high-betweenness centrality
tend to be found in paths connecting different clusters. Centrality metrics provide
a computational method for finding pivotal points between different specialties or
tipping points in an evolving network (Chen 2006).

• **Pennant Diagram:** An analysis model based on Sperber and Wilson's relevance theory (Sperber and Wilson 1986). It calculates the term frequency (*tf*) and inverse document frequency (idf) values to judge the cognitive effects and ease of processing of a given topic (1). Presented in the form of scatter diagrams and finally in the form of pennant diagrams. *tf* predicts the cognitive effect of researchers in the field when using certain keywords together, while idf predicts the relative ease with which researchers associate their keywords with the seed keywords. Easier processing effort means that these terms are more related to the seed term and have higher contextual effects and vice versa.

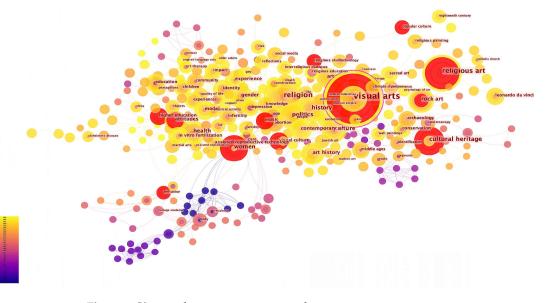
$$Relevance = 1 + \log(tf) \times \log(N/df)$$
 (1)

#### 4. Results

4.1. Intrinsic Network in the Interplay between Religion and Visual Art

# 4.1.1. Keywords Evolution

The keyword visualization map presents the co-occurrence network and frequency of research keywords in the field (Figure 1). The dimension of each node correlates with the frequency at which each keyword appears, while the connections between nodes delineate the relational network indicating where keywords co-occur. The research on religious visual arts has formed two main research networks. At the top are research hotspots that have emerged in recent years. Apart from the search words (visual arts and religious art), the keywords that constitute the network include cultural heritage, history, women, and others. The keyword network positioned in the lower-left area of the diagram is also relatively early in terms of research time and includes keywords like behavior, body, and prevalence. From the frequency of appearance of keywords, the top 10 are ranked as follows: visual arts (75 times), religion (37 times), religious art (32 times), cultural heritage (20 times), women (17 times), politics (16 times), history (16 times), culture (15 times), and health (14 times). High-frequency keywords in religion and visual arts research indicate that researchers have paid close attention to these research topics.



**Figure 1.** Keyword co-occurrence network.

Religions **2024**, 15, 481 6 of 18

These keywords on citation bursts since 1991 are shown in Table 2. Citation bursts signify a sudden increase in references to specific keywords within the field of religious visual art, with the duration of a burst reflecting the keyword's prominence in the given timeframe. Analyzing citation bursts helps identify emerging research topics and current trends in the field. The red line in the table indicates the burst duration. The blue line represents the entire time interval of the citation. The findings show that the keyword "attitudes" had the longest duration from 2011 to 2018. In 2019, significant citation bursts for "women", "visual culture", "music", and "religious studies" indicated these as influential research areas. However, the end of a keyword's citation burst does not denote a decline in the relevance of the topic it represents. This could be due to updates in terminology, new conceptual mergers, or shifts within the field. For example, religious art ended in early 2021. The keywords of *sacred art* continually developed to 2023 in the later period combined. It is evident that while discussions on pertinent topics like women and visual art commenced as early as the 1990s in the realm of digital media influence, substantial influence within the field of religious visual arts has predominantly surfaced post-2010. This observation also tangentially addresses the Uehlinger (2015) perspective.

<b>Table 2.</b> Top 10 keywords with the strongest citation bursts.

V1-	Citation Bursts							
Keywords	Strength	Year	Begin	End	Duration			
attitudes	2.98	2011	2011	2018				
higher education	2.99	2016	2016	2019				
religious art	5.08	2017	2017	2021				
women	3.80	1992	2019	2021				
visual culture	3.48	2019	2019	2021				
music	2.70	2019	2019	2021				
religious studies	2.70	2019	2019	2021				
visual arts	3.82	1997	2020	2021				
sacred art	2.80	2020	2020	2023				
cultural heritage	3.09	2010	2021	2023				

We categorized the literature on religious visual arts into three distinct time periods to assess their evolution (Figure 2). Keywords that appear more frequently are depicted as larger nodes and changes in their occurrence over time are indicated by the nodes' color transitions. By comparing these three periods and examining the networks' "Timezone" with interconnected keywords, we can trace the development of research topics within the domain of religious visual arts. The complexity of the network configuration has increased over time. Before 2001, the focus was primarily on sex differences, control of society, and body image. While visual arts emerged as a notable keyword within the field in 1997, it did not become part of a significant network until 2014. Between 2002 to 2012, there was an expansion in the field, including topics such as the history of medicine and transplantation. After 2007, themes related to performance and body art gradually gained attention. From 2013 to 2023, there was a marked shift in research focus, with visual arts becoming a central keyword and intertwining with religion and religious arts to form intricate networks of research topics. This trend illustrates that the keyword networks in religion and visual arts have matured, with stable sub-networks contributing to a cohesive intellectual framework.

Figure 3 showcases the recent 3 years' research hotspots and trends. Aside from art and religion, the focus on politics has become a central keyword in the past three years, indicating that political themes have become a primary medium of research in the field of art and visual arts. Many studies have explored the research on the involvement of religious visual arts through topics related to *politics* (Beisel 1993), such as *contemporary art*, *ottoman empire*, etc. In addition, *cultural heritage*, *experience*, and *woman* are also research hotspots. Through quantitative analysis, we have clustered these keywords into five thematic categories, namely *art therapy*, *Islamic marketing*, *Jewish art*, *English language arts*,

Religions **2024**, 15, 481 7 of 18

and *cultural industries*, that is to say, these themes of research were a hot spot in recent years.

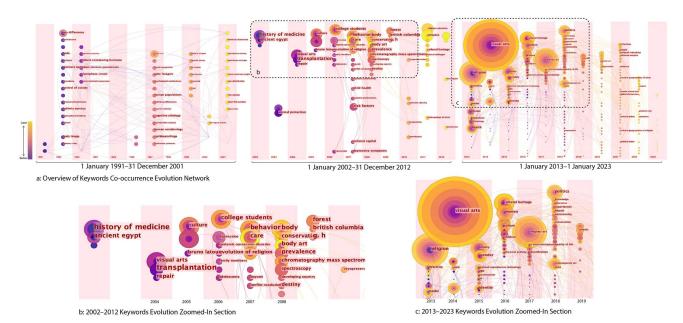


Figure 2. Keyword co-occurrence evolution network.

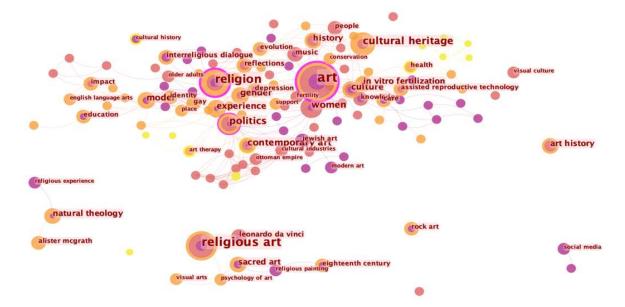


Figure 3. Keyword co-occurrence network (2020–2023).

# 4.1.2. Keyword Relevance

By setting "visual arts" as the seed term, we aimed to observe the theoretical relationships formed within the field of religious visual arts. The pennant diagram, s employed in CiteSpace, offers a visual representation of keyword co-occurrence patterns across a collection of documents. This diagram assigns weights that carry psychological implications according to relevance theory: term frequency (TF) is used to forecast the cognitive impact of co-occurring keywords, whereas inverse document frequency (IDF) estimates the ease with which keywords can be linked to a central term. Specifically, the TF weight predicts the cognitive effects of co-occurring keywords on the researcher. This means that keywords with higher TF weights are more likely to have a significant impact on the researcher's understanding or perception. Conversely, keywords with higher IDF weights are more

Religions **2024**, 15, 481 8 of 18

likely to be conceptually related to the seed keyword and are thus more easily associated with it by the researcher.

The analysis presented in Figure 4 indicates that topics associated with the seed term *visual arts* fall into medium and high categories in terms of processing ease, signifying that research topics in visual arts within the religious context are notably specific and highly relevant. The most specialized subjects, such as *animated sculpture* (kinetic sculptures), *apse*, and *reliquary cross*, are positioned in the pennant's upper left quadrant, highlighting their specificity to religious visual art studies. Conversely, topics such as *religious art* and *religion*, situated in the lower left quadrant, represent broader thematic areas, suggesting that they serve as overarching theoretical frameworks within the field. *Cultural heritage* presents the greatest cognitive effect with the seed term. In general, minimal processing effort and maximum cognitive effect will be key themes in domain research. In the study of religious visual arts, although specific research directions have emerged, no influential specific themes have been formed. Therefore, enhancing the influence of specific research themes is key to the subsequent development of this field.

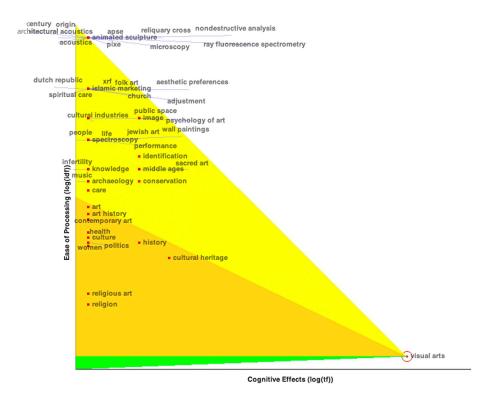


Figure 4. Pennant diagram of co-occurring keywords with visual arts.

## 4.1.3. Interdisciplinary Categories

During the development of religion and visual art, researchers have conducted extensive studies by combining different subjects, including *humanities*, *history*, *archaeology*, *anthropology*, *education*, and *philosophy*. The interdisciplinary collaboration in the study of religious visual arts commenced around 2003 (Figure 5). It can be seen from the interdisciplinary network with the time zone that the study of religion and visual art was initiated by the discipline of "religion" earliest, followed by the involvement of *sociology*, *anthropology*, and other disciplines. The discipline of *visual arts* was integrated into research in this field until 2016.

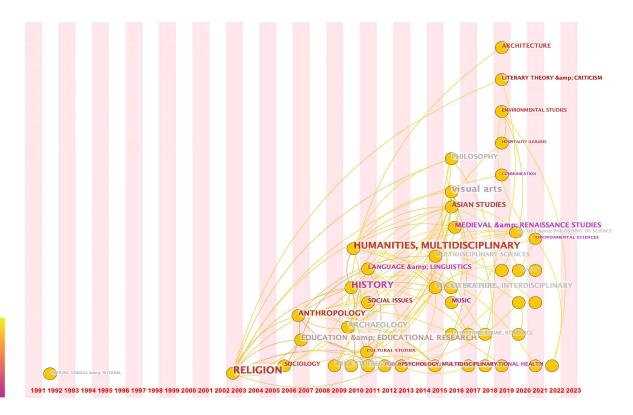


Figure 5. Categories' cooperation network.

Table 3 elaborates on the duration of influence from the Top 10 disciplines in precise citation bursts. *Sociology* (9 years), *anthropology* (8 years), and *regional studies* (6 years) have had a long-lasting impact in the field of religion and visual arts, which is consistent with the following results analyzed by the co-citing authors.

**Citation Bursts Subjects Categories** Strength Year Begin End Duration Religion 4.54 2003 2003 2005 Sociology 10.73 2006 2006 2015 Anthropology 23.81 2007 2007 2015 Area Studies 3.79 2009 2009 2015 **Education & Educational** 7.08 2007 2011 2015 Research **Cultural Studies** 4.62 202011 2011 2011 2016 Music 4.53 2016 2017 4.32 2010 2016 2017 Archaeology History & Philosophy of 3.99 2020 2020 2021 Science Social Issues 4.03 2011 2022 2023

**Table 3.** Top 10 subject categories with the strongest citation bursts.

4.2. Research Basis of the Interplay between Religion and Visual Art

## 4.2.1. Document Citation Networks

The citation burst of the co-cited document is an indicator, reflecting the intensity of research activity or the emergence of hotspots within a field. This metric elucidates the evolution of pivotal nodes over time. Table 4 shows the top 10 references with the strongest citation bursts in the field of religion and visual culture. The earliest literature that gained sudden attention in the field was (Taves 2009) and Măruţoiu et al. (2016). The book of Taves, "Religious experience reconsidered", presented a framework for the examination of religious

phenomena. This work reinstated religious experience as a key concept and reconciled the disconnect between religious studies and science. The Article of Măruțoiu "Scientific investigation of the Imperial Gates belonging to the wooden church from Săcel, Turda County, Romania" utilized scientific techniques (FTIR and XRF) to study the Imperial Gate from a wooden church in Cluj County, Romania. By studying the painting pigments, similar colors to the original art were found and 3D technology was used to reconstruct the cultural heritage. Măruţoiu's research has made a significant impact on the field, prompting many scholars to adopt this methodology for their research (Comes 2016; Garrote et al. 2017). However, some researchers believe that the FTIR technique has limitations (Zhao et al. 2019). Both the disputes and the referencing of this approach could result in a citation burst as they both underscore the scholarly attention focused on this research method. Harrison (2015) rapidly emerged as a citation burst within less than a year, marking it as the most pronounced citation burst in the field. In his book "The Territories of Science and Religion", Harrison explores the historical interplay between natural science and religious life, providing a detailed examination of their inherent connection for the first time. He aims to fundamentally alter our understanding of these critical aspects of human life and experience, promising lasting impacts on our perceptions of these foundational elements.

Table 4. T	op 10	references	with the	strongest	citation bursts.
------------	-------	------------	----------	-----------	------------------

Burst	Burst Begin	Burst End	Degree	Document	Title
3.56	2022	2023	6	Harrison (2015)	The Territories of Science and Religion
2.65	2020	2021	4	Birnbaum (2016)	Contemporary Israel: New Insights and Scholarship
2.50	2016	2017	1	Taves (2009)	Religious experience reconsidered
2.44	2021	2021	0	Houellebecq (2015)	The 8 p.m. news and the art of the novel: On the subject of Submission.
2.37	2022	2023	1	Sallam (2016)	Religious aspects of assisted reproduction
2.18	2016	2018	4	Măruţoiu (2016)	Scientific investigation of the Imperial Gates belonging to the wooden church from Săcel, Turda County, Romania
1.83	2021	2021	0	Lin (2014)	Microsoft COCO: Common Objects in Context
1.77	2022	2023	3	Skerrett (2014)	Religious Literacies in a Secular Literacy Classroom
1.77	2022	2023	7	Di Dio (2020)	Beauty in life: An eye-tracking study on young adults' aesthetic evaluation and vitality judgment of pictorial representations of sleeping and dead subjects
1.77	2022	2023	3	Juzwik (2014)	American Evangelical Biblicism as Literate Practice: A Critical Review

## 4.2.2. Author Collaboration Networks

Table 5 shows the top ten authors with the strongest citation burst. Compared with other authors, Bourdieu was the earliest in the field and had the strongest citation burst, with the longest duration. This indicates that from 2011 to 2018, Bourdieu's research had a significant impact on the field. Much of Bourdieu's work observes the role of educational and cultural resources in the expression of agency (Bourdieu 1984; Bourdieu and Passeron 1990). Walter Benjamin became an author with great strength within a year (2016–2017). Benjamin made enduring and influential contributions to historical materialism, aesthetic theory (Benjamin 1935), and literary criticism (Benjamin 1978).

Table 5. Top	10 authors	with the	strongest	citation	hurst
Table 3. IUL	) io audiois	o willi uic	SHUHEESI	Citation	Duist.

Burst	Burst Begin	Burst End	Degree	Authors	Year
5.79	2011	2018	29	Bourdieu, P	2011
4.38	2016	2017	15	Benjamin, Walter	2016
3.73	2022	2023	8	Harrison, Peter	2022
3.73	2022	2023	0	Unesco	2022
3.53	2018	2020	28	Panofsky, Erwin	2018
3.48	2013	2017	5	Inhorn, Mc	2013
3.24	2022	2023	4	Duncan, C	2020
3.11	2020	2021	12	Habermas, J	2020
2.91	2017	2018	3	Campbell, C	2017
2.79	2019	2019	10	Berger, Pl	2019

Furthermore, we utilized centrality analysis to observe the influence of researchers within the field of religious visual arts. Centrality measures the proximity of one node to others within the network, serving as an indicator of a researcher's influence and importance (Freeman 2002). Table 6 shows the top 10 authors scored by centrality in religion and visual art from 1991 to 2023. The top three high-centrality authors included Taylor, and Charles (0.22). Morgan, David (0.21), and Asad, Talal (0.15). Charles Taylor, a Canadian philosopher, has significantly contributed across various philosophical disciplines, including moral philosophy, epistemology, hermeneutics, aesthetics, and the philosophy of mind, language, and action. David Morgan is a Professor of Religious Studies at Duke University. Morgan's research has focused on the history of Protestant visual culture since the 18th century. He has also studied Catholic devotional images, the history of art theory, and religion and media. One of his notable contributions is *The Sacred Gaze: Religious Visual Culture in Theory and Practice* (Morgan 2005). Talal Asad is a cultural anthropologist. He mainly focuses on religiosity, Middle Eastern studies, postcolonialism, and notions of power, law, and discipline.

**Table 6.** Top 10 highly ranked centrality authors and start years.

Freq	Degree	Centrality	Authors	Year	Cluster
25	48	0.22	Taylor, Charles	2017	3
38	58	0.21	Morgan, David	2016	1
18	47	0.15	Asad, Talal	2017	6
48	39	0.14	Eliade, Mircea	2016	1
38	38	0.12	Foucault, M	2015	5
22	41	0.11	Belting, Hans	2017	0
18	32	0.11	Freedberg, David	2017	0
25	48	0.22	Taylor, Charles	2017	3
18	37	0.08	Mitchell, Wjt	2018	0
15	28	0.06	Panofsky, Erwin	2018	0

Co-citation author analysis sheds light on the collaboration and intellectual exchange among researchers in a given field. The clustering timeline of co-cited authors (Figure 6) reveals that while the intersection of religion and visual art as a subject of scholarly interest dates back to 1991, a significant uptick in literature contributions to this domain began around 2015. This surge indicates that since 2015, the study of religion and visual arts has established a more solid theoretical base. The research themes identified through co-citation

in this area have been organized into eight distinct clusters, showcasing the diverse yet interconnected topics that scholars are exploring within the intersection of religion and visual art.

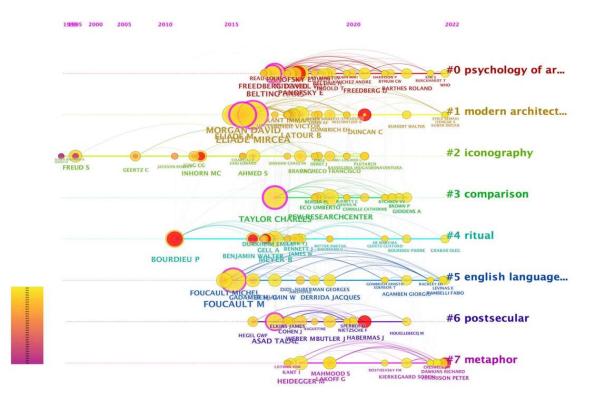


Figure 6. Co-cited author timeline with clusters.

Iconography is a cluster that possesses the earliest co-cited author. This indicates that iconography is the topic that began to exert influence earliest in the field of religious visual arts. Sigmund Freud is the earliest co-cited author whose influence continues to resonate, as evidenced in the timeline (Rempel 1997). The remaining clusters include *psychology of art, modern architecture, comparison, ritual, English language arts, post-secular*, and *metaphor*.

#### 4.3. Domains and Regions of Interplay between Religion and Visual Art

# 4.3.1. Distribution of Contributing Countries

From the perspective of the nation's research contributions, the top five countries/ regions are the USA (533), Russia (193), England (167), Spain (131), and Turkey (103), which possess the dominant positions and influence in religious visual arts research. Furthermore, the number of documents from the USA is twice that of Russia, indicating the dominance of the USA in religious visual arts research achievements. Table 7 lists the top 10 countries by the strength of their citation bursts in religious visual arts research. The United States initiated its research efforts as early as 1991 but it was German research that marked the first significant citation burst in this domain from 1999 to 2006, indicating an early dominance and leadership in religious visual arts studies. Over time, the influences of Belgium, Romania, and Australia have progressively become more prominent. It is worth noting that Russia experienced a citation burst in the field in 2018, which lasted only one year but resulted in the highest burst strength. This indicates that Russia's research has contributed important research results to this field in the short term. In addition, Ukraine and China joined relatively late but they have also developed influence in recent years.

From a centrality perspective (Table 8), England and the USA are highly influential research countries, followed by France. Through the clusters shown in the timeline view (Figure 7), it is evident that the USA's research focus on religion includes keywords such as *religion*, *rococo*, *Santa Rita*, *semiotics*, and *experience*. This indicates that in the 1990s,

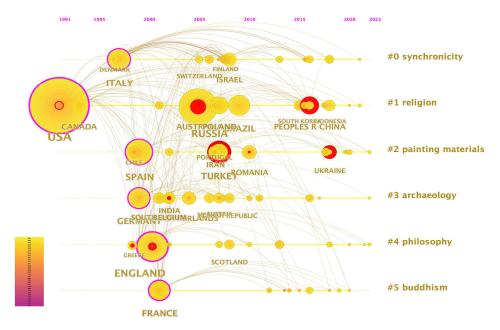
American research explored the relationship between religion and artistic styles such as *rococo* and *Santa Rita*. On the other hand, research from England leans towards philosophy and includes keywords such as *religion*, *silence*, *metaphor*, *religiosity*, *Christianity*, *cave art*, *iconography*, *finger-fluting*, and *inscription*.

Table 7.	Top	10	countries	with	the	strong	gest	citation	bursts.
----------	-----	----	-----------	------	-----	--------	------	----------	---------

Countries				Citation Bu	ırsts
	Strength	Year	Begin	End	Duration
Germany	3.56	1999	1999	2006	
Belgium	3.85	2002	2009	2017	
Romania	6.49	2010	2010	2015	
Australia	2.93	2005	2014	2017	
USA	5.15	1991	2015	2015	
England	4.86	1999	2016	2017	_
Russia	6.85	2006	2018	2019	
Ukraine	3.79	2018	2021	2023	
China	3.51	2016	2021	2023	
Turkey	3.84	2007	2022	2023	

Table 8. Top 10 highly ranked centrality countries and start years.

Freq	Degree	Centrality	Countries	Year
167	33	0.28	England	1999
533	36	0.25	USA	1991
82	25	0.18	France	2001
87	28	0.15	Germany	1999
97	26	0.15	Italy	1997
131	19	0.11	Spain	1999
77	7	0.06	Brazil	2009
193	10	0.05	Russia	2006
37	10	0.05	Iran	2007
50	15	0.04	Canada	1993



**Figure 7.** Network clustering of cooperation between countries in a timeline view.

## 4.3.2. Distribution of Contributing Institutions

The Top 10 institutions (Table 9) ranked by the citation burst of religion and visual art are the Russian Academy of Sciences (39), the Ministry of Education and Science of Ukraine (17), the University of California System (16), Tomsk State University (15), University of Oxford (12), Yale University (8), Lomonosov Moscow State University (8), UDICE-French Research Universities (24), University of Murcia (5), and University of Melbourne (6). Among them, the Russian Academy of Sciences has the largest number of publications, the longest citation burst duration, and the highest strength, which indicates that the institution's research literature is of high quality and has great influence.

**Citation Bursts Countries** Strength Year Begin End Duration 3.72 2016 2016 2017 University of California System 2016 2016 2017 University of Oxford 3.62 2.70 2017 2017 2019 University of Melbourne Russian Academy of Sciences 7.49 2018 2018 2021 2018 Tomsk State University 3.68 2018 2020 3.07 2018 2018 2020 Yale University Ministry of Education & Science of 2019 4.35 2020 2023 2.97 2006 2020 2021 **UDICE-French Research Universities** Lomonosov Moscow State University 3.05 2019 2021 2021 University of Murcia 2.96 2022 2022 2023

**Table 9.** Top 10 institutions with the strongest citation bursts.

#### 5. Discussion

Through bibliometric analysis, we have systematically addressed the posed research questions. Firstly, by evaluating literature keywords and categories, we have mapped the evolution of research themes at the intersection of religion and visual arts. This process has also allowed us to pinpoint the breadth of influence and identify existing gaps within the realm of visual arts in religious studies. Secondly, through analysis of author collaboration and cited literature, we have identified key theoretical works in the field and themes of collaboration among authors. Thirdly, an analysis of the geographical distribution of the research literature and institutional affiliations has shed light on global collaboration patterns among researchers and revealed regional variances in the focus of religious visual arts research.

The results of this article significantly facilitate the work of interdisciplinary researchers engaged in the study of religious visual arts, especially sociologists, psychologists, and art scholars. The visualized interplay network we present enables them to rapidly grasp the discursive framework and research focal points within the field of religious visuals. More importantly, our findings offer substantial value in assisting researchers in formulating research questions, conducting literature reviews, and choosing appropriate methodologies. In the subsequent discussion, we provide concrete suggestions for researchers, structured around three key areas: research topics, theoretical foundations, and the academic context. These recommendations are designed to guide scholars through the intricate process of establishing a robust framework for their investigations in religious visual arts.

# 5.1. Research Topic Gaps: Constructing Influential Cognitive Topics

Initially, the results indicate that research in religious visual arts is primarily led by the theme of "religion" from a disciplinary perspective. This underscores the influence of visual arts on religious studies. As the field of study progresses, we observe a pivotal shift around 2013 in the development timeline of keywords, signaling the emergence of interdisciplinary exploration at the intersection of religion and visual arts. This transition

Religions **2024**, 15, 481 15 of 18

initiates a complex network of interdisciplinary collaboration, with social humanities and historical archaeology emerging as key facilitators for this mutual relationship. Notably, this interdisciplinary fusion successfully surmounts traditional disciplinary boundaries, as evidenced by a substantive focus on *cultural*, *gender*, and *political* dimensions in religious visual arts research. Moreover, the research outcomes underscore the catalytic role of visual arts propelled by religion, catalyzing heightened discourse on societal issues such *as gender disparities* and *social control*. The profound intersection of religion and visual arts offers a lens for a deeper interpretation of *cultural heritage*, exemplified through expressions such as *performance* and *body art*.

In a further dimension, religious visual arts manifest as a scholarly achievement spanning diverse academic levels. The exploration of religious themes in visual art encapsulates a spectrum, encompassing visual aesthetics in religious architecture (e.g., *Reliquary Cross, apse,* and *sculpture*), nuanced examinations of artistic issues in *Islamic marketing,* and studies delving into the intersection of visual arts with *cultural industries*. Despite this comprehensive multi-level inquiry, a critical observation emerges—the current research landscape lacks a cohesive thematic exploration with discernible cognitive impact. This realization underscores the ongoing potential for profound insights into specific religious themes within the realm of visual arts, urging further scholarly exploration and inquiry.

Therefore, for interdisciplinary researchers selecting research topics within the domain of religious visual arts, social issues and cultural heritage can serve as foundational entry points. This approach encourages scholars from the fields of cultural and social studies to infuse religious visual arts research with fresh insights drawn from their specific areas of expertise. Regarding the choice of specific research topics, researchers are advised to focus on several emerging areas of interest, including art therapy, Islamic marketing, Jewish art, English language arts, and cultural industries. Notably, art therapy distinguishes itself as a relatively distinct topic, aligning more closely with health-related discussions than other humanities and social science themes.

# 5.2. Theoretical Foundations: Applying Sociological and Psychological Analysis in Research

In the intricate interplay between religion and visual art within academic spheres, the dynamics unfold through interdisciplinary collaboration and methodological fusion, with sociology, psychology, and cultural theory acting as pivotal bridges. The exploration of scientific methodologies in the study of religious art highlights a broader trend toward interdisciplinary approaches. As researchers navigate this complex intersection, the evolving discourse and citation patterns underscore the dynamic nature of academic engagement with the multifaceted relationship between religion and visual arts. The academic land-scape is shaped by citation bursts, with seminal works by sociologists and cultural critics like Bourdieu and Walter Benjamin catalyzing shifts in research focus. This academic interplay is marked by continuous evolution, as reflected in the clustering timeline of co-cited authors, where the theoretical foundation of religion and visual arts research solidifies over time.

Notably, influential literature often emerges from interdisciplinary endeavors. Their attempts to integrate scientific methodologies with religious art underscore the academic synergy between diverse fields. Sociology, exemplified by scholars like Pierre Bourdieu, and psychology, as demonstrated by Freud, offer crucial theoretical foundations that bridge the domains of education, culture, and religious visual arts.

Upon selecting a research topic and moving towards conducting a literature review and theoretical framework development, our findings offer pivotal guidance for researchers. Scholars are advised to aim for publications with significant impact within the realm of religious visual arts journals. Those embarking on this scholarly journey can lay a robust groundwork by integrating theories from sociology and psychology into their exploration of religion and visual arts. Moreover, it is observed that the cornerstone of the existing classic literature in this field predominantly comprises written books. This trend reflects the disciplinary emphasis on a solid theoretical foundation. However, the future progression

of religious visual arts research will likely be propelled by the publication of academic journal articles. These publications, embodying contemporary findings and discussions, are essential in propelling the discipline forward. Considering the earlier mentioned absence of influential cognitive themes, we strongly recommend that researchers employ interdisciplinary approaches such as sociology and psychology, aiming to make greater contributions to academic journals in the field.

## 5.3. Regional Characteristics: Diverse Academic Contexts across Regions

This intricate interplay of religious visual art research specializations and thematic emphases not only enriches the academic landscape but also underscores the dynamic and multifaceted nature of religious visual art studies. From an academic geography perspective, the field of religious visual art has witnessed significant contributions primarily emanating from institutions and nations in the United States and Europe. The discernible distribution of publications suggests the existence of potential clustering networks, shaped by distinct research specializations and thematic focuses. In 1991, the United States marked a pivotal moment in its engagement with religious visual art research, placing a pronounced emphasis on the overarching theme of "religion". Concurrently, Germany took a leading role by directing its focus towards "archaeology" during notable citation bursts. Amidst the spectrum of nations contributing to this academic domain, the United Kingdom stands out as particularly research-centric, showcasing a significant emphasis on the exploration of "philosophy".

Notably, discernible trajectories of research among different institutions and countries may align with specific standards. Interdisciplinary scholars should be acutely aware that both religion and visual arts are deeply embedded in regional and cultural specificities, leading to a pronounced regionalism in academic studies within this field. These regional characteristics significantly influence the direction of academic research in a given area, creating a cyclical academic context. For sociologists, gaining an understanding of the religious visual arts context within a specific region is incredibly valuable for interdisciplinary research. Furthermore, our findings serve as a valuable reference during the writing and discussion phases for researchers. We recommend that researchers tailor their discourse to closely align with the contextual characteristics of the study region, which may resonate more effectively with the academic community. Most importantly, our results support researchers in pursuing collaborations across institutions and internationally. By leveraging the unique features and established research foundations of different institutions and regions, researchers can foster more targeted and impactful collaborations.

#### 6. Conclusions

Utilizing bibliometric analysis and data visualization, this study methodically delineates the complexities inherent in the research on religion and visual arts. By examining their interrelatedness, patterns of collaboration, and developmental trajectories, our investigation has illuminated crucial aspects of their interplay. Our analysis, organized into three principal components—research topics, theoretical frameworks, and scholarly discourse—unveils the dynamic collaboration within the field.

The data-driven insights have led to targeted recommendations for interdisciplinary research, emphasizing topic selection, theoretical development, and discourse contextualization. These recommendations serve as a robust reference for scholars preparing to embark on interdisciplinary studies, particularly those navigating the nuanced domain of religious visual arts. Furthermore, by crafting a comprehensive network overview of religious visual arts research, we not only offer an entry point for novices to the field but also encourage broader academic engagement. Ultimately, this paper aspires to amplify the appreciation of interdisciplinary methodologies within religious studies, advocating for a future rich in collaborative research efforts.

## 7. Limitations and Future Work

Although this study has provided informative and insightful research conclusions, there are still limitations to the study. The methods of bibliometric analysis and visualization diagrams may result in the research focusing mainly on macro and significant results while neglecting small clusters and small data. Conducting a more specialized and indepth analysis of individual documents may produce more perspectives. Furthermore, analytical methods with algorithmic coding such as meta-analysis and Mapequation will be considered in future studies to obtain more valuable and persuasive research conclusions.

**Author Contributions:** Writing—original draft, H.Z.; Supervision, C.Z.Q. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research was funded by 2023 Jiangsu Province Graduate Research and Innovation Program, China. Grant number: KYCX23\_2429.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Not applicable.

Data Availability Statement: No new data was created in this study.

Conflicts of Interest: The authors declare no conflict of interest.

## References

Ahyar, Muzayyin. 2019. Aksi Bela Islam: Islamic Clicktivism and the New Authority of Religious Propaganda in the Millennial Age in Indonesia. *Indonesian Journal of Islam and Muslim Societies* 9: 1–29. [CrossRef]

Balaid, Ali Saleh S., Masoumeh Zibarzani, and Mohd Zaidi Abd Rozan. 2013. A Comprehensive Review of Knowledge Mapping Techniques. *Journal of Information Systems Research and Innovation (JISRI)* 3: 61–66.

Beisel, Nicola. 1993. Morals versus Art: Censorship, the Politics of Interpretation, and the Victorian Nude. *American Sociological Review* 58: 145–62. [CrossRef]

Belting, Hans. 2007. Der Blick Im Bild. Zu Einer Ikonologie Des Blicks. Leiden: Brill, pp. 47–75.

Belting, Hans. 2009. Zu Einer Ikonologie Der Kulturen: Die Perspektive Als Bildfrage. In *Ikonologie der Gegenwart*. Leiden: Brill Fink, pp. 9–20.

Benjamin, Walter. 1935. The Work of Art in the Age of Mechanical Reproduction. London: Routledge.

Benjamin, Walter. 1978. Reflections: Essays, Aphorisms, Autobiographical Writings. New York: Schocken Books.

Bourdieu, Pierre. 1984. Distinction: A Social Critique of the Judgement of Taste. London: Routledge Kegan Paul.

Bourdieu, Pierre, and Jean-Claude Passeron. 1990. Reproduction in Education, Society and Culture. London: Sage.

Chen, Chaomei. 2006. CiteSpace II: Detecting and Visualizing Emerging Trends and Transient Patterns in Scientific Literature. *Journal of the American Society for Information Science and Technology* 57: 359–77. [CrossRef]

Chen, Chaomei. 2014. The Citespace Manual. College of Computing and Informatics 1: 1-84.

Comes, Radu. 2016. Haptic Devices and Tactile Experiences in Museum Exhibitions. *Journal of Ancient History and Archaeology* 3: 60–64. [CrossRef]

Elsner, John. 1996. Image and Ritual: Reflections on the Religious Appreciation of Classical Art. *The Classical Quarterly* 46: 515–31. [CrossRef]

Engler, Steven, and Michael Stausberg. 2021. *The Routledge Handbook of Research Methods in the Study of Religion*. London: Routledge. Freeman, Linton C. 2002. Centrality in Social Networks: Conceptual Clarification. *Social Network: Critical Concepts in Sociology* 1: 238–63. [CrossRef]

Garrote, Marco Aurelio, M. D. Robador, and José Luis Perez-Rodriguez. 2017. Analytical Investigation of Mudéjar Polychrome on the Carpentry in the Casa de Pilatos Palace in Seville Using Non-Destructive XRF and Complementary Techniques. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 173: 279–91. [CrossRef]

Gell, Alfred. 1998. Art and Agency: An Anthropological Theory. Oxford: Clarendon Press.

Golan, Oren, and Michele Martini. 2019. Religious Live-Streaming: Constructing the Authentic in Real Time. *Information, Communication & Society* 22: 437–54. [CrossRef]

Goldburg, Peta. 2004. Towards a Creative Arts Approach to the Teaching of Religious Education with Special Reference to the Use of Film. *British Journal of Religious Education* 26: 175–84. [CrossRef]

Günzel, Stephan, and Dieter Mersch. 2014. Bild: Ein Interdisziplinäres Handbuch. Berlin: Springer.

Harrison, Peter. 2015. The Territories of Science and Religion. Chicago: University of Chicago Press.

Hoover, Stewart M., and Knut Lundby. 1997. Rethinking Media, Religion, and Culture. Los Angeles: Sage, vol. 23.

Hosseini, Seyed Hassan. 2008. Religion and Media, Religious Media, or Media Religion: Theoretical Studies. *Journal of Media and Religion* 7: 56–69. [CrossRef]

Jenkins, Henry. 1999. The Work of Theory in the Age of Digital Transformation. A Companion to Film Theory, 234-61.

Kleinberg, Jon. 2002. Bursty and Hierarchical Structure in Streams. Paper presented at the Eighth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, Edmonton, AB, Canada, July 23–26; New York: ACM, pp. 91–101.

Măruţoiu, C., I. Bratu, L. Troşan, C. Neamtu, V. C. Măruţoiu, D. Pop, C. Tănăselia, and S. Garabagiu. 2016. Scientific Investigation of the Imperial Gates Belonging to the Wooden Church from Săcel, Turda County, Romania. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 152: 311–17. [CrossRef] [PubMed]

Molster, Ragnhild. 2013. Religion across Media: From Early Antiquity to Late Modernity. NORDICOM Review: Nordic Research on Media and Communication 34: 143–44.

Morgan, David. 1997. Visual Piety: A History and Theory of Popular Religious Images. Berkeley: University of California Press.

Morgan, David. 2000. Visual Religion. Religion 30: 41–53. [CrossRef]

Morgan, David. 2005. The Sacred Gaze: Religious Visual Culture in Theory and Practice. Berkeley: University of California Press.

Morgan, David. 2020. The Lure of Images: A History of Religion and Visual Media in America. London: Routledge.

Mullins, Phil. 1996. Imagining the Bible in Electronic Culture. Religion & Education 23: 38–45. [CrossRef]

Narin, Nida Gökçe. 2021. A Content Analysis of the Metaverse Articles. *Journal of Metaverse* 1: 17–24.

Nasr, Seyyed Hossein. 2006. Religious Art, Traditional Art, Sacred Art. The Essential Sophia 12: 175-85.

Phillips, Ruth B., and Christopher B. Steiner. 1999. *Unpacking Culture: Art and Commodity in Colonial and Postcolonial Worlds*. Berkeley: University of California Press.

Poole, Deborah. 1997. Vision, Race, and Modernity: A Visual Economy of the Andean Image World. Princeton: Princeton University Press, vol. 13.

Rempel, Morgan Harvey. 1997. Understanding Freud's Philosophy of Religion. Canadian Journal of Psychoanalysis 5: 215-42.

Schwabsky, Barry. 2000. *The Uses of Images: Studies in the Social Function of Art and Visual Communication*. London: Phaidon Press, pp. 89–90.

Shaw, Wendy M. K. 2019. What Is "Islamic" Art?: Between Religion and Perception. Cambridge: Cambridge University Press.

Shockey, Rachel R. 2019. The Intersection of Christian Apologetics and the Arts: The Power of the Arts to Convey Truth and Change Lives. Ph.D. thesis, Biola University, La Mirada, CA, USA.

Silva, Elizabeth B. 2006. Distinction through Visual Art. Cultural Trends 15: 141-58. [CrossRef]

Small, Henry. 1973. Co-citation in the Scientific Literature: A New Measure of the Relationship between Two Documents. *Journal of the American Society for Information Science* 24: 265–69. [CrossRef]

Sperber, Dan, and Deirdre Wilson. 1986. Relevance: Communication and Cognition. Cambridge: Harvard University Press.

Taves, Ann. 2009. *Religious Experience Reconsidered: A Building-Block Approach to the Study of Religion and Other Special Things*. Princeton: Princeton University Press.

Uehlinger, Christoph. 2015. Approaches to Visual Culture and Religion: Disciplinary Trajectories, Interdisciplinary Connections, and Some Suggestions for Further Progress. *Method & Theory in the Study of Religion* 27: 384–422.

Vail, Edmond F., II. 1999. Knowledge Mapping: Getting Started with Knowledge Management. *Information Systems Management* 16: 1–8. [CrossRef]

Wheeler, Geraldine. 2003. Revisiting the Question of the Use of Visual Art, Imagery, and Symbol in Reformed Places of Worship. In *Chrisfian Worship in Reformed Churches Past and Present*. Michigan: William B. Eerdmans, pp. 348–70.

Wuthnow, Robert. 2012. Faithful Audiences: The Intersection of Art and Religion. In *Engaging Art*. London: Routledge, pp. 127–46. Zhao, Chen, Yiwen Zhang, Chong-Chen Wang, Miaole Hou, and Aiqun Li. 2019. Recent Progress in Instrumental Techniques for Architectural Heritage Materials. *Heritage Science* 7: 36. [CrossRef]

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.