

# **RB4014: Research Methods**

**2020**

## **Assessment Cover Sheet for the Essay**

**Assessment Due Date: 16th March 2020**

**Please complete the following**

**I confirm that this assignment which I have submitted is all my own work and the source of any information or material I have used (including the internet) has been fully identified and properly acknowledged as required in the school guidelines I have received.**

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<b>Word Count</b>	3,290 words

# Taking an area of research of your choice, critically discuss its constitution and development as a field of knowledge production.

## Introduction

This essay will explore the methodological and epistemological features as well as the ontological issues facing the production of knowledge when the fields of astronomy and religion are brought together. The historical context in which these two fields have been studied will be intertwined with an investigation into how the politics of the epistemology have caused significant consequences for the production of knowledge.

To accomplish this, I will firstly provide a brief overview of religion and astronomy's interactions and how the nature of their relationship has changed, thus influencing how knowledge is produced. An analysis of the existing literature will swiftly follow, covering the epistemological frameworks used in the production of knowledge for these fields. This is with the intention of highlighting methodological issues facing several authors and ultimately to denote how these issues have impacted knowledge production.

Finally, the essay will culminate into a wider discussion of the subjects' ontological natures, namely their position at the intersection of a multitude of disciplines, the issue of overbearing gatekeepers and the shifts in hierarchies that have occurred to change how knowledge can be produced. Further to this, to close the discussion, there will involve a justification for the relevance of the study of these two topics together in the contemporary context.

However, firstly, it is crucial to gain an understanding of knowledge production. Knowledge production is the creation and conceptual assembly of knowledge presented in the form of researched and evidenced content for the expansion of a given topic. This often involves a new perspective on the topic or the exploration of an entirely new or under-researched subtopic area (Campbell, 2018, p5-15; Gurukkal, 2019, p7-25). The issues facing contemporary productions of knowledge result from historical events and narratives that have lead to the present context; this is particularly evidential in the fields of astronomy and religion.

## Background

From prehistoric times, astronomy and religion have been deeply intertwined, as is evidenced by the popularity of practices like astrology throughout the ancient, medieval and into the early modern world (Jarus, 2012). However, with the rise of the Age of Enlightenment and the glorification of scientific knowledge, particularly represented as being superior to all spiritual knowledge and religious precepts, a dilemma occurred for astronomers. A discipline that had been so deeply engrained into religious organisations for millennia was now having to choose a side between religion and science.

Science was the side that the astronomers took which signalled its departure from religion. No doubt this was a just decision considering the harsh treatment that astronomers like Giordano Bruno (Mason, 2008; Stanley, 2000) and Galileo Galilei had faced from religious institutions prior to astronomy's emancipation from the dogmas of the Church (Feldhay, 1995, p14-15, p26-28). This type of intellectual side-taking that astronomers faced is echoed in the 1967 article "Whose Side Are We On" in which Becker (p239-247) delineates the dilemma faced by researchers in whether taking sides in their research is a positive attribution to their work, but also how this may undermine the research they are attempting to convey. This has lead to a fragmented literature in the study of religion and astronomy, leading to a lack of a consensus on whether these subjects should indeed be written about together at all.

## Literature analysis

In this section, I analyse the works of some of the key individuals to this field of knowledge production. To complete this, I made use of a tabular method into which I inputted key authors and the titles of their works alongside an analysis of epistemological and methodological issues followed by looking at the ontological features effecting knowledge production.

Maud Worcester Makemson was a specialist in archaeoastronomy whose 1954 work titled *Astronomy in Primitive Religion* published in *The Journal of Bible and Religion* is an authoritative text for the discussion of early religion and astronomy. In this work, Makemson draws from various archaeological sources to postulate the connection between astronomy and the origins of religion. Makemson does provide the beginning of a historiographical account for astronomy and religion's interactions, but she doesn't take this further to suggest that her findings present the existence of a religious tradition based on astronomy. This is likely due to the fact that Makemson wasn't a religious scholar, but was instead an archaeoastronomer, thus religion was likely not the centre of her subject interests. This issue of imbalance is similarly found in other works due to each author specialising in third-party disciplines which leads to an imbalance between religion and astronomy's representations.

Finally, Makemson's references stem from the early to mid 20th century. Just as other key authors have drawn their sources from various disciplines so did Makemson as the majority of her sources are prior research conducted by fellow archaeoastronomers as well as archaeologists like Zelia Nuttall and anthropologists like Ethel Drower. Highlighted from those two figures and by Makemson herself, the role of female scholarship in this field is significant, particularly due to the fact that female academia was still in limited supply during the first half of the 20th century (Parker, 2015, p3-12).

Clive Ruggles is a contemporary archaeoastronomer who is still publishing works in the field of prehistoric astronomy. Ruggles' most famous works, including *Archaeoastronomy in the 1990s* (1993), *Astronomy in Europe* (1999), and *Astronomy Before History* (1999) are also joined by the works of Michael Hoskin, specifically *Astronomy in Antiquity* (1999), with Hoskin's specialty focusing on astronomy in ancient civilisations rather than in prehistory. Although the works of both Ruggles and Hoskin do make consistent reference to religion throughout, they, like Makemson, fail to delineate a tradition of religion again because they are not scholars of religion and they perhaps did not have the goal nor the sufficient knowledge of religion to create such a historiographical account.

Louise Ballhausen's 1940 work titled *Astronomy and religion* is another central resource and so is A. P. Fitzgerald's 1951 work *Some Aspects of Primitive Astronomy* published in the *Irish Astronomical Journal*. Fitzgerald does consistently highlight the utilitarian aspects of ancient astronomical faiths particularly in the development of agriculture. However, an epistemological issue arises with the multidisciplinary nature of this field of knowledge production in that researchers are required to possess considerable amounts of knowledge across multiple disciplines to accurately conduct their research which significantly reduces the pool of capable researchers. Another notable aspect about the current state of literature produced is that very limited amounts are originating from academics studying religion itself with the majority emerging from archaeoastronomers and archaeologists.

Finally, works like *Astrology and Astronomy in the Seventeenth Century* by Joshua C. Gregory published in 1947 certainly succeed in providing a historical account for the interactions between religious ideas and astronomy in a particular century. However, this piece and others of a similar nature can be considered as single parts to a wider whole historical account that is in need of constructing to clarity to the field. In essence, the current body of literature is disjointed and remains in an unorganised state. Additionally, looking at the current body of literature available, there seems to have been a peak in interest in astronomy and religion's interactions in the 1940s.

This was perhaps due to an influx of orientalist fervour which might have ignited interest in how religion and astronomy interacted not only in European societies, but in the Eastern societies of China, the Arab world and in India (Whalen-Bridge, 2001, p193-204).

Essentially, I have identified that although these works do not delineate a religious tradition based on the stars, they do sufficiently explore the relationship between astronomy and religion. As seen from the publication dates of these works, they are in need of being updated to 21st century language and perspectives. Perhaps revisions and updates to these works would provide new insights, particularly as knowledge of astronomy has significantly grown from eighty years ago. In this, I touch on the importance of perspective to the production of knowledge and how those whom were writing on this subject seventy or so years ago would not have been able to access the global wealth of resources available today. As evidenced by this literature analysis, a wide variety of disciplines converge when the topics of astronomy and religion are combined, but this ontological feature has consequences for knowledge production.

## **Discussion of ontological issues**

There are a number of key issues facing the production of knowledge in this area which reveal significant sociological, cultural and political obstacles. A striking ontological issue is highlighted through the interdisciplinary nature of the study. The issue arises in that because many different disciplines and types of academics are involved, there is less overall consensus amongst what can and cannot be written regarding religion and astronomy. This occurs because although each key figure is providing support for the study of astronomy and religion together, they are doing so in the context of their respective fields of research and not in an holistic way that amalgamates the different disciplines involved.

Another issue of ontology stems from the scientific community. Perhaps a reason for the consistent disassociation of astronomers from involving religion in their work suggests the term's delegitimising effect. In seeking recognition for their work, an astronomer is likely not to mention the trigger word "religion" in order to maintain their scientific legitimacy, as highlighted in Figures 1 and 2 by the significant reduction in the number of articles including "religion" and "astronomy" (~38,000) as opposed to those which just include "astronomy" (~1,315,000). Essentially, the division between religion and science has become so deep that the very word religion is attached to a multitude of negative, largely unscientific connotations.

Causing further issues of ontological being for this study is the effect of fashion which is likely an important factor in the divergence between astronomy and religion. The trend that has arisen in the previous couple of centuries has involved science marking its territory over astronomy. It was in the Space Race of the 1960s that the example of fashion in relation to astronomy is most evident. During that time, interest in the affairs of the extraterrestrial emerged, sparking global interest as was demonstrated by the 650 million people who tuned in to watch the moon landing (Loff, 2019). As a result, astronomy and space exploration cemented themselves into certain cultures, particularly the United States and Russia, and this engrained status has largely survived to the present day demonstrating how major events can influence the interest in knowledge production. However, following the moon landing, there has since been no measurable mass public interest in astronomy to come close to that event and has only lead to astronomy's retreat back to being a discipline reserved for the academic community to engage with. As such, astrology has re-taken its status as a form of cultural astronomy in more recent times (Campion, 2014, p103-116).

The interdisciplinary nature of this field of knowledge production is prominent, especially regarding its significance for how knowledge producers rely upon a multitude of disciplines to complete their productions. This means that more gatekeepers within different portions of the academic community involved in the production of knowledge leads to further obstacles the more people that are involved. The issue with this is that not only do academics from different fields use dissimilar vocabularies and writing standards to convey their work, they also utilise different methodologies

for the production of knowledge which could lead to potential inconsistencies in terminology and methodology for this field. Beyond astronomy and religion themselves, there are key disciplines that make fundamental contributions upon which knowledge of the interactions between astronomy and religion remains dependent upon.

Firstly, this includes anthropology, particularly when researching how astronomy and religion together played an important role in the development of human societies and cultures in different places throughout the world and in different periods of history. A key figure in anthropology relevant to this field is Genevieve Von Petzinger (Tedx Talks, 2012), a palaeoanthropologist involved in the study of the origins of religion. Genevieve represents a contemporary figure contributing to the knowledge of this field, although her work does lack a definitive and particular focus on astronomy. Despite this, her contributions to the understanding of the earliest forms of religion in the Upper Palaeolithic period remain significant.

Secondly, archaeology plays an integral role in providing evidence of astronomy and religion's deeply entwined interactions, particularly providing proof for the prehistoric origins of their interactions. Louise E. Ballhausen, who was published throughout the 1930s in *Popular Astronomy* and *Popular Science* in articles about the extraterrestrial, remains an important source due to the fact that she began a historiographical account for astronomy and religion (Smith, 2014, p409), albeit the fact that she did not complete that endeavour.

Thirdly, archaeoastronomy plays an significant role in this field of knowledge production because, as a discipline, it focuses on the astronomical knowledge and practices of prehistoric cultures, many of which are directly related to religious beliefs and practices. The philosophy and history of religion also play a foundational part in this knowledge production with sociology acting as a related peripheral subject. However, each of these disciplines are guarded by their own gatekeepers which have a significant impact on the plausibility for knowledge production.

## **Gatekeeping the topic**

Identifying the gatekeepers to knowledge production is essential for understanding how certain authoritative groups and organisations effect the landscape and possibility for knowledge production. But first, a gatekeeper is a force within a field of knowledge whose main function is to control what knowledge is and isn't accepted into that field (Barzilai-Nahon, 2011, p1-79). A gatekeeper is likely not one individual, but instead a collection of authoritative individuals and organisations within a discipline who work to preserve the discipline from, firstly, an overflow of research of low quality and from knowledge that does not align with the established narrative for the discipline.

Perhaps the main numerical signification of a person's acceptance by the discipline's gatekeepers is the extent to which they are cited by those within the field which acts as somewhat of the holy grail of academia and is therein used as a tool by gatekeepers to control the dissemination of knowledge (Carrillo Rowe, 2005, p15-46). However, issues arise when gatekeepers hold preconceived ideas about a particular branch of knowledge, especially if they halt such knowledge from being contributed based on those biases.

The first major group of gatekeepers specific to religion and astronomy are established religions. The Catholic Church in particular has represented significant historical obstacles to the involvement of astronomy with religion, namely during the Trial of Galileo as one important example in which religious authority clashed with astronomical scientific observations that can now be said to have ignited the beginning of the divergence of astronomy and religion. However, the waning influence of the Catholic Church in the Western world does highlight the relevance of recognition by the Catholic Church, thus lowering such a recognition from a necessity, like it might have been two hundred or so years ago, to a recognition that is none-the-less appreciated but not essential in contemporary times.

The second major group of gatekeepers for this area of knowledge production is the scientific community. However, the scientific community has been at the forefront of separating astronomy from religion since the Age of Enlightenment, but with this essay's advocacy for the coming together of astronomy and religion, this conflicts with the established narrative, thus causing issues with the gatekeepers. Considering the fact that astronomy is now understood and treated as a firmly scientific discipline, to re-introduce religious elements into astronomy would be to clash with the narrative that the scientific community has constructed which was itself a response to the long-standing history of religious and astronomical affairs being deeply intertwined.

Changes in hierarchy have significantly impacted the ontology of the fields of astronomy and religion. Shifts occurring across centuries involving the relevance and role of religious institutions have given wake to the scientific community which now decides what can and cannot be deemed as part of astronomy. Although this shift away from the power of religious institutions has occurred as a product of the West's secularisation, this has essentially caused a 'changing of the guard'. The gatekeepers to this field of knowledge have shifted, albeit the field itself remaining just as restricted by scientific gatekeepers as it was with its religious gatekeepers of the past.

Briefly analysing the relevance of this knowledge production is important to link its study to present day endeavours, namely focusing on space exploration as a macro-issue. For the entire history of astronomy and space up until sixty years ago, the subject had been hampered by humanity's lack of technological ability to physically explore space. However, with the invent of the Space Race and the subsequent thrust of humanity into the Space Age, the relevance of the topic of space is growing evermore prominent. This rise in attention of astronomy beyond the boundaries of academia will likely catapult astronomy and space into wider mass culture and societal discourse once more.

Furthermore, the rise of atheism in the West has followed with a large section of society longing to find existential fulfilment and some form of "spirituality" from naturalistic understandings of the world. For people to gain meaning and existential purpose from beliefs about space and its exploration, there will be more reason for humanity than ever before to consider space and astronomy in a religious and philosophical context which the scientific gatekeepers will need to contend with.

## **Conclusion**

In conclusion, astronomy and religion have been intertwined since prehistory, but following the dominance of the Catholic Church in Europe throughout Medieval and Early Modern history, the ability of astronomers and philosophers interested in writing about space were severely punished as their thought deviated from Church dogma (McCluskey, 2014, p165-179). Following this overbearing religious structure, the Age of Enlightenment freed astronomy from its previous religious constraints and secured it as part of science whilst doing away with astrology in the process by designating it a pseudoscience (Zarka, 2011, p420-425).

However, this has resulted in an abyss of knowledge between astronomy and religion both in the historical and contemporary contexts; an abyss that needs filling. Each are now presented by the scientific community as holding little in common with one another as is evidenced by the lack of publications discussing their intertwined histories and the importance of each on the development of the other, even into contemporary times. Not only does the lack of researchers studying and writing about astronomy and religion together highlight this, but this status quo is also demonstrated through the fact that there exists no clearly delineated historiography for astronomy and religion.

Finally, from the investigations undertaken and the conclusions made in this essay, if I were to undertake research in this area, I would split my approach in two halves, the first consisting of a

historio-critical method while the second manifesting as a comparative method (Engler & Stausberg, 2011, p3-21). The historio-critical method would provide essential historiographical foundations and would act as a producer of knowledge through presenting history through the lens of astronomy and religion. The comparative method would provide a critical analysis dimension to the research, particularly in making comparisons between the treatment of astronomically-based religions in different time periods and by different organisations.

In any case, astronomy and religion are and will remain intertwined. Just as established narratives have been re-routed by the bravest of individuals in the past, no doubt if the study of astronomy and religion is to re-emerge, the same vigour and determination to convince gatekeepers to accept such a study must be adopted once more.

# Figures

Figure 1

The screenshot shows the uclan Library Search interface. The search bar contains the query "astronomy" "religion". The results page displays 38,375 results on page 1. The left sidebar offers options to expand results, sort by relevance, and filter by resource type (Articles, Book Chapters, Books, Conference Proceedings, Dissertations). The main results list includes:

- 1. **BOOK**: Extraterrestrial intelligence and human imagination : SETI at the intersection of science, religion, and culture. Traphagan, John, author. 2014; Extraterrestrial intelligence and human imagination : SETI at the intersection of science, religion, and culture. Available Online >
- 2. **BOOK**: Extraterrestrial Intelligence and Human Imagination SETI at the Intersection of Science, Religion, and Culture ; Springer eBooks. Traphagan, John, author. 2015; Extraterrestrial Intelligence and Human Imagination SETI at the Intersection of Science, Religion, and Culture. Available Online >
- 3. **ARTICLE / multiple sources exist. see all**: INDIAN ASTRONOMY; Transactions of the American Philosophical Society, 2014, Vol.104(3), pp.205-208. Pingree, David.

Figure 2

The screenshot shows the uclan Library Search interface with the search bar containing the query "astronomy". The results page displays 1,315,211 results on page 1. The left sidebar offers options to expand results, sort by relevance, and filter by resource type (Articles, Book Chapters, Books, Conference Proceedings, Dissertations). The main results list includes:

- 1. **JOURNAL**: Astronomy (Milwaukee, Wis. : Online). 1973; Astronomy (Milwaukee, Wis. : Online). Available Online >
- 2. **BOOK**: Astronomy. c2006; Astronomy. Available Online >
- 3. **BOOK**: Astronomy. Ronan, Colin A. 1973; Astronomy. Available at Preston Main Library 2nd floor (520.9 RON) >
- 4. **BOOK**: Astronomy!



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