

Visualizing Worldviews: Applications of Diagrammatic Notation to Cosmology & Theology in the Middle Ages

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Abstract. Diagrams are powerful tools that can be applied to help us elucidate complex relationships and elegantly convey information. The scope of this paper lies in showcasing the advantages of diagrams over plain text for analyzing historical worldviews and highlighting the pedagogical value they bring to studying the history of science. In order to accomplish this, we have applied diagramming techniques to a rich episode in the history of science: cosmology and theology in Medieval Christian Europe.

Keywords: medieval cosmology, theology, belief systems.

1 Introduction

Our research seeks to highlight the virtues of diagrammatic notation for the purpose of visualizing worldviews. Traditionally, diagrammatic notation has not been applied to the study of epistemic change in medieval thought. It is often the case that one needs to read chapters of information in order to grasp the positions of historical agents as their epistemic backgrounds are so foreign to our own. Our diagrams provide a concise summary of the views and arguments of these agents, which enable them to serve as pedagogical tools. This is accomplished by showcasing the agent's background assumptions and the structure of their reasoning. All of the historical information represented in these diagrams has been taken from Edward Grant's 2001 textbook, *God and Reason in the Middle Ages*.

2 Applications of the Diagrammatic Notation

This paper draws on the thoughts of prominent agents and proponents of cosmological beliefs popular in Europe between the 13th and 15th centuries. The first diagram is a timeline, which efficiently summarizes a variety of events in a single visual. It is worth noting that the lifespan of Jean de Ripa is denoted by an imprecise data bar because the details of the specific years of his lifespan are ambiguous.

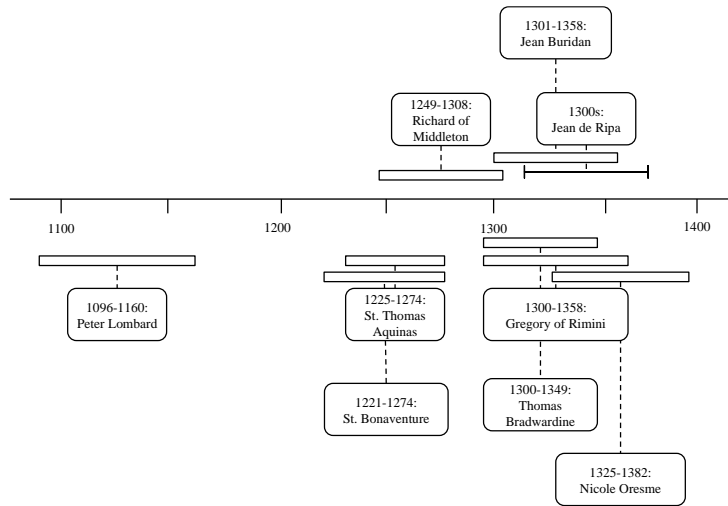


Fig. 1. Timeline of the lifespans of key cosmological thinkers form 1096- 1400.

The second diagram serves to summarize the theories of particular thinkers. Diagram 2 is a theory-relation diagram, which reconstructs the logical structure of Richard Lombard’s argument against the instantaneous motion of angels. The diagram incorporates a definition box, which provides the definition of “An Instant”, as well as callout boxes to highlight fruitful discussion points. Additionally, boxes with a perforated border are used to denote implicit premises, which are premises that were not explicitly claimed by the agent but are necessary for deductive validity. The “funnel-down” structure of theory relation diagrams helps the reader to understand how broad and general premises can be combined layer by layer to reach a precise conclusion.

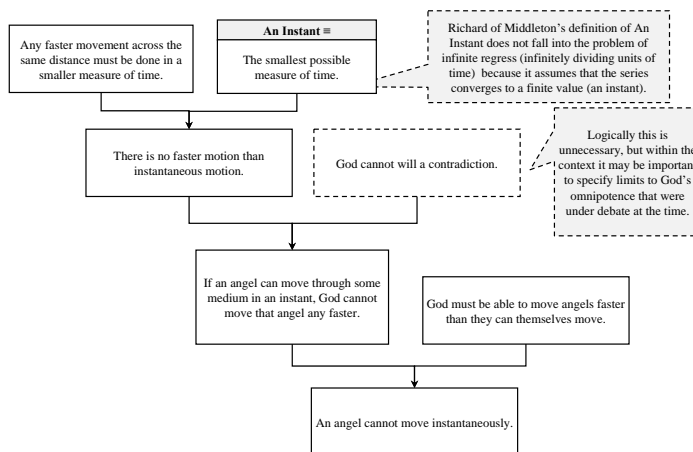


Fig. 2. Theory Relation diagram of Peter Lombard’s Argument against the instantaneous motion of angels.

The third and final diagram is a 3-way mosaic comparison between Aristotle, Nicole Oresme, and Jean Buridan on the possibility of God creating many worlds, as well as the existence of infinite void space. Each folder of the diagram represents an individual agent’s mosaic—their collection of beliefs and other epistemically relevant elements. The merits of a mosaic comparison diagram over pure text are best showcased with two or more agents, as a single diagram contains information about multiple thinkers and highlights the juxtaposition of their beliefs. In Diagram 3, the seven sections of the visual clearly delineate which theories belong to which agents and allow the reader to seamlessly cross-reference the available information between thinkers.

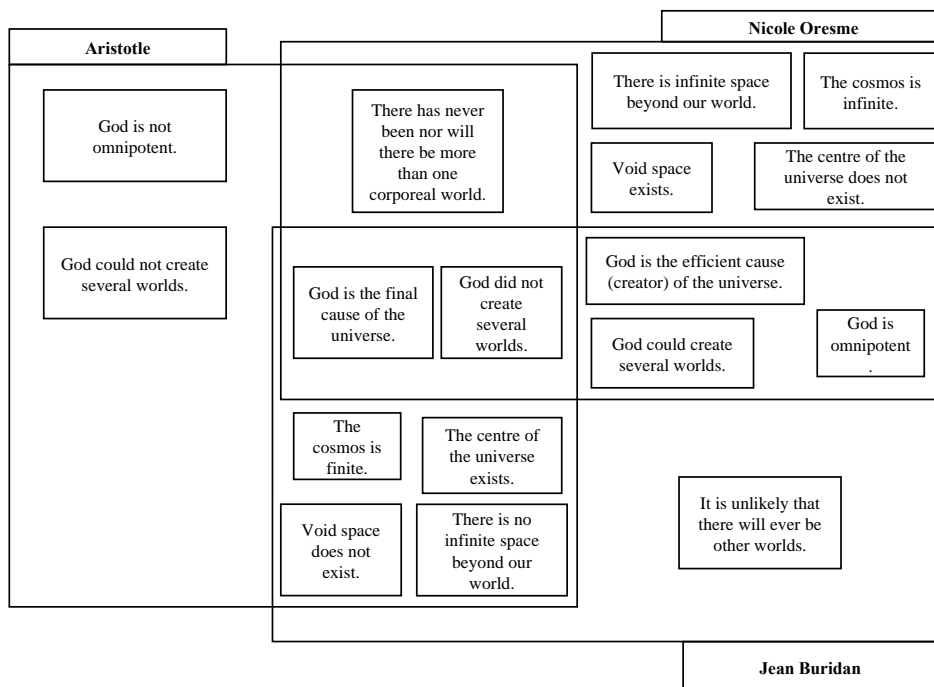


Fig. 3. 3-way mosaic comparison of Aristotle, Oresme, and Buridan on the multiplicity of worlds.

References

1. Grant, E.: God and Reason in the Middle Ages. Cambridge University Press (2001).