John Pecham

Background and Education

John Pecham (c. 1230–1292) was probably born in Sussex, England and joined the Franciscan Order in the late 1240s or 1250s. He studied arts and theology at Paris and Oxford, serving as regent master in Paris, provincial minister and lecturer at Oxford before becoming Master of the Sacred Palace in Rome (theologian to the papal Curia) and later Archbishop of Canterbury in 1279. During his time in Paris, he lived alongside Roger Bacon, whose teachings on light, optical science, and the works of Alhazen (11th century Islamic polymath) deeply guided his thinking.

Theology and Physics of Light

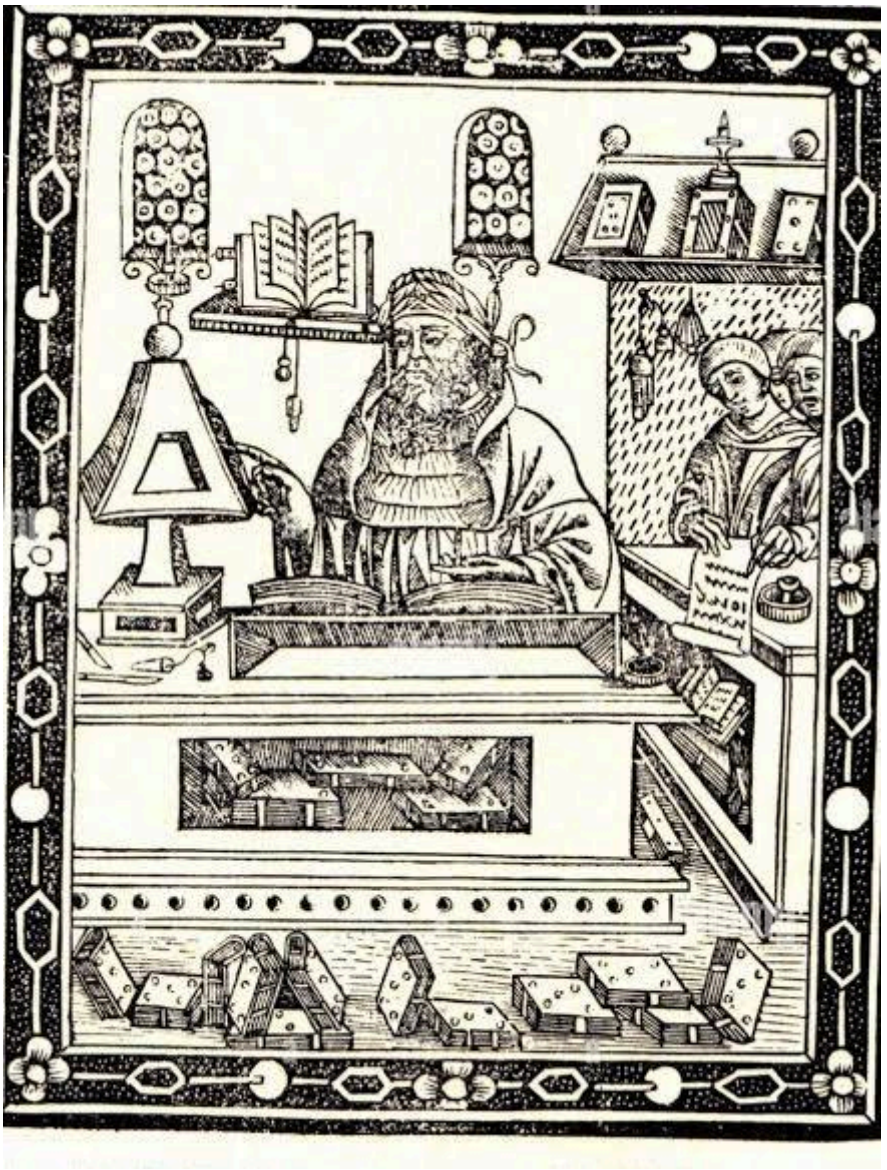
Influenced by Augustinian theology, Robert Grosseteste, Roger Bacon and Alhazen, Pecham viewed the study of physical light as an essential path to understanding divine truth and scripture. For Pecham, physical light served as a visible manifestation and analogy of divine light. He argued that studying the mathematical and physical behaviors of light provided profound insight into creation and the divine order, bridging the material and spiritual realms.

Perspectiva Communis and Legacy

Pecham's chief intellectual legacy rests on *Perspectiva communis* (*Common Optics*), written between 1277 and 1279. Synthesizing complex Arabic and Latin optical studies into a clear, accessible format, it became the standard European university textbook on optics, reflection and refraction for centuries, influencing figures such as Leonardo da Vinci and Johannes Kepler. He contributed original thought on matters such as image formation by reflection, how light passes through small apertures, the formation of rainbows and gave the first known description of concave refracting surfaces.

A digital version of *Perspectiva communis* with illustrations is available on the Internet Archive.

Illustrations from *Perspectiva communis* by John Pecham, edited by Luca Gaurico (1504). (Digital scan sourced from the Smithsonian Digital Library via the Internet Archive).



¶ IO. ARCHIEPISCOPI CANTVARIENSIS PERSPECTIVA COMMVNIS. PER I. GAVRICVM NEAPOLITANVM EMENDATA.

INTER philosophice cõsiderationis studia : lux iocundius afficit meditantes inter magnalia mathematicarum. Certo modo demulcitationis extollit præclarius ineffiganies. Per spectiua igitur humanis tradimonibus recte præferenda : in cuius area : line a radiosa demonstrationum nexibus compulcatur. In qua tam mathematicæ q philosophicæ gloria reperitur : utriusq floribus ornata. Cuius sententias magnis dispersas ambagibus in cõcinnia cõpendia coartabo mixtis iuxta modum materiæ naturalibus & mathematicis demonstrationibus nunc effectus ex causis nunc ex effectibus causas concluturus: addendo etiam nonnullas conclusiones quæ ibi non habentur ex eisdem tamen eliciuntur. De luce igitur tractaturus lux omnium dominus dignabitur illustrare, prædictus opusculum in tres partes distinguatur.

¶ Primæ partis Capitulũ primũ. De iis quæ obiciũtur uisui. Cõclo. I.



VIsum operari in uisuũ cõtra se conuersũ aliquid impressiue

¶ Hec conclusio probatur sic per effectus quoniam uisus in uidendo luces fortes dolet & patitur. Lucis etiam intensæ similacra in oculo remanet post aspectũ. Et locũ minoris lucis faciũt apparere tenebrosũ donec ab oculo uestigium maioris lucis euanuerit. Cõclusio. II.

OCulorem illuminatum impressiue uisum operari.

¶ Hec conclusio probatur experimẽtis sensibilibus. Amplius oculus super fortem colorem illuminatum luce fortuita intuitione : cõuertitur; si ad colorem debilius illuminatum se flexerit manifeste colorẽ primum secundo apparẽter inficiet : quod nõ posset nisi uestigia eius in oculo deleta essent. Conclusio. III.



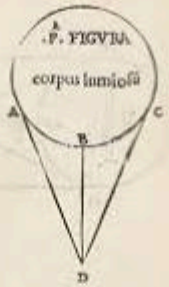
QVemlibet pũctũ luminosi uel illuminati obiectum sibi mediam totam simul illustrare.

¶ Hec conclusio probatur : quoniam quilibet punctus luminosi uel coloratus uisibilis est in qualibet parte medii sibi obiecti. Sed non uideret nisi primo do super uisum : igitur impressibilem omnẽ pũctum medii sibi obiecti.

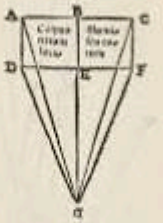
Conclusio. III.

TOtum luminosum uel illuminatum in quolibet puncto medii, pyramidem sui luminis terminare.

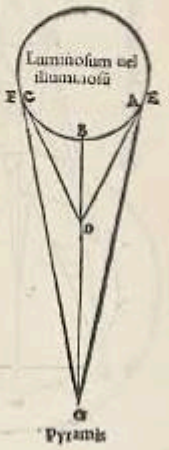
¶ Hec conclusio patet : quia si quilibet punctus luminosi illuminat quemlibet punctum medii totum luminosum luminat quemlibet punctum : quod non posset esse nisi luce pyramidaliter cadente in qualibet partem medii per quam pyramidem uideri potest. Concl. V.



Visus



Visus



Pyramis

Relations with Edward I and Diplomacy in Wales

Pecham's tenure as Archbishop of Canterbury frequently brought him into conflict with King Edward I over administrative reforms and ecclesiastical privileges. Beyond internal church governance, he played a notable diplomatic role during Edward's conquest of Wales in 1282. Pecham travelled to Wales to mediate (ultimately unsuccessfully) between the English Crown and Llywelyn ap Gruffudd, Prince of Wales, attempting to negotiate peace terms and avert further military escalation. Edith Pargeter depicts him in this role in her novel ‘Afterglow and Nightfall’.

Main sources

David C. Lindberg John Pecham and the Science of Optics Madison:University of Wisconsin Press, 1970

Decima L. Douie Archbishop Pecham Oxford Clarendon Press, 1952

Edith Pargeter Afterglow and Nightfall The Brothers of Gwynedd IV Macmillan London 1977

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