

Science and Religion in Europe: A modular curriculum

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Using the curriculum

The Curriculum has been designed around five specific Themes. Each Theme consists of different Units, for a total of twenty (20) Units.

- Theme A: “Science and Religion” as an historiographical question
 - Unit A1: “Science and Religion” as an historiographical question
 - Unit A2: “Science and Religion” and the origins of modern science
 - Unit A3: Modern historiographical considerations on “Science and Religion”
 - Unit A4: Decolonizing science and religion
- Theme B: Nature and the Divine in the Middle Ages
 - Unit B1: Nature and the Divine in the Middle Ages
 - Unit B2: Places and Practices of Nature and the Divine in the Middle Ages
 - Unit B3: Authorities of Nature and the Divine in the Middle Ages
 - Unit B4: Nature and the Divine in Byzantium
- Theme C: Natural Sciences, Christianities, Modernity
 - Unit C1: Natural Sciences, Christianities, Modernity
 - Unit C2: The Galileo as the founding myth of science and religion
 - Unit C3: Science and Religion at the eve of modernity
 - Unit C4: Neoaristotelianisms, Newtonianism and Orthodox Christianity
- Theme D: Darwinism and the human in science and religion
 - Unit D1: Darwinism and the human in science and religion
 - Unit D2: A global Darwin
 - Unit D3: Human nature at stake
 - Unit D4: What people believe
- Theme E: Ideologies, Science, Religion
 - Unit E1: Ideologies, Science, Religion
 - Unit E2: Nationalism and atheism in Science and Religion
 - Unit E3: Secularism, Disenchantment and Scientism
- Standalone Lecture: The myths and realities of science and religion

The Units are not meant to be used all at once.

In each Theme, *the first Unit* (A1, B1 and so on), are meant to be introductory, stand-alone lectures that introduce the theme. They are meant for summer schools, week-long introductions, or one-off presentations to a scholarly, but not specialist, audience. They could also be used to present this specific theme as part of a different curriculum, for example in pre-graduate History of Science or Religious Studies.

Units 2 and 3 and each theme are meant to be used in conjunction, covering the same material as Unit 1 but in much greater length. These ten lectures would form the backbone of a standard academic thirteen-lecture long course on Science and Religion.

The four final units (A4, B4 and so on) are meant to be a more in-depth introduction to a specific subject, that could be selected alongside Units 2 and 3 to create a standard curriculum. They could also be used as a standalone presentation of a subject added to a specialized relevant curriculum, such HPS or Theology graduate studies. By design, the investigators of the project decided these advanced Units to focus on topics that are rarely brought up in standard curriculums, such as case studies of Orthodox Christianity's interactions with the study of nature or decolonizing attempts within the field.

Finally, *the twentieth Unit* is a standalone, autonomous unit which could be given to a general public, and which touches upon myths and realities in science and religion. Its format was constructed considering a standard 45-minute length, but it could easily be expanded as a 2-hour lecture or contracted to a 30-minute presentation.

Each Unit has a list of *Learning Objectives* and *Topics Discussed*. We feel that this list will enable an experienced educator to see at a glance the general tone of the Unit and modify it according to his needs. They also serve as roadmap to the goals of the Unit. There is also a Suggested instructional procedure, where a broad timetable for the presentation of each course is given. Again, the modification of the presented Topics allows for the expansion or contraction of specific strands of the procedure by the educator.

Each Unit is accompanied by suggested *Teaching material* and probable *Follow-up activities*. The first are specific visual, multimedia or textual aides, that could enhance the teaching procedure and keep the audience engaged. Follow-up material are activities that can be assigned

after the presentation. The investigators made the decision to not include evaluation tools, since these are usually very context-sensitive and can vary greatly between institutions, national contexts or audiences. What has been included, is a short feedback form, the same one that was used in the development of the project.

Finally, each Unit is accompanied by a specific list of *references and suggested bibliography*, noting the relevant chapters, if applicable, in each case. These can serve as a guide for the instructor, for topics that may not be very familiar to her, but also as reading guide for students. The suggested bibliography is also a meta-descriptive tool, which shows the guiding assumptions the investigators made in creating this curriculum. For ease of use, scholarship in English has been used.

With the above in mind, some probable configurations for different engagement scenarios are presented below

Summer School (Five lectures)

- Unit A1: “Science and Religion” as an historiographical question
- Unit B1: Nature and the Divine in the Middle Ages
- Unit C1: Natural Sciences, Christianities, Modernity
- Unit D1: Darwinism and the human in science and religion
- Unit E1: Ideologies, Science, Religion

Standard academic course on Science and Religion (Thirteen lectures)

- Unit A2: “Science and Religion” and the origins of modern science
- Unit A3: Modern historiographical considerations on “Science and Religion”
- Unit A4: Unit A4: Decolonizing science and religion
- Unit B2: Places and Practices of Nature and the Divine in the Middle Ages
- Unit B3: Authorities of Nature and the Divine in the Middle Ages
- Unit B4: Nature and the Divine in Byzantium
- Unit C2: The Galileo as the founding myth of science and religion

- Unit C3: Science and Religion at the eve of modernity
- Unit C4: Neoaristotelianisms, Newtonianism and Orthodox Christianity
- Unit D2: A global Darwin
- Unit D3: Human nature at stake
- Unit E2: Nationalism and atheism in Science and Religion
- Unit E3: Secularism, Disenchantment and Scientism

Advanced subjects in Science and Religion (Nine lectures)

- Unit A2: “Science and Religion” and the origins of modern science
- Unit A3: Modern historiographical considerations on “Science and Religion”
- Unit A4: Decolonizing science and religion
- Unit B4: Nature and the Divine in Byzantium
- Unit C4: Neoaristotelianisms, Newtonianism and Orthodox Christianity
- Unit D3: Human nature at stake
- Unit D4: What people believe
- Unit E2: Nationalism and atheism in Science and Religion
- Unit E3: Secularism, Disenchantment and Scientism

Theme A

“Science and Religion” as an historiographical question

Unit A1: “Science and Religion” as an historiographical question

Role: Introductory, standalone

Intended Audience: Summer school, non-specialist scholars, introductory graduate lecture,

Suggested duration: 2.30 hours

Prerequisites: None

Learning Objectives

- To historicize the concepts of ‘religion’ and ‘science’ by highlighting their temporal trajectory through European history.
- To discuss the various proposals on how ‘science and ‘religion’ interacted within history (Merton thesis, Sarton, Koyré, Duhem, Harisson, Hessen).
- To describe the origin and limits of the Conflict Thesis.
- To emphasize how the history of Orthodox Christianity complicates historiographical considerations..

Topics discussed

- The History of the Origins of Modern Science and its relationship to Religion.
- The history of the Conflict Thesis
- The “territories” of Science and Religion in Europe

Suggested instructional procedure

1. Introduction: Initiating a discussion of what religion and science mean. Point out that the historicity of the traits associated with the words. (10-20 minutes)
2. Introduce historiographical approaches to science and religion. Discuss Weber on capitalism and Merton on the origins of science. Toulmin and Harrison’s Fall and Protestantism thesis. (30-45 minutes)
3. The Marxist approach as shown in Hessen. The Russian delegation to the Second International Congress of the History of Science in 1931. (10-20 minutes)
4. Conflict and complexity. The history of the conflict thesis. How it spread around the globe. The Spanish example. Orthodox Christianity and the Conflict thesis. (45-60 minutes)
5. Territories of science and religion in Europe. (20-30 minutes)

Follow up activities

Hessen "The Social and economic roots of Newton's Principia"

Merton's conclusion in "Science, Technology and Society in Seventeenth-Century England"

Materials

As this is a historiographical unit, no extra materials are needed.

References and bibliography

Brooke, John Hedley, and Cantor, Geoffrey. *Reconstructing Nature: The Engagement of Science and Religion*. London: A&C Black, 2000. Chapter 5.

Brooke, John Hedley, and Ronald L. Numbers, eds. *Science and Religion around the World*. Oxford and New York: Oxford University Press, 2011.

Hall, Karl, and Bayuk, Dimitri. "Science and Russian Orthodox Scholarship." *Isis* 107.3 (2016): 573-578.

Harrison, Peter. *The Fall of Man and the Foundations of Science*. Cambridge: Cambridge University Press, 2007.

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

Harrison, Peter. "Conflict, Complexity, and Secularization in the History of Science and Religion." In B. Lightman, ed. *Rethinking history, science, and religion: An Exploration of Conflict and the Complexity Principle*, 2019, 221-234.

Hessen, Boris, and Bukharin, Nicolai. *Science at the Cross Roads. Papers from The Second International Congress of the History of Science and Technology 1931*. London: Kniiga Limited, 1931.

Navarro, Jaume. "Draper In Spain: The Conflicting Circulation of The Conflict Thesis», *Zygon*® 54.4 (2019): 1107-1124.

Nicolaides, Efthymios. "Science and Eastern Orthodoxy." Baltimore: Johns Hopkins University Press, 2012. Chapters 5 & 7.

Nongbri, Brent. *Before Religion: A History of a Modern Concept*. New Haven, CT: Yale University Press, 2013.

Numbers, Ronald L., ed. *Galileo Goes to Jail and other Myths about Science and Religion*. Cambridge, MA: Harvard University Press, 2010. Chapters 9 and 10.

Shapin, Steven. "Understanding the Merton thesis." *Isis* 79.4 (1988): 594-605.

Tampakis, Kostas. "High Science and Natural Sciences: Greek Theologians and The Science and Religion Interactions (1832–1910)" *Zygon*® 54.4 (2019): 1067-1086.

Ungureanu, James C. *Science, Religion, and the Protestant Tradition: Retracing the Origins of Conflict*. Pittsburgh, PA: University of Pittsburgh Press, 2019.

Zilsel, Edgar. *The Social Origins of Modern Science*. Edited by D. Raven, W. Krohn and R. S. Cohen. Dordrecht, Boston and London: Kluwer Academic Publishers, 2003.

Unit A2: “Science and Religion” and the origins of modern science

Role: Part of a series of two or three lectures on the topic

Intended Audience: Pre-graduate or graduate students, non-expert historians

Suggested duration: 2 hours

Prerequisites: Prior engagement with the history of science at pre-graduate level

Learning Objectives

- To underline science and religion considerations as part of the inaugural historiographic attempts in history of science.
- To discuss the various proposals on how ‘science and ‘religion’ interacted within history (Comte, Whewell, Duhem, Hessen, Merton, Sarton, Koyré, Zilsel).
- To describe the origin of the Conflict Thesis, and discuss its limitations, especially when considering cases like Spain, Greece and Russia.

Topics discussed

- Science and religion at the origin of history of science
- The classic ‘theses’ of the historiography of science: Comte, Whewell, Duhem, Hessen, Merton, Sarton, Koyré, Zilsel
- The origin and limitations of the Conflict thesis, through a discussion of specific case-studies.

Suggested instructional procedure

1. Introduction: Initiating a discussion of what religion and science mean. Point out that the historicity of the traits associated with the words. (10-15 minutes)
2. 19th century ideas of science and religion. A discussion of Comte’s ideas on religion as related to his positivism. The Whewell approach to science. Duhem’s work as the founder of the history of medieval science and the role of theology. (10 -20 minutes)
3. New history for a new state: The Russian delegation to the Second International Congress of the History of Science in 1931. The Marxist approach as shown in Hessen. Zilsel and the laws of mature (20-30 minutes).
4. Science and religion at the birth of history of science: The Merton thesis. Sarton and his views on science and religion. Koyré and the birth of the scientific revolution. (20-30 minutes).

5. The origin and limitations of the Conflict thesis. The history of the conflict thesis. How it spread around the globe. The Spanish example. Orthodox Christianity and the Conflict thesis. (30-45 minutes)

Follow up activities

Readings of

Hessen "The Social and economic roots of Newton's Principia"

Merton's conclusion in "Science, Technology and Society in Seventeenth Century England"

Materials

As this is a historiographical unit, no extra materials are needed.

References and bibliography

Boutroux, Emile. *Science & Religion in Contemporary Philosophy*. London: Duckworth, 1912. Chapter 1.

Duhem, Pierre, *Medieval Cosmology- Theories of Infinity, Place, Time, Void, and the Plurality of Worlds*. Tran. and Ed. by R. Ariew, Chicago and London: University of Chicago Press, 1987.

Freudenthal, Gideon and McLaughlin, Peter, eds. *The Social and Economic Roots of the Scientific Revolution: Texts by Boris Hessen and Henryk Grossmann* Dordrecht: Springer, 2009. Chapters 1 and 2.

Graham, Loren, "The Socio-political Roots of Boris Hessen - Soviet Marxism and the History of Science" *Social Studies of Science* 15.4 (1985): 705–722.

Hessen, Boris, and Bukharin, Nicolai. *Science at the Cross Roads. Papers from The Second International Congress of the History of Science and Technology 1931*. London: Kniiga Limited, 1931.

Navarro, Jaume. "Draper In Spain: The Conflicting Circulation of The Conflict Thesis", *Zygon*® 54.4 (2019): 1107-1124.

Nicolaides, Efthymios. *Science and Eastern Orthodoxy*. Baltimore: John Hopkins Press, 2012. Chapters 5 and 7.

Shapin, Steven. "Understanding the Merton thesis." *Isis* 79.4 (1988): 594-605.

Tampakis, Kostas. "High Science and Natural Sciences: Greek Theologians and The Science And Religion Interactions (1832–1910)" *Zygon*® 54.4 (2019): 1067-1086.

Ungureanu, James C. *Science, Religion, and the Protestant Tradition: Retracing the Origins of Conflict*. Pittsburgh, PA.: University of Pittsburgh Press, 2019.

Zilsel, Edgar. "The sociological roots of science." *Social Studies of Science* 30.6 (2000): 935-949.

Zilsel, Edgar. *The Social Origins of Modern Science*. Edited by D. Raven, W. Krohn and R. S. Cohen. Dordrecht, Boston and London: Kluwer Academic Publishers, 2003.

Unit A3: Modern historiographical considerations on “Science and Religion”

Role: Part of a series of two or three lectures on the topic

Intended Audience: Pre-graduate or graduate students, non-expert historians

Suggested duration: 2 hours

Prerequisites: Prior engagement with the history of science at pre-graduate level. Unit A2.

Learning Objectives

- To present the Fall thesis of Toulmin and Harrison and the sociological thesis of Shapin and Schaffer.
- To discuss the emergence and use of the complexity thesis of Brooke, with additional examples drawn from Orthodox Christianity.
- To discuss the historicity of “science” and “religion”, via the historiographical lens of the “territories of science and religion” approach.

Topics discussed

- The Protestant tradition and modern science (The Fall thesis by Harrison and Toulmin).
- The sociological approach (Shapin and Schaffer).
- The complexity thesis (Brooke). Complexity in the historiography of the relations of Orthodox Christianity and science.
- The territories of science and religion in Europe.

Suggested instructional procedure

1. Introduction: Christian and non-Christian denominations. A discussion of different Christianities as part of European history. (10-20 minutes)
2. Shapin and Schaffer’s Leviathan argument and the role of religion. Boyle as a case in point. Hobbes and religion. (10-20 minutes)
3. The Fall thesis. Protestantism and modern science (30-45 minutes)
4. The complexity thesis. Its appearance and spread as a historiographical paradigm. Examples of complexity. Orthodox theologians and modern science as an example of complexity. (20-30 minutes)
5. The territories of science and religion. The argument of historicity. The creation of modern concepts of science and religion. (20-30 minutes)

Follow up activities

Reading of

Brooke, John Hedley. "Science, religion, and historical complexity." *Historically Speaking* 8.5 (2007): 10-13.

Critically Watch the film *Agora* (2009), as a Conflict-driven film

Materials

As this is a historiographical unit, no extra materials are needed.

References and bibliography

Brooke, John Hedley. *Science and Religion: Some Historical Perspectives*. Cambridge: Cambridge University Press, 1991. Chapters 1 and 3.

Brooke, John Hedley, and Cantor, Geoffrey. *Reconstructing Nature: The Engagement of Science and Religion*. London: A&C Black. 2000. Chapter 5.

Brooke, John Hedley. "Science, religion, and historical complexity." *Historically Speaking* 8.5 (2007): 10-13.

Cook, Margaret, "Divine artifice and natural mechanism: Robert Boyle's mechanical philosophy of nature" *Osiris* 16 (2001): 133-150.

Harrison, Peter. *The Bible, Protestantism, and the Rise of Natural Science*. Cambridge: Cambridge University Press, 2001.

Harrison, Peter. *The Fall of Man and the Foundations of Science*. Cambridge: Cambridge University Press, 2007.

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

Lightman, Bernard, ed. *Rethinking History, Science, and Religion: An Exploration of Conflict and the Complexity Principle*. Pittsburgh, PA: University of Pittsburgh Press, 2019. Chapters 13 and Afterword.

Shapin, Steven, and Simon Schaffer. *Leviathan and the Air-Pump*. Princeton: Princeton University Press, 2011.

Tampakis, Kostas. "High Science and Natural Sciences: Greek Theologians and The Science and Religion Interactions (1832–1910)" *Zygon*® 54.4 (2019): 1067-1086.

Unit A4: Decolonizing science and religion

Role: Part of a series of three lectures on the topic, or a standalone advanced presentation

Intended Audience: Graduate students, PhD candidates, non-expert historians

Suggested duration: 2 hours

Prerequisites: Working knowledge of the science and religion bibliography

Learning Objectives

- To present recent scholarship which expands the geographical scope of science and religion.
- To discuss religion and science as contributing to narratives of power.

Topics discussed

- Science and religion histories of India and China
- Science and religion in Judaism
- Spiritualism as modern science and modern religion

Suggested instructional procedure

1. Introduction: Discussion of science and religion as a narrative of colonial power. (10-20 minutes)
2. The other European religions: Islam and Judaism in science and religion narratives. Medieval and modern narratives. Complications of historiographical approaches stemming from Islam and Judaism's engagement with science. (30-45 minutes)
3. Away from Europe: Hinduism, Buddhism and Christianity as the gold standard of religion. Colonialism in science and religion. (30-45 minutes)
4. Spiritualism as modern science and modern religion. (20-30 minutes)

Materials

Wallace and Crookes pictures with ghosts
Ghandi looking through the telescope

Follow up activities

Reading:

Wallace's encounter with seances

<https://people.wku.edu/charles.smith/wallace/S400.htm>

Ghandi on science and antiscience

<https://www.newindianexpress.com/opinions/2019/oct/07/was-mahatma-gandhi-anti-science-2044229.html>

<https://www.nature.com/articles/d41586-019-03010-8?referral=true>

References and bibliography

Bhabha, Homi K. *The location of culture*. New York: Routledge, 2012.

Brooke, John Hedley, and Ronald L. Numbers, eds. *Science and Religion around the World*. Oxford and New York: Oxford University Press, 2011.

Chidester, David. *Empire of Religion*. Chicago and London: University of Chicago Press, 2014.

Clayton, Philip, et al. *The Oxford handbook of religion and science*. Oxford: Oxford University Press, 2006. Chapters 1 to 7.

Habib, S. Irfan, and Dhruv Raina. "Copernicus, Columbus, Colonialism and the Role of Science in Nineteenth-Century India." *Social Scientist* (1989): 51-66.

Iqbal, Muzaffar. *Science and Islam*. Westport, CT: Greenwood Press, 2007.

Klassen, Pamela E. "Christianity as a polemical concept." In J. Boddy and M. Lambek. *A Companion to the Anthropology of Religion*. London: Wiley-Blackwell, 2013, 344-62.

Kontou, T. and Willburn, S. (eds). *The Ashgate Research Companion to Nineteenth-Century Spiritualism and the Occult*. London and New York: Routledge, 2016, 43-72.

Kumar, Deepak. "Reason, science and religion: gleanings from the Colonial Past." *Current Science* 99.5 (2010): 671-678.

Lightman, Bernard, ed. *Rethinking History, Science, and Religion: An Exploration of Conflict and the Complexity Principle*. Pittsburgh, PA: University of Pittsburgh Press, 2019. Chapter 4.

Lopez Jr, Donald, S. *Buddhism and Science: A Guide for the Perplexed*. Chicago and London: University of Chicago Press, 2009.

Masuzawa, Tomoko. *The Invention of World Religions: Or, How European Universalism was Preserved in the Language of Pluralism*. Chicago and London: University of Chicago Press, 2005.

Noakes, Richard. "The sciences of spiritualism in Victorian Britain: possibilities and problems." In Strube, Julian. "(Anti-) Colonialism, religion and science in Bengal from the perspective of global religious history." *Journal of Global History* (2022): 1-20.

Nongbri, Brent. *Before Religion: A History of a Modern Concept*. New Haven, CT: Yale University Press, 2013.

Rawson, Don C. "Mendeleev and the scientific claims of spiritualism." *Proceedings of the American Philosophical Society* 122.1 (1978): 1-8.

Scott, Colin. "Science for the West, myth for the rest? The case of James Bay Cree knowledge construction." In L. Nader (ed.) *Naked Science: Anthropological Inquiry into Boundaries, Power, and Knowledge*, New York: Routledge, 1996, 69-86.

Stolz, Daniel A. *The Lighthouse and the Observatory: Islam, Science, and Empire in late Ottoman Egypt*. Cambridge: Cambridge University Press, 2018.

Swatos Jr, William H. "Spiritualism as a Religion of Science." *Social Compass* 37.4 (1990): 471-482.

Thomas, Renny. *Science and Religion in India: Beyond Disenchantment*. London and New York: Routledge, 2021.

Ziauddin Sardar, *Islamic Science: The Contemporary Debate*. In Sandra G. Harding (ed.), *The Postcolonial Science and Technology Studies Reader*. Durham, N.C.: Duke University Press, 2011.

Theme B

Nature and the Divine in the Middle Ages

Unit B1: Nature and the Divine in the Middle Ages

Role: Introductory, standalone

Intended Audience: Summer school, non-specialist scholars, introductory graduate lecture

Suggested duration: 2.30 hours

Prerequisites: None

Learning Objectives

- To problematize the notion of the Middle Ages as a universal historical category.
- To address the scientific and philosophical achievements of the European Middle Ages.
- To present the spaces and practices associated with the interaction between nature and the divine, from the 8th to the 15th century.

Topics discussed

- The European Middle Ages – Temporal and spatial considerations
- Places and practices of nature and the divine
- Theories of double truth in Western Christianity
- Nature, religion and politics: Hesychasm and Gregory Palamas in the Byzantine Empire

Suggested instructional procedure

1. Introduction: Engagement with the audience about their ideas on “Middle Ages”, “religion” and “science”. Discussion on the modern preconceptions of the terms. Discussion of temporality and spatiality in historiography. (10-20 minutes)
2. The rise of the university from cathedral schools. The Carolingian reestablishment of education and its religious basis. The creation of a scholastic tradition. (20-30 minutes)
3. Natural philosophy and natural knowledge before Aristotle’s re-emergence. Averroes and Avicenna. Medieval Scientia. (30 minutes)
4. Aristotle and scholasticism. Double truth doctrines. Cosmology and astronomy. Alchemy and medicine. (30-45 minutes)
5. Natural philosophy in Byzantium. Hesychasm. Gregory Palamas. Use of natural philosophy to acquire political capital in the Byzantine empire. (20-40 minutes)

Materials

Benozzo Gozzoli – Triumph of St. Thomas Aquinas painting

Laurentius de Voltolina - Liber ethicorum des Henricus de Alemannia painting
Byzantine astrolabe at Brescia, 11th century AD, picture and planispheric astrolabe 14th
century. picture

Follow up activities

Readings from The Medieval Aristotelian Principle of Motion: “Whatever Is Moved Is Moved by Another” [St. Thomas Aquinas from A Source Book in Medieval Science, Edited by Edward Grant, 1974

Readings from

Duhem, Pierre (1985). *Medieval Cosmology: Theories of Infinity, Place, Time, Void, and the Plurality of Worlds*. Chicago: University of Chicago Press. Chapters 4 and 5.

References and bibliography

Falk, Seb. *The Light Ages. A Medieval Journey of Discovery*, New York: W. W. Norton & Company, 2020. Chapters 3,4 and 7.

Gal, Ofer. *The Origins of Modern Science. From Antiquity to the Scientific Revolution*. Cambridge: Cambridge University Press, 2021. Chapters 4 to 6.

Grant, Edward. *The Foundations of Modern Science in the Middle Ages: Their Religious, Institutional and Intellectual Contexts*. Cambridge: Cambridge University Press, 1996.

Hannam, James. *God's philosophers: How the Medieval World laid the Foundations of Modern Science*. London: Icon Books Ltd, 2009. Chapters 7 to 15.

Kaldellis, Anthony, and Niketas Siniosoglou, eds. *The Cambridge intellectual history of Byzantium*. Cambridge: Cambridge University Press, 2017. Chapters 10 to 12.

Lindberg, David C. *The Beginnings of Western Science: The European Scientific Tradition in Philosophical, Religious, and Institutional Context (prehistory to AD 1450)*. Chicago and London: University of Chicago Press, 2010. Chapters 10 to 14.

Nicolaides, Efthymios. *Science and Eastern Orthodoxy*. Baltimore: John Hopkins Press, 2012. Chapters 5 and 7.

Numbers, Ronald L., ed. *Galileo Goes to Jail and Other Myths about Science and religion*. Cambridge, MA: Harvard University Press, 2010. Chapters 2 to 5.

Unit B2: Places and Practices of Nature and the Divine in the Middle Ages

Role: Intermediate, first of a two or three-part lecture

Intended Audience: Graduate lecture, undergraduate lecture for historians of science or religion

Suggested duration: 2 hours

Prerequisites: Basic medieval history and/or history of science

Learning Objectives

- To describe the places where the study of nature took place in the Middle Ages
- To analyze the practices in which science and religion interacted in the Middle Ages
- To bring to the fore historiographical presuppositions, through the use of the Byzantine Empire as a parallel example.

Topics discussed

- Monasteries and cathedrals as places of natural knowledge. Universities. The rise of scholasticism.
- Scientias of nature in the Middle Ages: Astronomy and Mathematics, Medicine and Alchemy, Natural philosophy and cosmology
- Scientias of the Divine: Theology
- Theology and Natural Philosophy in Byzantium. Courts as a place of natural and religious knowledge.

Suggested instructional procedure

1. The European Middle Ages: A discussion of what the Middle Ages mean spatiotemporally. The specificity of the concept. Invite the attendees to write words associated with the Middle Ages and then with Science (10-20 minutes)
2. The development of the medieval world. Brief historical exposition of the intellectual history of the era, with an emphasis on the development of the university. (10-20 minutes)
3. The Quadrivium and the Trivium. Scientias of nature: Astronomy and Mathematics, Medicine and Alchemy, Natural Philosophy, Cosmology (30-45 minutes)
4. Scientias of the divine: Theology (20-30 minutes)

5. Theology and Natural Philosophy in Byzantium in the First Byzantine Humanism. Courts as a place of natural and religious knowledge. (20-30 minutes)

Materials used

Readings of:

The Medieval Aristotelian Principle of Motion: "Whatever Is Moved Is Moved by Another" [St. Thomas Aquinas, Dynamic Arguments Justifying Motion in a Hypothetical Void

Albert of Saxony, The Configuration of Qualities and Motions, Including a Geometric Proof of the Mean Speed Theorem and Nicole Oresme on motion from Grant's *A Source Book in Medieval Science* (1974)

Follow up activities

The Middle Ages in literature

Readings of Eco's *The Name of the Rose* (1986) and Michon's *Winter Mythologies and Abbots* (2014)

References and bibliography

Cadden, Joan. "The Organization of Knowledge." In D. Lindberg and M. Shank, eds. *The Cambridge History of Science*, vol. 2. Cambridge: Cambridge University Press, 2013, 240-67. Falk, Seb. *The Light Ages. A Medieval Journey of Discovery*, New York: W. W. Norton & Company, 2020. Gal, Ofer. *The Origins of Modern Science. From Antiquity to the Scientific Revolution*. Cambridge: Cambridge University Press, 2021. Chapters 4, 6 and 8.

Grant, Edward. *The Foundations of Modern Science in the Middle Ages: Their Religious, Institutional and Intellectual Contexts*. Cambridge: Cambridge University Press, 1996. Chapters 3 and 8.

Grant, Edward, *God and Reason in the Middle Ages*. Cambridge: Cambridge University Press, 2001. Chapter 1 to 3, 5,6.

Hannam, James. *God's philosophers: How the Medieval World laid the Foundations of Modern Science*. London: Icon Books Ltd, 2009. Chapters 7 & 8.

Harrison, Peter, Ronald L. Numbers, and Michael H. Shank, eds. *Wrestling with Nature: From Omens to Science*. Chicago and London: University of Chicago Press, 2011.

Kaldellis, Anthony, and Niketas Siniosoglou, eds. *The Cambridge intellectual history of Byzantium*. Cambridge: Cambridge University Press, 2017. Chapters 10 to 14.

Lindberg, David C. *The beginnings of Western Science: The European Scientific Tradition in Philosophical, Religious, and Institutional Context (prehistory to AD 1450)*. Chicago and London: University of Chicago Press, 2010. Chapters 9 & 11.

Nicolaides, Efthymios. *Science and Eastern Orthodoxy*. Baltimore: John Hopkins Press, 2012. Chapter 4.

Unit B3: Authorities of Nature and the Divine in the Middle Ages

Role: Intermediate, second of a two or three-part lecture

Intended Audience: Graduate lecture, undergraduate lecture for historians of science or religion

Suggested duration: 2 hours

Prerequisites: Basic medieval history and/or history of science. Unit B2

Learning Objectives

- To discuss the role of authorities in the study of nature and the divine in the late Middle Ages
- To analyze the emergence of various doctrines of double truth and their role within Scholasticism
- To bring to the fore how politics, natural philosophy and theology interacted in 10th to 12th century Byzantium

Topics discussed

- Authorities: Plato, Aristotle, Averroes, Avicenna, neo-Platonism, etc.
- Scholasticism and theories of double truth in the West. The 1277 Condemnation.
- The contingent universe of the 14th and 15th centuries.
- Hesychasm, politics and natural philosophy in Eastern Christianity

Suggested instructional procedure

1. Introduction: The borders of the world. The development in Byzantium and in the Arab world. The Arabic discovery of Aristotle (20-30 minutes)
2. Authorities of Science and Religion. Plato, Aristotle, Averroes, Avicenna. The scholastic universe (20-30 minutes)
3. Jerusalem or Athens. A Christian Aristotle. Albertus Magnus, St. Aquinas. Bonaventura. The 1277 Condemnation. Theories of Double truth and Contingent Universe. (30-45 minutes)
4. Hesychasm, politics and natural philosophy in Eastern Christianity (20-30 minutes)

Materials used

Benozzo Gozzoli – Triumph of St. Thomas Aquinas painting

Follow up activities

The Middle Ages in literature II

Readings of Eco's Baudolino (1986)

References and bibliography

Falk, Seb. *The Light Ages. A Medieval Journey of Discovery*, New York: W. W. Norton & Company 2020.

Gal, Ofer. *The Origins of Modern Science. From Antiquity to the Scientific Revolution*. Cambridge: Cambridge University Press (2021). Chapter 4.

George, Demetra. "Manuel I Komnenos and Michael Glykas: A Twelfth-Century Defence and Refutation of Astrology." *Culture and Cosmos* 5.1 (2001): 23-51.

Grant, Edward. *The Foundations of Modern Science in the Middle Ages: Their Religious, Institutional and Intellectual Contexts*. Cambridge: Cambridge University Press, 1996. Chapters 5,6,8.

Grant, Edward, *God and Reason in the Middle Ages*. Cambridge: Cambridge University Press, 2001. Chapters 2,4& 6.

Grant, Edward. *A History of Natural Philosophy: From the ancient world to the nineteenth century*. Cambridge: Cambridge University Press, 2007. Chapters 8 & 9.

Hannam, James. *God's philosophers: How the Medieval World laid the Foundations of Modern Science*. London: Icon Books Ltd, 2009. Chapters 7 & 8.

Harrison, Peter, Ronald L. Numbers, and Michael H. Shank, eds. *Wrestling with Nature: From Omens to Science*. Chicago and London: University of Chicago Press, 2011. Chapter 3.

Lindberg, David C., and Ronald L. Numbers, eds. *When science and Christianity meet*. Chicago and London: University of Chicago Press, 2003. Chapter 1.

Lindberg, David C. *The Beginnings of Western Science: The European Scientific Tradition in philosophical, Religious, and Institutional Context (prehistory to AD 1450)*. Chicago and London: University of Chicago Press, 2010. Chapters 9 & 11.

Kaldellis, Anthony, and Niketas Siniosoglou, eds. *The Cambridge intellectual history of Byzantium*. Cambridge: Cambridge University Press, 2017. Chapters 10 to 14.

Nicolaides, Efthymios. *Science and Eastern Orthodoxy*. Baltimore: John Hopkins Press, 2012. Chapters 6 & 7.

Tihon, Anne. "Science in the Byzantine Empire." In D. Lindberg and M. Shank (eds)., *The Cambridge History of Science*, vol. 2. Cambridge: Cambridge University Press, 2013, 190-206.

Unit B4: Nature and the Divine in Byzantium

Role: Standalone lecture

Intended Audience: Graduate lecture, PhD candidates, Historians

Suggested duration: 2 hours

Prerequisites: History of Byzantium and/or history of science.

Learning Objectives

- To be able to place Byzantine history in the general history of science and religion scholarship
- To be able to describe the different cosmological models of the Byzantine scholars and laymen
- To analyze how the politics of Hesychasm and iconomachy affected Byzantine scientific production

Topics discussed

- Antiochean and Alexandrian conceptions of the world
- Icons and Byzantine renaissance of Nicea
- Byzantium as an intermediary of knowledge

Suggested instructional procedure

1. Introduction: Byzantium as history and as a historiographical category. Definitions and descriptions. (10-20 minutes)
2. The Greek fathers. The Hexaemeron as religious and cosmological models (20-30 minutes)
3. Antiochean and Alexandrian conceptions of the world. Cosmas Indicopleustes and his religious topography. (20-30 minutes)
4. Icons and knowledge. The Byzantine renaissance of Nicea (20-30 minutes)
5. Byzantium between Persia, Islam, Syria and the Latin West. (20-30 minutes)

Materials used

The world map of Cosmas Indicopleustes
St. Basil iconography

Follow up activities

Podcast: *A History of Philosophy without any Gaps* (Peter Adamson):

Episode 322: [Do the Math: Science in the Palaiologan Renaissance](#)

Episode 323: [Through His Works You Shall Know Him: Palamas and Hesychasm](#)

References and bibliography

Anastos, Milton V. "The Alexandrian Origin of the" Christian Topography" of Cosmas Indicopleustes." *Dumbarton Oaks Papers* 3 (1946): 73-80.

Callahan, John F. "Greek Philosophy and the Cappadocian Cosmology." *Dumbarton oaks papers* 12 (1958): 29-57.

George, Demetra. "Manuel I Komnenos and Michael Glykas: A Twelfth-Century Defense and Refutation of Astrology." *Culture and Cosmos* 5.1 (2001): 23-51.

Harrison, Peter, Ronald L. Numbers, and Michael H. Shank, eds. *Wrestling with Nature: From Omens to Science*. Chicago and London: University of Chicago Press, 2011. Chapter 3.

Kaldellis, Anthony, and Niketas Siniosoglou, eds. *The Cambridge intellectual history of Byzantium*. Cambridge: Cambridge University Press, 2017. Chapters 10 to 14.

Nicolaides, Efthymios. *Science and Eastern Orthodoxy*. Baltimore: John Hopkins Press, 2012. Chapter 1-9.

Shepard, Jonathan, ed. *The Cambridge History of the Byzantine Empire c. 500-1492*. Cambridge: Cambridge University Press, 2008.

Tihon, Anne. "Science in the Byzantine Empire." In D. Lindberg and M. Shank (eds.), *The Cambridge History of Science*, vol. 2. Cambridge: Cambridge University Press, 2013, 190-206.

Wallace-Hadrill, D. S. *The Greek Patristic View of Nature*. Manchester: Manchester University Press, 1968.

Theme C

Natural Sciences, Christianities, Modernity

Unit C1: Natural Sciences, Christianities, Modernity

Role: Introductory, standalone

Intended Audience: Summer school, non-specialist scholars, introductory graduate lecture, historians of 19th and early 20th century

Suggested duration: 2.30 hours

Prerequisites: None

Learning Objectives

- To describe the context and background of Galileo's trial, and the role of scientific and religious beliefs in its outcome
- To bring to the fore how religious beliefs and scientific discoveries interacted during the period known as the Scientific revolution
- To describe the emergence of Orthodox Newtonianism and Natural Theology as a different mode of engagement between science and religion

Topics discussed

- The trial of Galileo as a founding myth
- The contested Scientific Revolution as a theological project
- Enlightenment, anticlericalism and science

Suggested instructional procedure

1. Introduction: Discussion of the two paintings depicting Galileo. The heroic myth of Galileo. The "common knowledge" about the Galileo trial (10-20 minutes)
2. Natural philosophy and the Church during Galileo's trial. The sun in the church. Galileo as a courtier. Reformation and counter-reformation. The quest for authority. What then "really happened"? (30-45 minutes)
3. The religious background of the Scientific Revolution. Newton as the "contested priest of nature". God after Descartes. Neo-Thomism qua natural science. (30 - 45 minutes)
4. French enlightenment and British Natural Theology: Two modes of interaction (20-30 minutes)
5. The Greek Orthodox Enlightenment and modern science: a religious humanism. (20-30 minutes)

Materials

Painting: Cristiano Banti's 1857 painting Galileo facing the Roman Inquisition

Painting: Galileo before the Holy Office, by Joseph-Nicolas Robert-Fleury

Galileo's letter to Castelli (1613)

Follow up activities

Reading

Brecht's *Life of Galileo* play

Documentary:

Galileo: Fighting in the Dawn of Modern Science (2013)

<https://vimeo.com/95490386>

References and bibliography

Brooke, John, H. *Science and Religion: Some Historical Perspectives*. Cambridge: Cambridge University Press, 2014.

Cohen, H. Floris. *The Rise of Modern Science Explained: A Comparative History*. Cambridge: Cambridge University Press, 2015. Chapters 3 & 6.

Epstein, Julia L. "Voltaire's myth of Newton." *Pacific Coast Philology* (1979): 27-33.

Finocchiaro, Maurice, *Retrying Galileo, 1633–1992*. University of California Press (2005).

Gingras, Yves. *Science and Religion: An Impossible Dialogue*. John Wiley & Sons (2017). Chapter 2

Heilbron, John L. *The Sun in the Church: Cathedrals as solar Observatories*. Cambridge, MA: Harvard University Press, 2009. Chapter 6.

Henry, John. *The Scientific Revolution and the Origins of Modern Science*. London: Bloomsbury Publishing, 2008.

Iliffe, Rob. *Priest of Nature: The Religious Worlds of Isaac Newton*. Oxford: Oxford University Press, 2017. Introduction, Chapters 7 & 8.

Israel, Jonathan. *A Revolution of the Mind: Radical Enlightenment and the Intellectual Origins of Modern Democracy*. Princeton: Princeton University Press, 2010.

Numbers, Ronald L., ed. *Galileo Goes to Jail and other Myths about Science and Religion*. Cambridge, MA: Harvard University Press, (2010). Chapters 7-9.

Patiniotis, Manolis. "Periphery reassessed: Eugenios Voulgaris converses with Isaac Newton." *The British Journal for the History of Science* 40.4 (2007): 471-490.

Patiniotis, Manolis. "Shaping Newtonianism: The Intersection of Knowledge Claims in Eighteenth-Century Greek Intellectual Life." *How to Write the Global History of Knowledge-Making*. Dordrecht: Springer, Cham, 2020, 129-148.

Westfall, Richard S. *Never at Rest: The Life of Isaac Newton*. Cambridge: Cambridge University Press, 1994.

Zilsel, Edgar. "The sociological roots of science." *Social Studies of Science* 30.6 (2000): 935-949.

Unit C2: The Galileo as the founding myth of science and religion

Role: First of a two or three-part series of lectures

Intended Audience: Pre-graduate or graduate students, non-expert historians,

Suggested duration: 2 hours

Prerequisites: None

Learning Objectives

- To describe the context and background of Galileo's trial
- To contextualize the Galileo affair in the Reformation and Counter-reformation era
- To bring to the fore how the Galileo affair was appropriated and used in historical, apologetic and anticlericalist narratives

Topics discussed

- The trial of Galileo as a founding myth
- The Galileo affair as a Reformation and Counter-reformation event
- The multiple roles of Galileo: Mathematician, Natural philosopher, Courtier
- Galileo affair as myth and history

Suggested instructional procedure

1. Introduction: Discussion of the two paintings depicting Galileo. The heroic myth of Galileo. The "common knowledge" about the Galileo trial (10-20 minutes).
2. Natural philosophy and the Church during Galileo's trial. The sun in the church. Reformation and counter-reformation. The quest for authority. (20-30 minutes).
3. Galileo as a proponent of Copernicus. Galileo as a courtier. Galileo as a theologian. Galileo faces the Inquisition. What then "really happened"? (30-45 minutes).
4. Galileo as a martyr of science. The uses of Galileo's trial in history and historiography. Galileo and the Conflict thesis. Galileo and the Complexity thesis. (30-45 minutes)

Materials

Painting: Cristiano Banti's 1857 painting Galileo facing the Roman Inquisition

Painting: Galileo before the Holy Office, by Joseph-Nicolas Robert-Fleury

Galileo's letter to Castelli (1613)

Reading

William D. Montalbano "VATICAN FINDS GALILEO 'NOT GUILTY'" Washington Post, November 1, 1992

<https://www.washingtonpost.com/archive/politics/1992/11/01/vatican-finds-galileo-not-guilty/1092b119-440e-4fb6-b990-cc7f8a662f0d/>

Follow up activities

Reading

Brecht's *Life of Galileo* play

Documentary:

Galileo: Fighting in the Dawn of Modern Science (2013)

<https://vimeo.com/95490386>

References and bibliography

Biagioli, Mario. *Galileo, courtier: The practice of science in the culture of absolutism*. Chicago and London: University of Chicago Press, 1993.

Biagioli, Mario. *Galileo's Instruments of Credit*. Chicago and London: University of Chicago Press, 2007.

Cohen, H. Floris. *The Rise of Modern Science Explained: a comparative history*. Cambridge: Cambridge University Press, 2015. Chapters 3 & 6.

Draper, John William. *History of the Conflict between Religion and Science*. New York: Two D. Appleton & Co, 1875.

Finocchiaro, Maurice, *Retrying Galileo, 1633–1992*. California, CA: University of California Press, 2005. Chapters 3, 6, 10, 11, 16, 17.

Finocchiaro, Maurice A. "The Copernican revolution and the Galileo affair." In JB. Stump and A. Padgett, *The Blackwell companion to science and Christianity*, Malden, MA: Wiley-Blackwell, 2012, 14-25.

Finocchiaro, Maurice A. *The Essential Galileo*. Indianapolis, IL: Hackett, 2018. Chapters 4 & 9.

Finocchiaro, Maurice A. *On Trial for Reason: Science, Religion, and Culture in the Galileo Affair*. Oxford: Oxford University Press, 2019. Chapters 5, 7 & 8.

Gingras, Yves. *Science and Religion: An Impossible Dialogue*. Oxford: John Wiley & Sons, 2017. Chapter 2.

Heilbron, John L. *The Sun in the Church: Cathedrals as Solar Observatories*. Cambridge, MA: Harvard University Press, 2009. Chapter 6.

Heilbron, John L. *Galileo*. Oxford: Oxford University Press, 2010.

Numbers, Ronald L., ed. *Galileo Goes to Jail and other Myths about Science and Religion*. Cambridge, MA: Harvard University Press, 2010. Chapters 7-9.

White, Andrew Dickson. *A History of the Warfare of Science with Theology in Christendom*. New York: D. Appleton & Co, 1896.

Zilsel, Edgar. "The sociological roots of science." *Social Studies of Science* 30.6 (2000): 935-949.

Unit C3: Science and Religion at the eve of modernity

Role: Second of a two or three-part series of lectures

Intended Audience: Pre-graduate or graduate students, non-expert historians

Suggested duration: 2 hours

Prerequisites: None

Learning Objectives

- To bring to the fore that considerations of the divine were a constitutive part of the Scientific Revolution.
- To show how protagonists of the contested Scientific Revolution utilized religious knowledge for their work on natural philosophy.
- To discuss natural theology and the thinking of pre-Revolutionary *philosophes* as two historical modes of engagement of science with religion.

Topics discussed

- The contested Scientific Revolution as a theological project.
- Newton as the “founder of modern science” and as a priest of nature.
- Enlightenment, anticlericalism and science.
- Natural theology as a historical mode of engagement between science and religion.

Suggested instructional procedure

1. Introduction: Newton as the venerated founder of modern science. Discussion about histories, historiographies and images of Newton. The sources for Newton historiography. (10-20 minutes)
2. What is the Scientific Revolution. What is so scientific and revolutionary about the era. The religious background of the Scientific Revolution. Newton as the “contested priest of nature”. Newton and religion. (20-30 minutes)
3. God and Descartes. Boyle, mechanical philosophy and religion. Neo-Thomism qua natural science. (20 - 30 minutes)
4. French enlightenment and British Natural Theology: Two modes of interaction. Atheism vs anticlericalism in the *Encyclopédie*. Voltaire and Newton. Diderot and d’ Holbach (20-30 minutes)
5. British Natural Theology. Paley and his predecessors. The watchmaker argument. Natural theology across Abrahamic religions (20-30 minutes)

Materials

Poems about Newton, especially Pope, William Blake and Edmond Halley

https://mathshistory.st-andrews.ac.uk/HistTopics/Newton_poetry/

Painting by William Blake (1795-1805)

The monument of Sir Isaac Newton in Westminster Abbey

<https://www.westminster-abbey.org/abbey-commemorations/commemorations/sir-isaac-newton>

Follow up activities

Reading

John M. Keynes lecture: *Newton, the man*

https://mathshistory.st-andrews.ac.uk/Extras/Keynes_Newton/

Documentaries:

Newton: The force of God (2016)

<https://vimeo.com/207434216>

Isaac Newton: His life and Work (1983)

https://www.youtube.com/watch?v=GvW_Y9sw6hk

References and bibliography

Brooke, John Hedley. "Science and the fortunes of natural theology: Some historical perspectives." *Zygon*® 24.1 (1989): 3-22.

Brooke, John, H. *Science and Religion: Some Historical Perspectives*, Cambridge: Cambridge University Press, 2014. Chapters 4-6.

Cohen, H. Floris. *The Scientific Revolution: a Historiographical Inquiry*. Chicago and London: University of Chicago Press, 1994.

Cook, Margaret G. "Divine artifice and natural mechanism: Robert Boyle's mechanical philosophy of nature." *Osiris* 16 (2001): 133-150.

Curran, Mark. *Atheism, Religion and Enlightenment in pre-revolutionary Europe*. Woodbridge: Boydell & Brewer Ltd, 2012. Chapters 5-7.

Epstein, Julia L. "Voltaire's myth of Newton." *Pacific Coast Philology* (1979): 27-33.

Fara, Patricia. *Newton: The Making of Genius*. New York: Columbia University Press, 2002.

Fara, Patricia. *Life After Gravity: Isaac Newton's London Career*. Oxford: Oxford University Press, 2021.

Garber, Daniel. *Descartes' metaphysical physics*. Chicago and London: University of Chicago Press, 1992. Chapter 9.

Gillespie, Michael Allen. *The theological origins of modernity*, Chicago and London: Chicago University Press, 2008. Chapter 8.

Henry, John. *The scientific revolution and the origins of modern science*, 3rd ed. London: Bloomsbury Publishing, 2008. Chapters 5-7.

Iliffe, Rob. *Priest of Nature: The Religious Worlds of Isaac Newton*. Oxford: Oxford University Press, 2017.

Israel, Jonathan. *A Revolution of the Mind: Radical Enlightenment and the Intellectual Origins of Modern Democracy*. Princeton: Princeton University Press, 2010. Chapters 6 & 7.

Kors, Alan Charles. *Atheism in France, 1650-1729, Volume I*. Princeton: Princeton University Press, 2014. Introduction.

Kors, Alan Charles. *Naturalism and Unbelief in France, 1650–1729*. Cambridge: Cambridge University Press, 2016. Chapters 1 and 5.

Manning, Russel, Ed. *The Oxford handbook of natural theology*. Oxford: Oxford University Press, 2013. Introduction, Chapter 6, 11-13.

Nicolaides, Efthymios. *Science and Eastern Orthodoxy*. Baltimore: John Hopkins Press, 2012.

Numbers, Ronald L., ed. *Galileo Goes to Jail and other Myths about Science and Religion*. Cambridge, MA: Harvard University Press, 2010. Chapters 10 & 13.

Snobelen, Stephen D. "" God of Gods, and Lord of Lords": The Theology of Isaac Newton's General Scholium to the Principia." *Osiris* 16 (2001): 169-208.

Westfall, Richard S. *Never at Rest: The Life of Isaac Newton*. Cambridge: Cambridge University Press (1994).

Unit C4: Neoaristotelianisms, Newtonianism and Orthodox Christianity

Role: Advanced standalone lecture, or the third part of a series.

Intended Audience: Graduate students, PhD candidates, historians

Suggested duration: 2 hours

Prerequisites: History of science and/or history of Eastern Christianity. C2 and C3.

Learning Objectives

- To show how Loukaris and Korrydaleas renegotiated neo-Aristotelian doctrines to formulate an Orthodox natural philosophy.
- To discuss how Newtonian theories appeared in Orthodox and Greek-speaking discourses of the 18th and 19th centuries.
- To bring to the fore and contextualize condemnations by the Orthodox Church of modernistic theories, vis-a-vis the revolutionary discourses of the era.

Topics discussed

- Varieties of neo- Aristotelianism in the 16th and 17th century
- Kyrillos Loukaris and Theophilos Korrydaleas: The creation of an Orthodox natural philosophy
- The Modern Greek Enlightenment and Newton
- Condemnations of modern natural philosophy by the Orthodox Church in the 18th and 19th century.

Suggested instructional procedure

1. Introduction: A problem of concepts. The multiple lives of Aristotelianism. What counts as Enlightenment and by whom. Modern Greek Enlightenment and its history. (20-30 minutes)
2. Kyrillos Loukaris and Theophilos Korrydaleas: The creation of an Orthodox natural philosophy. The influence of Padua. The necessity of the unlikely alliance. The role of the political forces of the era within the Ottoman Empire (30-45 minutes)
3. The modern Greek Enlightenment and Newton. Copernican and Brachean cosmologies in the work of the scholars of the Greek Enlightenment. A renegotiated Newton. (30-45 minutes)

4. Condemnations of modern natural philosophy by the Orthodox Church in the 18th and 19th century. Revolutionary fervor and conservative reactions. Modern physics as a political argument in the 19th century. (20-30 minutes)

Materials and Follow up activities

None

References and bibliography

Agiotis, Nikos. "Greek Aristotelianism in the seventeenth century: uncovering Cesare Cremonini in the works of Theophilus Korydalleus." *Byzantine and Modern Greek Studies* 43.1 (2019): 105-116.

Kitromilides, Paschalis M. *Enlightenment and Revolution*. Cambridge MA: Harvard University Press, 2013.

Makrides, Vasilios N. "The Enlightenment in the Greek Orthodox East: appropriation, dilemmas, ambiguities." In Pas. M. Kitromilides, ed. *Enlightenment and religion in the Orthodox world*, Voltaire Foundation, 2016, 17-47.

Nicolaides, Efthymios. *Science and Eastern Orthodoxy*. Baltimore: John Hopkins Press, 2012. Chapters 10-12.

Obolevitch, Teresa. *Faith and science in Russian religious thought*. Oxford: Oxford University Press, 2019. Chapters 2 & 3.

Patiniotis, Manolis. "Periphery reassessed: Eugenios Voulgaris converses with Isaac Newton." *The British Journal for the History of Science* 40.4 (2007): 471-490.

Patiniotis, Manolis. "Neo-Hellenic Enlightenment: In Search of a European Identity." In Th. Arabatzis, Jür. Renn, and An. Simões eds. *Relocating the History of Science. Essays in honor of Kostas Gavroglu*. Dordrecht: Springer, 2015, 117-130.

Patiniotis, Manolis. "Eclecticism and appropriation of the new scientific methods by the Greek-speaking scholars in the Ottoman Empire." In F Günergün, D Raina eds. *Science between Europe and Asia*. Dordrecht: Springer, 2011, 193-206.

Patiniotis, Manolis. "Shaping Newtonianism: The Intersection of Knowledge Claims in Eighteenth-Century Greek Intellectual Life." In Joh. Feichtinger, An. Bhatti, and Cor. Hülmbauee eds. *How to Write the Global History of Knowledge-Making*. Dordrecht: Springer, 2020, 129-148.

Randall, John Herman. *The School of Padua and the emergence of modern science*. Padova: Editrice Antenore, 1961.

Roudometof, Victor. "From Rum Millet to Greek Nation: Enlightenment, Secularization, and National Identity in Ottoman Balkan Society, 1453-1821." *Journal of Modern Greek Studies* 16.1 (1998): 11-48.

Schmitt, Charles, *The Aristotelian Tradition and Renaissance Universities*, London: Variorum, 1984.

Vlahakis, George N. "A Note on the Penetration of Newtonian Physics in Greece." *Nuncius* 8.2 (1993): 645-656.

Vlahakis, George N. "The Introduction of Classical Physics in Greece: The Role of the Italian Universities and Publications." *History Of Universities* 14.1 (1998): 157-180.

Vlahakis, George N. "The Greek Enlightenment in Science: Hermes the Scholar and its contribution to science in early nineteenth-century Greece." *History of Science* 37.3 (1999): 319-345.

Theme D

Darwinism and the human in science and religion

Unit D1: Darwinism and the human in science and religion

Role: Introductory, standalone

Intended Audience: Summer school, non-specialist scholars, introductory graduate lecture, sociologists of science, theologians

Suggested duration: 2.30 hours

Prerequisites: None

Learning Objectives

- To contextualize the evolution debate before and after Darwin
- To highlight the varied religious responses to Darwin, within and across denominations.
- To present how eugenics and creationism operationalized Darwinism within pre-existing contexts.
- To bring to the fore psychology as contested space between science and a theology of the soul

Topics discussed

- Darwinism and evolution as a controversy
- New Evangelicalism
- Psychology as contested space

Suggested instructional procedure

- Introduction: Images from eugenics and caricatures of Darwin. Discussion of evolution vis-à-vis Darwinian evolution. (10 minutes)
- 18th and 19th centuries controversies. The divine watchmaker and the age of the Earth debate: Neptunists and vulcanists. Lord Kelvin's chronology. Theories of evolution before Darwin: Fixists and catastrophists. Lamarck. (20-30 minutes)
- Darwinian evolution and religious responses around the world. German materialism and Orthodox responses: Greece and Russia. Eugenics (30-45 minutes)
- Creationism. The Monkey Trial. Intelligent Design (20-30 minutes)
- Psychology as contested space. (20-30 minutes)

Materials

Images from the Image Archive of the American Eugenics Movement

<http://www.eugenicsarchive.org/eugenics/list3.pl>

Caricatures of Darwin from Janet Browne, "Darwin in Caricature: A Study in the Popularization and Dissemination of Evolution," *Proceedings of the American Philosophical Society* 145 (2001): 506.

Follow up activities

Critically watch the "Inherit the Wind" film (1960)

References and bibliography

ALMAGEST, Special Issue, *Creationism in Asia, Oceania, and Eastern Europe* (2021)

Dean, Dennis R. "The age of the earth controversy: beginnings to Hutton." *Annals of Science* 38.4 (1981): 435-456.

Dixon, Thomas. "The psychology of the emotions in Britain and America in the nineteenth century: The role of religious and antireligious commitments." *Osiris* 16 (2001): 288-320.

Glick, Thomas F., ed. *The comparative reception of Darwinism*. Chicago: University of Chicago Press, 1988.

Livingstone, David. *Dealing with Darwin: Place, politics, and rhetoric in religious engagements with evolution*. Baltimore: John Hopkins University Press, 2014.

Mülberger, Annette. "The persuasive rhetoric of a manifesto (1870): Ribot's promise of an "independent" psychological science." *Centaurus* 59.3 (2017): 204-222.

Nicolaides, Efthymios. *Science and Eastern Orthodoxy*. Baltimore: John Hopkins Press, 2012. Chapter 14.

Numbers, Ronald. *The Creationists: from Scientific Creationism to Intelligent Design*. Cambridge, MA: Harvard University Press, 2006.

Tampakis, Kostas and Nicolaides, Efthymios "Darwin's dragons: 150 years of Greek Orthodox apologetics and the challenge of Darwinism" In K. Fox and M. Brownnut eds, *Global perspectives on Science and Religion*. Lancaster St, Carlisle: Langham Publishing (forthcoming 2023).

Vucinich, Alexander. *Darwin in Russian Thought*. California, CA: University of California Press, 1989.

Zarimis, Maria. *Darwin's Footprint: Cultural Perspectives on Evolution in Greece (1880–1930s)*. Budapest & New York: Central European University Press, 2015.

Unit D2: A global Darwin

Role: The first lecture of a two-or three-part series.

Intended Audience: Pre-graduate or graduate students, non-expert historians

Suggested duration: 2 hours

Prerequisites: Familiarity with the historiography of science and religion, concerning the conflict and complexity thesis

Learning Objectives

- To contextualize the evolution debate before and after Darwin
- To highlight the varied religious responses to Darwin, within and across denominations.
- To showcase the various uses that Darwinian evolution was put to, by very different ideologies.
- To discuss how Darwinism was negotiated in specific Orthodox contexts

Topics discussed

- Controversies of natural philosophy and natural theology in 18th and 19th century Europe. The age of the Earth.
- Evolution before Darwin. The development of the idea and its relationship with the emergence of Geology.
- Darwinian evolution. Religious responses to evolution. Materialism and Darwinism. The Global Darwin.
- Darwinism as the archetypical Conflict thesis example.

Suggested instructional procedure

- Introduction: Images from caricatures of Darwin. Discussion of evolution vis-à-vis Darwinian evolution. (10 minutes)
- 18th and 19th century controversies on Creation and the earth. Neptunists and Vulcanists. Lord Kelvin's chronology. Theories of evolution before Darwin: Fixists and catastrophists. Lamarck. (20-30 minutes)
- Darwinian evolution. Darwin's religious views. Religious responses. The Wilberforce-Huxley debate. Darwin's appropriators: Huxley and Spencer. (30-45 minutes)
- Darwin as a founding myth for science and religion. Darwin around the world. German materialism and Darwinism. Orthodox responses: Greece and Russia. (30-45 minutes)

Materials

Caricatures of Darwin from Janet Browne, "Darwin in Caricature: A Study in the Popularization and Dissemination of Evolution," *Proceedings of the American Philosophical Society* 145 (2001): 506.

Follow up activities

Darwin's Beagle voyage diary as a Blog
<http://darwinbeagle.blogspot.com/2006/>

References and bibliography

- Artigas, Mariano, et al. *Negotiating Darwin: the Vatican confronts evolution, 1877–1902*. Baltimore: John Hopkins University Press, 2006. Chapters 4-6.
- Bowler, Peter J. *The Earth Encompassed: A history of the Environmental Sciences*. New York: Norton & Company, 2000. Chapters 4-6.
- Bowler, Peter J., and Iwan Rhys Morus. *Making modern science: A historical survey*. Chicago and London: University of Chicago Press, 2020. Chapters 5-7.
- Dean, Dennis R. "The age of the earth controversy: beginnings to Hutton." *Annals of Science* 38.4 (1981): 435-456.
- Elshakry, Marwa. *Reading Darwin in Arabic, 1860-1950*. Chicago and London: University of Chicago Press, 2014.
- England, Richard. "Natural selection, teleology, and the logos: From Darwin to the Oxford Neo-Darwinists, 1859-1909." *Osiris* 16 (2001): 270-287.
- Gillispie, Charles Coulston. *Genesis and geology: a study in the relations of scientific thought, natural theology, and social opinion in Great Britain, 1790-1850*. Cambridge, MA: Harvard University Press, 1996.
- Glick, Thomas F., ed. *The Comparative Reception of Darwinism*. Chicago and London: University of Chicago Press, 1988. Chapters 11-13.
- Junker, T. "Darwinism, materialism and the revolution of 1848 in Germany. On the interaction of politics and science." *History and Philosophy of the Life Sciences* 17.2 (1995): 271-302.
- Livingstone, David. *Dealing with Darwin: Place, politics, and rhetoric in religious engagements with evolution*. John Hopkins University Press, 2014. Chapters 1 & 7.
- Richard, Robert. *The Tragic Sense of Life: Ernst Haeckel and the Struggle over Evolutionary Thought*, Chicago and London: University of Chicago Press, 2008.
- Shapiro, Adam R. "Darwin's foil: The evolving uses of William Paley's Natural Theology 1802–2005." *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences* 45 (2014): 114-123.
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Vucinich, Alexander. *Darwin in Russian Thought*. California, CA: University of California Press, 1989.

Zarimis, Maria. *Darwin’s Footprint: Cultural Perspectives on Evolution in Greece (1880–1930s)*, Budapest & New York: Central European University Press, 2015. Chapters 2 & 3.

Unit D3: Human nature at stake

Role: The second lecture of a two-or three-part series.

Intended Audience: Pre-graduate or graduate students, non-expert historians

Suggested duration: 2 hours

Prerequisites: Familiarity with the history of biological thought before and after Darwin. D2.

Learning Objectives

- To contextualize and document the rise of creationism and its spread around the world.
- To discuss the history and impact of the Scopes trial and its link with Intelligent design
- To contextualize the reported link between eugenics and Darwinism
- To bring to the fore the history of psychology as a contested territory between religion and science

Topics discussed

- The emergence of creationism in the USA. The history of the Monkey Trial vis-a-vis its dramatization. Intelligent Design.
- The history of eugenics
- Psychology as a science and the psyche as a religious territory

Suggested instructional procedure

1. Introduction: Images from Eugenics posters. With what is eugenics associated today? Where did it actually seem to have flourished? As a corollary, the rise of Christian fundamentalism at the end of the 19th century and the beginning of the 20th century. (10-20 minutes)
2. The emergence of creationism in the USA. Anti-evolutionism and American Protestantism. The history of the Monkey Trial vis-a-vis its dramatization. Intelligent Design. Creationism around the world (30-45 minutes)
3. The history of eugenics as Darwinism. (20-30 minutes)
4. Psychology as contested space. Religious opposition to Freud and psychology. (20-30 minutes)

Materials

Images from the Image Archive of the American Eugenics Movement

<http://www.eugenicsarchive.org/eugenics/list3.pl>

Follow up activities

Critically watch the “Inherit the Wind” film (1960)

References and bibliography

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Szerzynski, Bronislaw, “Understanding creationism and evolution in America and Europe” in Dixon, Thomas et al *Science and Religion: New historical perspectives*, Cambridge: Cambridge University Press, 2010, 153-174.

Tampakis, Kostas and Nicolaidis, Efthymios “Darwin’s dragons: 150 years of Greek Orthodox apologetics and the challenge of Darwinism.” In K. Fox and M. Brownnut eds, *Global perspectives on Science and Religion*. Lancaster St, Carlisle: Langham Publishing (forthcoming 2023).

Unit D4: What people believe

Role: Standalone lecture

Intended Audience: Graduate students, PhDs, historians of science

Suggested duration: 45 minutes

Prerequisites: A firm understanding of the history of religion and science

Learning Objectives

- To discuss the allocation of different beliefs among scientists and religious people in the current era
- To discuss transhumanism as an issue within science and religion scholarship.

Topics discussed

- What scientists believe
- What religious people believe
- Morality in science and religion
- Transhumanism

Suggested instructional procedure

1. Introduction: The role of belief. The image of scientists and the reality of their beliefs (15-20 minutes)
2. What counts as a religious person? What do they believe about science? The skewness of data towards Catholic and Protestant populations. (15-20 minutes)
3. Transhumanism between science and religion. (10-15 minutes)

Materials and follow up activities

None

References and bibliography

Burdett, Michael. "The Religion of Technology: Transhumanism and the Myth of Progress." In C. Mercier and Tr. Trothen, eds. *Religion and Transhumanism: The Unknown Future of Human Enhancement*. Santa Barbara, CA: ABC-CLIO, 2014, 131-147.

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Ecklund, Elaine Howard, and Elizabeth Long. "Scientists and spirituality." *Sociology of Religion* 72.3 (2011): 253-274.

Ecklund, Elaine Howard, and Christopher P. Scheitle. *Religion vs. Science: What Religious people Really Think*. Oxford: Oxford University Press 2017.

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Hopkins, Patrick D. "Transcending the animal: How transhumanism and religion are and are not alike." *Journal of Evolution and Technology* 14.2 (2005): 13-28.

Tirosh-Samuelson, Hava. "Transhumanism as a secularist faith." *Zygon*® 47.4 (2012): 710-734.

Theme E
Ideologies, Science, Religion

Unit E1: Ideologies, Science, Religion

Role: Introductory, standalone

Intended Audience: Summer school, non-specialist scholars, introductory graduate lecture, sociologists of science, theologians

Suggested duration: 2.30 hours

Prerequisites: None

Learning Objectives

- To show that ideologies have been constitutive of science and religion debates
- To highlight the role of nationalism as a common resource for secularists and anti-secularists
- To differentiate the role played by different types of atheism, especially science-based atheism and traditional atheism, in science and religion history.
- To analyze the role of vocation and popularization in creating perceptions about science and religion

Topics discussed

- Nationalism
- Secularism and disenchantment
- Atheism and Marxism
- Scientism

Suggested instructional procedure

1. Introduction: Theories of nationalism and the nation (10-20 minutes)
2. Nationalism in science and religion: Italian Unification. Modern Greece. Catalan language. The making of Argentina (30-45 minutes)
3. Secularism and the disenchantment of the world. Modernism and science. The secularism and religion debate. (30-45 minutes)
4. Orthodoxy and modernity: The case of Greek theologians on science (20-30 minutes)
5. Atheism and Marxism. **New Atheism**. Atheism and science. (20-30 minutes)
6. Scientism. A new profession. Oracles of Science. Scientists as Prophets (30-45 minutes)

Materials

Lawrence M. Krauss, "All scientists should be militant atheists" *New Yorker* (2015)

Marion Smith "Communism and Religion cannot coexist", *Wall Street Journal* (2019)

Follow up activities

Watch the "Science & Orthodoxy Around the World" documentary

<https://www.youtube.com/watch?v=nHg5azXTxjg>

References and bibliography

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Smolkin, Victoria. *A Sacred Space Is Never Empty*. Princeton: Princeton University Press, 2018.

Taylor, Charles. *A Secular Age*. Cambridge, MA: Harvard university press (2009).

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Unsworth, A. "Secularization. What Has Science Got to Do with It?" in F. Elson-Baker And B. Lightman, B. Eds. *Identity In A Secular Age: Science, Religion, And Public Perceptions*. Pittsburg: University of Pittsburgh Press, 2020, 141-158.

Walsh, L. *Scientists as Prophets. A Rhetorical Genealogy*. Oxford: Oxford University Press, 2013.

Unit E2: Nationalism and atheism in science and religion

Role: The first lecture of a two-part series.

Intended Audience: Pre-graduate or graduate students, non-expert historians

Suggested duration: 1.5 hours

Prerequisites: Familiarity with the historiography of science and religion

Learning Objectives

- To show that ideologies have been constitutive of science and religion debates.
- To highlight the role of nationalism as a common resource for secularists and anti-secularists
- To differentiate the role played by different types of atheism, especially science-based atheism and traditional atheism, in science and religion history.

Topics discussed

- Nationalism in the history of science and religion
- Varieties of Atheism and the link with Marxism

Suggested instructional procedure

1. Introduction: Readings of the two papers. Discussion of their points (10-15 minutes)
2. Theories of nationalism and the nation (10-20 minutes)
3. Nationalism in science and religion. Nationalism as a shared source of legitimization. The examples of Italian Unification, Modern Greece, Catalan language and the making of Argentina (30-45 minutes)
4. Atheism and Marxism. Varieties of Atheism. Scientific atheism as a counterpoint to religion. Soviet Atheism as a political statement. The perceived connection of atheism and science. New Atheism. (20-30 minutes)

Materials

Lawrence M. Krauss, "All scientists should be militant atheists" *New Yorker* (2015)

Marion Smith "Communism and Religion cannot coexist", *Wall Street Journal* (2019)

Follow up activities

Read the Cold War Comic *This Godless Communism*, 1961

https://www.historyonthenet.com/authentichistory/1946-1960/4-cwhomefront/7-comics/tcgodless/This_Godless_Communist_1961.html

References and bibliography

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- Ceba Herrero, Agustín, and Joan March Noguera. "Serving God, Fatherland, And Language": Alcover, Catalan, And Science" *Zygon*® 54.4 (2019): 1087-1106.
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- Tampakis, Kostas. "Onwards facing backwards: the rhetoric of science in nineteenth-century Greece." *The British Journal for the History of Science* 47.2 (2014): 217-237.
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Wong, Aliza S. *Race and the Nation in Liberal Italy, 1861-1911: Meridionalism, Empire, and Diaspora*, London: Palgrave Macmillan, 2006. Chapters 3 & 4.

Unit E3: Secularism, Disenchantment and Scientism

Role: The second lecture of a two-part series.

Intended Audience: Pre-graduate or graduate students, non-expert historians

Suggested duration: 1,5 hours

Prerequisites: Familiarity with the historiography of science and religion. E2.

Learning Objectives

- To discuss the disenchantment thesis, trace its origins and describe its importance for science and religion scholarship
- To analyze the secularism thesis, and the role of science in the process
- To analyze the role of vocation and popularization in creating perceptions about science and religion
- To describe what scientism is and how it relates to discussions about science and religion

Topics discussed

- The Secularism and Disenchantment Theses
- The professionalization of science
- The history and current role of Scientism

Suggested instructional procedure

1. Introduction: Weber's disenchantment of the world. The use by the Frankfurt school. The critique of technology. (10-15 minutes)
2. The disenchantment argument in science and religion. Historical and current counter-arguments for disenchantment. (20-30 minutes)
3. Modernism and science. The secularism and religion debate. Secularism and science. (20-30 minutes)
4. Scientism and scientification of religion. A new profession. Oracles of Science. Scientists as Prophets (20-30 minutes)

Materials

None

Follow up activities

See an excerpt by Carl Sagan on religion

<https://www.youtube.com/watch?v=fIEfwbv-CZo>

References and bibliography

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Collin, Finn, and David Budtz Pedersen. "The Frankfurt school, science and technology studies, and the humanities." *Social Epistemology* 29.1 (2015): 44-72.

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Stenmark, Mikael. *Scientism: Science, Ethics and Religion*. New York: Routledge, 2017. Chapters 1,6 & 7.

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Taylor, Charles. *A Secular Age*. Cambridge, MA: Harvard University Press, 2009. Chapters 12-14.

Thomas, Renny. *Science and Religion in India: Beyond Disenchantment*. New York: Routledge, 2021. Chapters 1-2.

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von Stuckrad, Kocku, *The Scientification of Religion-An Historical Study of Discursive Change, 1800–2000*, Berlin, De Gruyer, 2014. Chapters 1 & 6.

Walsh, Lynda. *Scientists as Prophets. A Rhetorical Genealogy*, Oxford: Oxford University Press, 2013. Chapters 1,6,8.

Standalone Lectures

SL: The myths and realities of science and religion

Role: Standalone lecture.

Intended Audience: General public

Suggested duration: 1 hour

Prerequisites: None

Learning Objectives

Since this is not part of an education context, no learning objectives are necessary

Topics discussed

- Galileo, Darwin and Newton as the archetypical cases of science and religion discussions.
- Problems of historiography and representation. The others.

Suggested procedure

1. Galileo faces the inquisition. Discussion of the paintings. (5 minutes)
2. Natural philosophy and the Church during Galileo's trial. The sun in the church. Galileo as a courtier. Reformation and counter-reformation. The quest for authority. What then "really happened"? (10-15 minutes)
3. The religious background of the Scientific Revolution. Newton as the "contested priest of nature". Newton and religion. (10-15 minutes)
4. The many faces of Darwin. Darwin's advocates and Darwin's enemies. Darwin around the globe as an example (10-15 minutes)
5. The others. Islam, Judaism, India. Whose science and whose religion. Narratives of power. (10-15 minutes)

Materials

Painting: Cristiano Banti's 1857 painting Galileo facing the Roman Inquisition

Painting: Galileo before the Holy Office, by Joseph-Nicolas Robert-Fleury

Caricatures of Darwin from Janet Browne, "Darwin in Caricature: A Study in the Popularization and Dissemination of Evolution," *Proceedings of the American Philosophical Society* 145 (2001): 506.

Ghandi at the telescope.

Follow up activities

No follow-up activities are necessary for a lecture aimed at a general public

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- Fara, Patricia. *Newton: the making of genius*. Columbia University Press (2002)
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- Lopez Jr, Donald S. *Buddhism and science: A guide for the perplexed*. University of Chicago Press, 2009.
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- Stolz, Daniel A. *The lighthouse and the observatory: Islam, science, and empire in late Ottoman Egypt*. Cambridge University Press, 2018.
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- Snobelen, Stephen D. "'God of Gods, and Lord of Lords': The Theology of Isaac Newton's General Scholium to the Principia." *Osiris* 16 (2001): 169-208.
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