Course Description EG 20801 Physicalism and Catholicism

Instructor: Prof. Craig S. Lent

Physicalism and Catholicism: Are you a machine?

Prominently displayed on the webpage for the outreach series Our Universe Revealed (universerevealed.nd.edu) is this quote from author Chuck Palahniuk:

"There is nothing special in the world. Nothing magic. Just physics."

Behind this quote is a worldview that comes completely naturally to many of us, particularly students studying science and engineering. It is the air we breathe. Since the scientific revolution of the 16th and 17th centuries, science has explained more and more comprehensively just how the world works. The unfolding of the history of the physical world, from subatomic particles to the expanding universe, is determined by the physical law, which can be expressed mathematically and precisely links one moment to the next. Chemistry is an application of physics; biology is an application of chemistry; all other fields of science build on this. Armed with an understanding of the physical law, at whatever level is appropriate, we can engineer systems to accomplish our goals and invent solutions to human problems.

Of course, "there is nothing special in the world," is not a scientific statement. It is a worldview statement that encapsulates a comprehensive account in which the ontology of the universe is exhausted by a description of particles and fields, and its history is a causal chain of events completely controlled by the physical law. Our universe is "revealed" to be empty of meaning and godless. Humans are biochemical machines responding to stimuli, storing information, and computing through a deterministic succession of neural states.

The primary goal of this course is to foster reflective and critical student engagement with this secular physicalist worldview. Many students implicitly accept this view uncritically while maintaining a personal Catholic Christian faith that is fundamentally incompatible with it. People are quite capable of holding conflicting accounts simultaneously. Many perhaps privately see their faith position as intellectually weaker than the "only physics" view, and as a result are tentative and without confidence in their Christianity.

The course will engage some of the best arguments of secular physicalist thinkers. Sean Carroll is a professor of physics at Caltech and Sam Harris holds a Ph.D. in neuroscience. Both make careful and reasoned arguments for their views. Students will analyze physicalism and compare it to the Catholic teaching and the biblical account. Science as a total worldview is relatively new, but science has a history. A common view is that science emerged in the scientific revolution as Europeans began to cast off the weight of old religious dogma and arguments from authority and started to look for truth on the basis of empirical evidence. Part of the course will be an encounter with the scientific revolution as it actually occurred.

This course is the result of a collaboration between Prof. Craig Lent, Freimann Professor of Engineering and Concurrent Professor of Physics at Notre Dame, and Prof. Peter Distelzweig. Lent

holds a doctorate in physics and has taught quantum mechanics in the Electrical Engineering for many years. Distelzweig hold a B.A. in philosophy (from ND), an M.S. in physics, and doctorate in the history and philosophy of science (Univ. of Pitt.). He is currently Assistant Professor of Philosophy at the University of St. Thomas, St. Paul, Minnesota. He specializes in early modern philosophy, and the history and philosophy of science and medicine.

Prerequisites: 1st Semester university physics (mechanics), major in College of Science or College of Engineering

Maximum enrollment: 12 students

Credits: 3

Curriculum: Physicalism and Catholicism

Main Texts:

Sean Carroll, *The Big Picture: On the Origins of Life, Meaning, and the Universe Itself* (Dutton, 2016)
Sam Harris, *Free Will* (Simon & Shuster, 2012)
Lawrence Principe, *The Scientific Revolution: A Very Short Introduction* (Oxford, 2011)
The Bible
Catechism of the Catholic Church (CCC)
Gaudium Et Spes (GS)
Lumen Gentium (LG)
Dei Verbum (DV)
Craig S. Lent *et al., The Story of the Bible*
Selected readings from other sources.

MWF* 5:00-6:15 P.M. SR109

Part 1: Physicalism

Week 1 (1/14)

- Class 1: Introduction, Physicalism
- Class 2: Physicalism I
    - Harris, pp. 1-44
    - Carroll, Prologue Chap. 1-3

Week 2 (1/21)

- Class 3: Physicalism II
    - Harris, 45-66
    - Carroll, Chap. 4-6
- Class 4: Physicalism III

- Carrol, Chap. 12,13,17

Week 3 (1/28)

- Class 5: Physicalism IV
  - Carroll Chap. 20-23,
- Class 6: Physicalism V
  - Carroll Chap. 26, 44, Appendix

Part 2: The Biblical story

Week 4 (2/4)

- Class 7: Creation
  - Genesis 1-3
  - *Dei Verbum*
  - Ch.1 Walton, John Walton, *The Lost World of Genesis One: Ancient Cosmology and the Origins Debate* (IVP, 2009)
  - Israel (1), The Story of the Bible, Ch 2
- Class 8: Israel(2)
  - The Story of the Bible, Ch 3-6

Week 5 (2/11)

- Class 9: Israel (3)
  - The Story of the Bible, Ch. 9-14
  - **Essay 1 due: Physicalism**
- Class 10: New Testament
  - The Story of the Bible, Ch 16-18

Week 6 (2/18)

- Class 11: Contrasting the Narratives of Physicalism and Christianity

Part 3: The Scientific Revolution (SR)

- Class 12: SR was not a rupture—Ancient and Medieval Science
  - Principe, Ch. 1,2
  - "John Pecham: The Geometry of Reflection" (p. 410-412);
  - "Witelo: A Problem of Image Formation by Reflection" (pp. 412-413);
  - "The First Systematic Description in Europe of the Properties of the Lodestone (pp. 368-376);
  - The Configuration of Qualities and Motions, including a Geometric Proof of the Mean Speed Theorem" (pp. 243-253)
  - Lindberg, David C. (2007) "Mathematical Description of Motion" in *The Beginnings of Western Science* (University of Chicago Press), pp. 299-306.
  - Lindberg, David C. (2007) "The Legacy of Ancient and Medieval Science" in *The Beginnings of Western Science* (University of Chicago Press), pp. 357-367.

Week 7 (2/25)

- Class 13: SR was not obvious: Galileo, the telescope, and Copernicanism
  - Principe, Ch. 3,4
  - Excerpt from Galileo, *Dialogue Concerning the Two Chief World Systems*
  - *Cambridge Companion to Galileo*, chapter on Telescopic Observations
- Class 14: SR was not obvious: Force, occult properties, and Newtonianism
  - Principe, Ch. 5
  - The nature of Newtonian force

Week 8 (3/4)

- Class 15: SR was not secular: Christianity and the new science
  - Principe, Ch. 6
  - Proem from Book V, Kepler's *Harmonices mundi*
  - Introductory materials from Francis Bacon, Great Instauration
  - Excerpts from Boyle's *Christian Virtuoso*
  - Newton's General Scholium
  - Henry, "Religion and Science" In *The Scientific Revolution and the Origins of Modern Science*
  - **Essay 2 due: Catholicism, the Biblical Narrative, and Physicalism**

- Class 16: Galileo Affair I
  - McMullin, Galileo Affair Summary
  - Lindberg "Galileo, the Church, and the Cosmos" in *When Science & Christianity Meet.*

Spring Break

Week 9 (3/18)

- Class 17 Galileo Affair II
  - Selection of primary texts from Galileo Affair

Part 4: Evolution

- Class 18: Recent Church documents on evolution
  - *Humani Generis* paragraphs 35-36; John Paul II, "The Origins and the Early Evolution of Life," Address to the Pontifical Academy of Sciences, 22 October 1996, Paragraph 4 – 6 (there is a mistranslation to be noted);)
  - International Theological Commission, "Communion and Stewardship: Human Persons Created in the Image of God," 2004, paragraphs 62-70.

Week 10 (3/25)

- Class 19: Evolution, Adam and Eve
  - Selections from *Adam and the Genome*, Scot McKnight and Dennis Venema
  - McMullin, *Evolution as a Christian Theme* (Lecture at Baylor)

Part 5: Quantum Mechanics

- Class 20: Quantum Mechanics 1
  - Video: Lent, QM vs Classical mechanics

Week 11 (4/1)

- Class 21: Quantum Mechanics 2
  - Video: Lent, Taking QM seriously
- Class 22: Quantum Mechanics 3
  - Video: Lent, QM and molecular biology
  - **Essay 3 due: Christianity and the Scientific Revolution**

Week 12 (4/15) Good Friday

- Class 23: Bell's Theorem
  - Video: Lent, QM interpretations

Part 6: The Human Person

- Class 24: The Human Person: are we machines?
  - Video: ND Lecture by Joachim Ostermann

Week 13(4/22) Easter Monday

- Class 25: The Human Person:
  - Video: ND interview of Joachim Ostermann
- Class 27: Thomistic view
  - Video: Nicanor Austriaco Lecture

Week 14 (4/29) Reading days Th,F

Part 7: The Big Picture

- Class 26: Creation and Eschatology
  - *CCC* 279 – 324, *CCC* 1042-1050 (esp. 1046), *GS* Ch. 3, 33-39
- Class 28: Wrap-up discussion

Week 15 Exam week

Final Essay due

Course learning goals

1) The student will be able to articulate and defend the physicalist view.
2) The student will be able to contrast the physicalist view with that of Christianity, especially the biblical account of reality as understood through Catholic hermeneutics.
3) The student will be able to describe the relationship between the narrative structure of a physicalist view of history and that of the biblical account. The central question being: what is going on here?
4) The student will have some knowledge of the scientific revolution, especially both the continuities and discontinuities with the medieval view of nature.
5) The student will be able to discuss the challenge of evolution to the Christian account, and some of the Christian response.
6) The student will be able to state—albeit non-mathematically—the relevance of quantum mechanics in overturning the mechanical view of the physical world.
7) The student will be able to discuss the Catholic view of the human person and compare that to a physicalist account.

CAD course criteria

This course is designed very explicitly to connect the disciplinary knowledge of science and engineering with the broader worldview questions of physicalism and the Catholic view of reality and the human person. One goal is to confront head-on the strongest arguments of the physicalist critically, whatever the student's personal view. This will be a seminar course, limited to an enrollment of 12. Class discussions will be an important component, and one technique in facilitating the critical exploration will be mini-debates in which students are assigned a position to defend.

The engagement with Catholic teaching is substantial—the Bible and official church teaching. More than just documents, this course is designed to be a clash of worldviews—what is the core of the reality that confronts us?