

THE NEW PHYSICS: ALTERNATIVE WORLDVIEWS

Humanities 324
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I. Worldviews: Traditional, Modern, and Postmodern

| | TRADITIONAL | MODERN | POSTMODERN |
|---------------------|-----------------------|------------------------|----------------------|
| Nature of Nature | Static, Unchanging | Dynamic, Evolving | Observer-Dependent |
| Source of Knowledge | Authority | Reason and Observation | Add Culture |
| Truth | Divinely Given | Absolute, Discoverable | Subjective, Multiple |
| The Big Question | Why? (Teleology) | How? (Mechanism) | Who? (Discovery) |

II. Science and the Humanities

- a) The Scientific Revolution and the Enlightenment
- b) Scientism--The Idolatry of Science

III. Twentieth Century Physics: Relativity and Quantum Mechanics

- a) Albert Einstein and Relativity
- b) Neils Bohr, Louis de Broglie, and Quantum Mechanics
- c) Werner Heisenberg and the Uncertainty Principle
- d) The EPR Paradox and Non-locality

IV. Connections

- a) Multiple truths
- b) Uncertainty
- c) Observer-dependent Reality
- d) Absolutes?
- e) Eastern Philosophy

V. Postmodernity and the Choices We Face

VI. What's left of the Enlightenment? Where do we go from here?

QUOTATIONS

On Modern Physics: “The theory of quantum electrodynamics describes nature as absurd from the point of view of common sense. And it fully agrees with experiment. So I hope you can accept Nature as She is--absurd.” Richard Feynman, QED: The Strange Theory of Light and Matter

On Scientism: “In a sense, science has taken over the role of state religion in modern culture, and it has become a very influential religion at that. Who can deny that the scientific establishment has become a modern priesthood? The pronouncements of scientists are respected and accepted by today’s public just as the doctrines of the church fathers were respected and accepted by people a thousand years ago. The rigorous training in arcane mathematics and methodology is no less exacting, demanding, and monastic than was the medieval study of ancient languages and theology. Modern scientific training today is an insuperable barrier to the layperson who would question the authority of science, just as the ecclesiastical training of the Roman Catholic priesthood was a great obstacle to the medieval laity with its questions and doubts. If anything, modern science incurs far less challenge and criticism than the church ever did. The church fathers would have given their eyeteeth to command for medieval Catholicism the kind of obedience and blind faith that we freely lavish on science today.” Roger S. Jones, Physics for the Rest of Us, pp. 134-35

A Postmodern View of the Enlightenment: “The postmodern verdict on the Enlightenment project is that it was a brilliant, ambitious effort, but that its field of vision was limited. Its leaders thought the task of building a universal human culture upon a foundation of rational thought would be easier than it has turned out to be. The universe now seems, if not infinite, at least infinitely complex and mysterious. Our eternal truths now appear to be inseparable from the cultures that created them and the languages in which they are stated.” Walter Truett Anderson, The Truth about Truth, p. 240

On Postmodernity: “This time is, for all its jangle, complexity, and dissonance, a moment of great beauty and opportunity. We glimpse new ways of thinking about ourselves, new possibilities for coexisting with others--even profoundly different others. We begin to feel a sense of ownership of our worldviews and identities. My own feeling about this time is a hopeful one.” Walter Truett Anderson, “What’s Going on Here?”, in The Truth about Truth, p. 11

SUGGESTED READINGS

Roger S. Jones, Physics for the Rest of Us (1992)
Fritjof Capra, The Tao of Physics (4th ed., 2000)
Gerhard Stagnun, God’s Laughter (1994)
Richard P. Brennan, Heisenberg Probably Slept Here (1997)