

1. **God is the creator of "all that is seen and unseen."** This is one of the salvific truths revealed by Genesis 1&2 (CCC, 289). That there is a God Who is the source of all things "can be known with certainty through His works, by the light of human reason" (Vatican I, 1870--CCC, 286, echoing Rom 1:19-20).
2. **Science studies what God created.** Therefore, "there can never be any **real** discrepancy between faith and reason. Since the same God who reveals mysteries and infuses faith has bestowed the light of human reason on the human mind, **God cannot deny himself, nor can truth ever contradict truth**" (CCC, 159; LG 36).
3. **The natural and human sciences deserve praise.** "When we work in the disciplines of philosophy, history, mathematics, and science, and when we cultivate the arts, we can greatly help humanity to reach a higher understanding of truth, goodness, and beauty, to make **judgments of universal value**" (LG, 57). Christians should understand the worth of science (LG, 62). *Scientific truth is a matter of sound judgment.*
4. **Science deals with the physical universe, not the metaphysical realm.** "There is no doubt that modern scientific and technical progress can lead to a certain phenomenism or **agnosticism** [*Wallace calls this "fallibilism"*]; this happens when scientific methods of investigation, which of themselves are incapable of penetrating to the deepest nature of things, are **unjustifiably taken as the supreme norm for arriving at truth**" (LG, 57; *Saganism* makes this kind of unscientific generalization that scientific method is the norm of all truth).  
The declaration that "**the scientific method is the only way to know the truth**" cannot be verified by the scientific method (physical observation, hypothesis, quantification, controlled experiments, accurate reporting of results). When scientists discuss religious, ethical, or philosophical issues, **they cease to do science and begin speaking as theologians or philosophers**. Their expertise *as scientists* is irrelevant to the quality of their reasoning *as theologians or philosophers*. "Many, trespassing beyond the boundaries of the positive sciences, either contend that everything can be explained by the reasoning process used in such sciences, or, on the contrary, hold that there is no such thing as absolute truth [*Wallace: the error of fallibilism*]" (LG, 19).
5. **Bad people can do good science:** Hitler's doctors, Richard Feynman, the inventor of the polymerase chain reaction, etc. *Genius in one area of human affairs does not imply genius in all areas.* (Scientists who lie about their results do bad science; cf. Polanyi on the importance of the **scientific conscience**--scientists have an ethical, metaphysical obligation to tell the truth and to believe the truth.)
6. **Bad theology creates false conflicts.** The Roman Catholic Church rejects the *literalist interpretation* of the Bible ("Every proposition found in the Scriptures is true in every sense of the word 'true'"). Catholics are not obliged to accept either version of the creation story as a *scientific* narrative. We are obliged to grasp "that truth which God, for the sake of our salvation, wished to see confided" to these stories (DV, 11). **Catholics are not obliged to defend stupidities derived from an uncritical reading of the Scriptures.** Literalism applies bad principles of interpretation to the sacred text, producing theological nonsense. It is a case of **GIGO**: garbage in, garbage out. "We cannot but deplore certain attitudes, not unknown among Christians, deriving from a short-sighted view of the **rightful autonomy of science**; they have occasioned conflict and controversy and have misled many into opposing faith and science" (LG, 201). *Good scientists can do bad theology* (e.g., Newton, Einstein, Hawkings, Feynman, Sagan).
7. **Science is judged by ethics, not vice-versa.** Science says **what is** and **what can be** in the physical universe; ethics addresses what **should be** in the universe. The following proposition can only be debated using ethical reasoning, not laboratory techniques: "Every act of war directed to the indiscriminate destruction of whole cities or vast areas with their inhabitants is a crime against God and humanity, which merits firm and unequivocal condemnation" (LG, 80). Science tells us we **can** blow up whole cities; the Church and humanitarian ethics tell us that we **may not** target the innocent along with the guilty.  
The **universal negative prohibitions** (no murder, adultery, stealing, or lying) in the Ten Commandments cannot be derived from physics, chemistry, or biology, although support for them may come from the natural or human sciences. ***We do not establish these principles by experimentation!***  
Science that **assists nature** is good (restoring health, saving life, increasing fertility, etc.). Science that **violates human nature** is bad (artificial birth control, in vitro fertilization, cloning, abortion, suicide, euthanasia). The distinction between good and bad here is an *ethical* distinction, not a *scientific* distinction. From the **pragmatic** point of view--a philosophy common among scientists, but antithetical to the gospel in many respects--if it "works" it is "good."

CCC: *Catechism of the Catholic Church*. LG: *Lumen Gentium*; DV: *Dei Verbum* (documents from Vatican II, 1963-65).

***My characterization of science:*** *in the modern sense of the word, science deals with the physical universe (space-time/matter-energy); it depends upon observation and measurement; its results should be repeatable, in principle, by any equally well-trained and well-equipped observer. In the medieval sense of the word as an organized body of knowledge, philosophy (metaphysics, epistemology, ontology, etc.) and theology were called "sciences."*

<p><b>Saganism (scientism)</b>                  Science is true.                  Religion is false.</p>	<p><b>Catholicism</b>                  Science is true.  <b>Catholic Christianity</b> is true.</p>
<p><b>Nihilism</b>                  Science is false.                  Religion is false.</p>	<p><b>Fundamentalism</b>                  Science is false.                  The Bible is true in every respect.</p>

**The nature of science:**

When I say "science" with no other qualification, I mean "the physical sciences": **physics, chemistry, and biology.**

The proper object of science is **physical reality.**

By "physical reality," I mean "all forms of matter and energy that are found in the space-time continuum."

**"Force fields" are physical realities,** even though we cannot apprehend them directly with our senses, as we can other forms of matter or energy. We see the effects of the fields, and so we properly reason to the existence of forces that can act on observable physical realities. Examples: electro-magnetism, gravity, nuclear forces (weak and strong), dark energy (?).

The **methods of science** are observation, experimentation, formulation of theories, and openness--publication of data, methods, and results that allows others to review the findings.

**"Observation"** depends on the five senses and instruments that, by analogy, extend the power of our senses. We see, hear, taste, touch, and smell things in the physical world. All of our instruments bring information to our senses--telescopes, microscopes, microphones, interferometers, spectroscopes, antennas, amplifiers, satellites, robotic instruments and vehicles landed on other bodies in the solar system, etc., etc.

**"GOD"** is never a proper answer to a properly formed *scientific* question in the sense in which I am using the word "science" in this handout and in the course generally. If "God" comes into a conversation *about* science, it is not a scientific conversation but philosophical or theological instead.

**Scientific knowledge is real knowledge of the physical universe** within which "we live and move and have our being" (Acts 17:28). The triumphs of science are real, and scientists should be honored for their discoveries.

**The nature of philosophy:**

The great quest of philosophy is to **see how far our powers of reason can take us.**

The object of philosophy is the kind of truth that we can attain just by **thinking about thinking** (Lonergan).

The methods of philosophy all depend upon making **logical inferences**, reasoning from premises to conclusions. Philosophy is not reducible to pure logic, but it cannot operate without relying on logic.

**In making these distinctions between science, philosophy, and religion, I am doing philosophy right before your eyes.**

Some *philosophers* of science claim that **only scientific knowledge is real knowledge** and that every other kind of truth claim is merely an opinion. If what they say is true, then it is merely their opinion, asserted without scientific backing, because "scientific knowledge" is not an object of science (i.e., a form of matter or energy found in the space-time continuum and known through the human senses or through instruments that extend the human senses). The claim that "only scientific knowledge is knowledge" is a **philosophical claim that must be defended on philosophical grounds.** The fact that it is self-referentially inconsistent makes me think it is an absurd and indefensible claim; YMMV.

**The nature of religion:**

"Religion," as such, is an abstract category. **"Religion" does not exist; religions do.** Religions have similar features that allow us to lump them all together in the category of "religion," but also have contrasts and contradictions that prevent us from treating them all as identical in every respect.

I am familiar with the great *types* of world religions, and would be happy to talk about any of them with you in our class discussions, but **I am myself an assenting evangelical Catholic,** and I rely on Catholic philosophy and theology to resolve the apparent conflict between religion and science. I do not defend all forms of religion; some are better than others.

The object of Catholic Christianity is **GOD.**

**GOD** is a pure spirit, outside of time, uncaused by any other being but the cause of *all* other beings and events. GOD's power and goodness are infinite in all respects. GOD is present everywhere (**omnipresent**), knows everything (**omniscient**), and possesses all power (**omnipotent**).

**We cannot observe GOD directly** because He is not a form of matter and energy in the space-time continuum; the methods of science are useless to affirm or deny GOD's existence and nature. Unless God reveals Himself to us, we cannot know Him as He knows Himself.