

VESTIGES OF THE NATURAL HISTORY OF CORE:  
A TEAM-TAUGHT, INTERDISCIPLINARY APPROACH TO A  
WRITING-INTENSIVE, HONORS COURSE

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Both of us joined the University of Denver faculty in 1988. At that time, we were presented with a Core curriculum (in place since the middle of the decade) that featured a collection of team-taught, interdisciplinary courses. Coherence was provided by organizing themes. And, most notably, they were *year-long* offerings! Funded initially by a substantive grant from the National Endowment of the Humanities, the University of Denver's Core had garnered a good deal of national attention, drawing praise from many segments of the higher education community, including Lynn Cheney's approbation.

Today, there remain but palimpsests of that approach to general education at DU (e.g., the year-long sequences in NATS). Employing teams of three, four or more faculty members from as many disciplines, the old Core was labor-intensive to say the least. Scheduling was a nightmare. Students locked into year-long courses during the first two years of their undergraduate careers complained of being trapped, of having very little freedom or choice about their schedules. "Core sucks!" became the litany among students.

Our course in the revised curriculum, CORE 2410: "Science and Religion in Dialogue—The Case of Darwin," is, to our knowledge, the last hold-out from this era of interdisciplinary, team-taught Core. To be sure, ours is not a year-long offering (and we are divided on the wisdom of requiring a year-long sequence of courses in *any* subject given the complexity of knowledge, and brevity of attention spans, in today's technology-saturated world). But our course is certainly an interdisciplinary one. As faculty we represent two departments in different Divisions whose disciplines are characterized by broad-ranging methodological inclusiveness. Our approach is thematic, reflecting not only the "Communities and Environments" niche into which we have opted, but also a sustained and

carefully-orchestrated conversation over the course of quarter. The current configuration of Core and the discussions in which we are now engaged about its revision (which include a new litany—this time among faculty—that "Core doesn't work") have not altered our conviction that a team-taught, thematic approach—one that is genuinely interdisciplinary (i.e., *across divisions*)—is absolutely the best way to prepare students to engage with topics of paramount importance to their lives as thoughtful, engaged citizens.

**University Professorships  
and the Origins of Core 2410**

The decision to teach Core 2410: Science and Religion in Dialogue: The Case in Darwin was the result of our selection, in 2000, as "University Professors" in the Arts and Humanities and the Social Sciences. Ours were three-year terms stipulating that we collaborate in a joint teaching venture of our design. We hadn't talked long before it became clear that we share certain passions. We are acutely aware that science and religion are two important forces in American life. The relationship between science and religion has become increasingly controversial in our country, as indicated by ongoing, oft-heated debates over the proposed teaching of "Intelligent Design" in public school science classes, the morality of stem cell research, genetic engineering and cloning, and, more broadly, what the Founders meant when they prescribed a Constitutional separation of church and state. These imbroglios are deeply consequential; our ability to settle them depends on how we understand, and relate, science and religion. In our opinion, one cannot join responsibly as citizens in those conversations until s/he comes to terms with Darwin. Our course began to take shape.

The University Professorships also provided us with professional development funds for the period (regrettably, this development opportunity for faculty no longer exists). As we began to work on the course, the first third of which was to focus on Darwin's intellectual development and the 19<sup>th</sup>-century backdrop for his scientific contributions, it became clear to us that a research trip to experience the Galápagos Islands first hand would be essential to the teaching strategies we intended to employ. Fortunately, we were able to join in the field component of a DU Seminar (BIOL 3110) for advanced students in biology led by Professor Michael Monahan for a three-week stint in Ecuador in November and December, 2002.

Beginning with the 700-mile flight from Quito to Baltra on Islas Seymour, the trip proved to be the adventure of a lifetime. Over the course of eight days we re-traced Darwin's odyssey on a boat even smaller than the *HMS Beagle* (a 90 foot brig of a type described by British seaman as a "floating coffin"). Aboard our yacht, *Daphne*, we journeyed to Bartolomé Bay on the island of San Salvador, and from there to the islands of Fernandina, Isabel, Santa Cruz, Plazas, Santa Fé, Española and San Cristóbal. We visited the Darwin Research Station in Puerto Ayora and stalked giant tortoises in the wild. We experienced the same remote, isolated, exotic landscape, came face to face with the same peculiar species, and grew to appreciate the cruel existence of nature "red in tooth and claw" that Darwin himself had documented. Photographically, we took note of how, in Puerto Ayora, murals on the enclosing wall of the Adventist Church directly across the street from the Darwin Research Station, and on the bell tower of the church in Puerto Baquerurizo Moreno, bore witness to present-day, Christian, creationist opposition to the conclusions Darwin drew from his visit to the Islands.

In the summer of 2003, we followed up the Galápagos trip with one to England. To spend some time at Darwin's family home, Down House, in County Kent, to peer into his study from which emanated, over the course of 40 years, not only his famous treatises but also nearly 15,000 letters, to trace his footsteps along the sand walk he meditatively negotiated three times each day, to visit his grave in Westminster Abbey, and to participate in a conference on Darwin in

Oxford University deepened considerably our engagement in the material we were to teach.

The inaugural iteration of the course was launched in the fall of 2003. We have taught it annually ever since. Our goal from the outset was to create a highly-interactive, engaged teaching and learning environment. At the heart of our syllabus was a careful reading and analysis of primary sources, including large sections of *The Origin of Species* and *The Descent of Man*. A hefty writing component was envisioned from the beginning. However, given the demand for Core offerings at DU and the recent strictures that have attended team-teaching, our enrollment was capped at 60 students. Our hopes for the course as we had envisioned it were ultimately frustrated. And so, for the spring quarter of 2009, we have proposed to teach it as a writing-intensive Core course for students in the University Honors Program. To be sure, this will present us with a new set of challenges, but may allow us to realize, for the first time really, the ideals encoded in the conceptual DNA of DU's innovative Core of the 1980s.

### **The challenge of teaching Honors students**

We anticipate an enrollment of no more than 30 Honors students. If recent trends continue, among those we may expect a sizable group of students majoring in the Natural Sciences. For example, of the 124 Honors students slated to graduate in 2009, 31 have declared majors (BS or BA) in the Natural Sciences. In 2010, 16 per cent of all DU Honors students are expected to graduate with degrees in the sciences. In has been our experience that being a science major does not necessarily mean a student has had any sort of sustained exposure to Darwin's writings. Science majors read *about* Darwin; Darwinian evolutionary theory is a *presupposition* for the work they do, not the object of their study. Few Honors students have had much acquaintance with the academic study of religion. Only 10 per cent of the Honors cadre majors in Arts and Humanities. Honors students do, however, seek out opportunities to stretch their horizons. They want to be challenged as critical thinkers, and welcome the opportunity to hone their skills by writing. We relish the opportunity to re-cast our course to meet just those expectations.

The key question for our team-taught, interdisciplinary, writing-intensive Honors course will be this: “What is the best way to understand or construe the relationship between science and religion?” To anchor our inquiry we shall focus on the life, the scientific discoveries, and the religious commitments and struggles of Charles Darwin. Darwin’s evolutionary theory fundamentally transformed the scientific environment of his day. But in so doing, it also raised significant challenges to religious belief, particularly in Christian communities of faith. More than any other scientific discovery of his time, Darwin’s theory caused ordinary people to re-examine their core beliefs about origins and about the presumed dignity of human existence. Thus, Darwin’s career and his writings, taken on their own terms, provide the foundation for considering much broader issues in the relationship between science and religion, ones that developed in the years that followed, and which cast a long shadow on American life.

#### **Four ways of construing the relationship between science and religion**

During the first week of the course, we will lay the groundwork for our quarter-long conversation by introducing our students to the options Ian G. Barbour presents in his groundbreaking work, *When Science Meets Religion: Enemies, Strangers or Partners* (2000), where he proffers four ways of framing the relationship between science and religion. They are:

1. *Conflict*—This view contends that science and religion make *literal* statements about the same domain (the history of nature) that are diametrically opposed. Science and religion present an “either/or” decision; a person must choose between them. Since the late 19<sup>th</sup> century, the rhetoric of warfare has often been used to characterize the differences in worldview. Currently, scientific materialism and Christian fundamentalism appear to be engaged in mortal combat.
2. *Independence*—This view holds that science and religion are autonomous fields in inquiry. They can be distinguished according to the *questions* they ask, the *domains* to which they refer, and the *methods* they employ. Stephen Jay Gould, the eminent zoologist and

paleontologist offered an acronym, NOMA (= “non-overlapping magisteria”), to capture the distinction. The focus of science is the explanation of objective, public, repeatable data. Religion concentrates on the existence of order and beauty in the world, or is more concerned with the experiences of one’s inner life (such as guilt, anxiety and meaninglessness, on the one hand, and forgiveness, trust and wholeness, on the other). Science asks objective “how” questions. Religion asks personal, “why” questions about meaning and purpose, and about humanity’s ultimate origin and destiny. The basis of authority in science is logical coherence and experimental adequacy. The final authority in religion is God and revelation, understood through persons to whom enlightenment and insights have been given, and validated in one’s own, personal experience. Science makes quantitative predictions that can be tested experimentally. Religion must use symbolic and analogical language because God is transcendent.

3. *Dialogue*—This view allows that science and religion share methodological and conceptual parallels. The construction of theories and the “doing of theology” are *both* imaginative enterprises in which analogies, metaphors, and models often play a role. Both are frequently concerned with “limit” questions, viz., questions about origins. While the integrity of each field is preserved and the genuine differences acknowledged, this position holds that each has something to learn from the other, and that communication of information is possible. The subject of ethics is often thought to be an obvious locus of discussion, and, more recently, human responsibility for the environment.
4. *Integration*—This view maintains that science and religion are inseparable, that they are two sides of the same coin. An integrationist view can take the form of a renewed emphasis on *natural theology*, in which it is claimed that the existence of God can be inferred from (or is supported by) the evidence of design in nature, of which science makes us more aware. Or, it can take the form of a *theology of nature*, which holds that some traditional

doctrines need to be reformulated in the light of current science. An integrationist view may seek a *systematic synthesis*, in which science and religion contribute to the development of an inclusive metaphysics, as in the case of process theology, or in some of the more self-disclosing versions of Intelligent Design creationism.

### Writing-intensive, Honors-appropriate strategies

With Barbour's categories in mind, our goal for the end of the course is to have the students write position papers in which they stake their claims regarding the relationship between science and religion. Their point of departure will be the contemporary debate over Darwin's work. But the assignment is also intended to be integrative. We shall expect our students to:

- Demonstrate their understanding of why Darwin is still a controversial figure in America life;
- Show a substantive grasp of what they consider the merits and limitations (or tradeoffs) of each of Barbour's alternatives to be;
- Make specific use of selected course material to defend their positions (e.g., Barbour's descriptions; Darwin's own words; the history of Darwinism in America; speeches from the Scopes Trial; statements by mainstream religious groups; arguments by Intelligent Design advocates; theological constructs by process thinkers; etc.);
- Situate themselves firmly within their own communities and environments, and, if appropriate,
- Disclose how their thinking about the science-religion relationship and changed (*or not*) as a result of the exposure to this material.

We expect the paper to be persuasive, subject to peer review by classmates and instructors, colleagues of good will who have been anxiously awaiting the moment when all the cards are laid on the table, the various hands revealed—including those the instructors hold!

There will be, of course, several interim writing projects that make this final exercise

possible. To anticipate where we are heading, and to gauge early on how well our students have understood Barbour's categories, our first writing assignment asks students to conduct their own survey about the relationship between science and religion. We invite them to:

1. Read *The New York Times* article from Wednesday, August 31, 2005, "Teaching of Creationism is Endorsed in New Survey."
2. Note how the survey's questions are posed and the statistics presented.
3. Frame a survey question of their own—one that genuinely interests them—that is relevant to the question of the American public's understanding of the relationship between science and religion.
4. Research available data, making use of resources on the Web (see below for a sample).
5. Analyze their results by asking "On this question, where does the American public's sentiment fall along the spectrum Barbour presents in his chapter, "Four Views of Science and Religion," from *When Science Meets Religion*?
6. Write newspaper articles of about 500 words, using *The New York Times* piece as a model. They should be of interest to the general reader, ones that present fairly (and accurately!) what they have learned, *and ones that reveal the research methods employed*. Provide attention-getting headlines!

NOTE: For starters, here are a few sites to explore:

<http://pewform.org/surveys/origins>  
[http://www.religioustolerance.org/ev\\_publi.htm](http://www.religioustolerance.org/ev_publi.htm)  
[http://www.harrisinteractive.com/harris\\_poll/index.asp?PID=581](http://www.harrisinteractive.com/harris_poll/index.asp?PID=581)  
<http://www.hcdi.net/polls/J5776/>  
or

From DU's home page type: Marsico/IDEA, to access the data set: General Social Survey.

As mentioned above, the first third of our course is devoted to a careful reading of Darwin and his contemporaries. The suggestions we found in Chapter 8, "Helping Students Read Difficult Texts," of John Bean's book, *Engaging Ideas* (San Francisco: Jossey-Bass, 2001, 133-148) struck us as particularly useful for helping us

achieve our goals and for engaging Honors students at an appropriate level. For example, it has been famously said of Darwin's contemporary Karl Marx that "his words are like bats. One can see in them both birds and mice." The same might be said of Darwin's words as they relate to the question of religion. *The Origin of Species* was a huge scientific and popular success largely because of Darwin's use of *metaphor* to capture the readers' attention and to excite their imaginations about other ways the history of life might have unfolded. These metaphors have also inspired much scholarly speculation as to what, if anything, they imply about Darwin's belief in a personal god. So we envision an early assignment that will require our students to identify three "metaphor-rich" passages in *The Origin* that address the issue of Darwin's "god." Then we ask:

1. Do these passages imply belief? Non-belief? Uncertainty? Agnosticism?
2. Alternatively, might they reflect tactical, rhetorical moves by Darwin to soften heretical or atheistic ideas?
3. Based on how your answers questions one and two, where would you place Darwin in terms of Barbour's categories for understanding the relationship between science and religion? Why?

Similarly, when we turn our attention to David Hume's *Dialogues Concerning Natural Religion*, a guided journal assignment seems like an ideal solution for helping our students navigate its multi-faceted argument. Hume (1711-1776) did not publish *Dialogues* during his lifetime. He left copies with his nephew, his publisher and with his close friend, Adam Smith, to ensure that the work would appear after his death. *Dialogues* made it to print in 1779. Darwin, by his own admission, admired it greatly. We propose a writing assignment that includes both reading strategies and attempts to draw the students into conversation with the author and with Darwin as a reader of Hume. For us, the leading question is: What leverage does Darwin gain for his own scientific conclusions from Hume's philosophical musings? Answering that question requires a careful reading of the *Dialogues*, accompanied by thoughtful journaling. Here is the assignment we envision:

1. Read the *Dialogues* carefully and deliberately, one section at a time. Once you have finished each part (there are 12), stop and jot down, briefly, how you think the discussion has advanced.
2. Can you now distinguish, in a way that makes sense to you, between an *a posteriori* argument and an *a priori* one?
3. Can you summarize for yourself the main lines of Cleanthes' argument? In your opinion, what is most persuasive about the case Cleanthes makes?
4. Why do Demea and Philo take issue with Cleanthes? Why do they find his argument less than compelling? Do you find yourself siding with them? Why? Why not?
5. How does the interchange between these friends end? Is it, to you way of thinking, a satisfying conclusion? If so, why? If not, why not?
6. What is the overarching "topic" of the *Dialogues* really? Why was it of keen interest to Darwin? In the end, do you think it is an important one? How, specifically, does it relate to the subject matter of this course. Is it a topic with which thoughtful people still wrestle?

The middle third of the course is devoted to the reception of Darwin in America and the events that led up to the 1925 Scopes Trial. That chapter in American history provides a way for us to sharpen the focus of our theme, "Communities and Environments," to illustrate the value of Barbour's categories. As a means of transitioning to the final part of the course and contemporary, 21<sup>st</sup>-century debates, we use a film as our "text" for analysis. Since its release, many have maintained that Stanley Kramer's 1960 film, *Inherit the Wind*, has significance to students because it illuminates a piece of America's intellectual history (the Scopes Trial) and presents important ideas in a compelling, dramatic format. After all, the authors of the original 1955 Broadway play (Jerome Lawrence and Robert E. Lee) indicate that their fundamental premise was "to establish some way for this society to survive despite its duality of beliefs."

However, critics have suggested that presenting *Inherit the Wind* as a history lesson can be dangerous. There are serious discrepancies



between the account of the trial portrayed in the film and the actual trial records themselves (which we will have read). Sophisticated viewers warn that the dramatization of historical events gave both the playwrights and the filmmaker opportunities to represent history in a way that expressed particular personal biases and prejudices. Insights gained from Chapter 7 of Bean’s book, “Designing Tasks for Active Thinking and Learning,” have led us to frame this writing exercise:

Draft a “white paper” for middle school teachers (both science and humanities instructors) that:

1. Identifies what you consider to be the most glaring historical inaccuracies in *Inherit the Wind*;
2. Discusses what you perceive (from your perspective as an informed viewer steeped in early 21<sup>st</sup>-century American sensibilities) to be the significant biases—political, cultural, religious, ideological, etc.—that potentially “contaminate the film”;
3. Makes a reasoned case—on the basis of the film’s strengths *and* weaknesses—for why *Inherit the Wind* might or might not be a useful teaching tool for enhancing a classroom discussion about the following:
  - The general issue of the relationship between science and religion in American life, and
  - The specific issue of what should be taught in America’s public school science classes: evolution only, creation only, both, or neither.

The final third of the course concentrates on recent debates about the shortcomings of evolution theory and teaching Intelligent Design in public schools. Once again, students will be introduced to the key figures and acquainted with the more trenchant arguments on both sides of the controversy. The earlier writing exercise on Hume asked students to “eavesdrop” on a late 18<sup>th</sup>-century dialogue that identified the philosophical weakness at the heart of any argument from design. The previous assignment asked students to write with a specific audience in

mind: middle school teachers. For this portion of the course we envision a cooperative learning and writing project for which students imagine and script a dialogue *in which they participate*. We shall ask students to work in groups of three outside of class. And, we shall “embed” them in a community and environment for their collaboration: “Your local school board is considering changes to the high school science standards in order to accommodate growing public interest in alternatives to evolutionary theory as an explanation of the history of life on earth. The board has invited an advocate of evolutionary theory and a proponent of Intelligent Design to debate, before the Board, the key issues at stake.” Here is the assignment:

Your task is to co-author a dialogue that covers what you take to be the most important issues around

1. Scientific method
2. Data interpretation (similar to what they undertook in the initial writing exercise)
3. Curriculum control
4. Church-State separation, and
5. Consequences for liberal learning

You and your fellow group members play the roles of school board members (identified as “SBM’s 1, 2, and 3”) who insert yourselves into the dialogue at key points as a way to deepen and re-direct the discussion. These interventions should reflect your personal questions and concerns about the so-called “teach the controversy” debate. The dialogue need not end in a decision about curriculum change; rather, the point is to engage the issues in a comprehensive and critical manner.

These five formal writing assignments, supplemented by more informal, exploratory writing activities in class, should provide our Honors students with considerable confidence in their ability to produce the final position paper for the course. Our hope is that these strategies will likewise prepare them to assume responsible roles as citizens in communities where religious convictions and scientific worldview frequently collide. The plan is ambitious, the prospect audacious.

## Conclusion

In 1844, fifteen years before Charles Darwin had the courage to publish *The Origin of Species*, a Scottish journalist named Robert Chambers released, anonymously, a book entitled *Vestiges of the Natural History of Creation*. Examining the fossil record as it was then understood, Chambers, who was by no means a careful scientist, was convinced that there were, in the organic world, traces or “vestiges” of physical forms that betrayed a history of development, of

evolution. As the result of natural laws, the simple appeared first, and then the complex. As time went by, higher and higher forms of life had left their mark. Like Darwin, we are loathe to use the terms “higher” and “lower” to describe the physical forms we encounter in nature. By analogy with Chambers, however, we believe that our re-designed, writing-intensive course for Honors students will bring to expression the latent possibilities present in the natural history of DU’s innovative, progressive, Core Curriculum.

