Science and Religion in Symbiosis: An Interdisciplinary Learning Experience for Biology Majors in a Liberal Arts Undergraduate Setting

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Abstract / Context
In our experience, many undergraduate science students confuse different ways of knowing, leading to potential existential crises when trying to rectify personal religious and educational worldviews. Documents well-known to science teachers, such as NGSS, Vision and Change, and the NABT and NSTA position statements on Nature of Science and Teaching of Evolution clearly define science as a way of knowing. However, we suspect most students have a more difficult time defining religion as a way of knowing in a way that avoids perceived conflict between science and religion. This poster explores an innovative interdisciplinary teaching collaboration between a biology professor and a religion professor focused on helping students to explore connections between science and religion and to articulate their beliefs in this regard. Students participated in high-impact, non-cognitive teaching practices, including leading discussions and doing experiential learning activities, all intentionally planned to promote clear understanding of these ways of knowing.

Four Heuristic Models of Interactions between Science (S) & Religion (R)
First described by Ian Barbour in his classic text, Religion and Science: Historical and Contemporary Issues, depictions of the four models or interactions between S and R develop organically in our discussions with students, when we ask them to draw their ideas of the relationships between S and R. Diagrams of Barbour’s four models, along with brief descriptions, are depicted below. Examples of public figures whose worldviews fit each model are also given. These four models can be considered along a continuum: Conflict is often the easiest heuristic to implement in a personal worldview, while integration can be the most challenging.

CONFLICT
S & R make rival statements about the same domain. This heuristic requires choice between the two “sides.” Often the most visible heuristic to public perception. Example public figures: Richard Dawkins, Ken Ham.

INDEPENDENCE
S & R are total independent and autonomous. Each has its own methods that can be justified on their own terms. Each should “keep off the other’s turf.” Two approaches: Separate realms (value/meaning vs. facts), or single realm with two perspectives (how & why). Example public figures: Stephen J. Gould, Langdon Gilkey.

DIALOGUE
From this perspective, S & R should engage in a dialogue leading to mutual understanding and enrichment. Respects the distinct identity of both science and religion, while exploring areas of shared concern. Example public figures: HH Dalai Lama, Chet Raymo.

INTEGRATION
This approach attempts integration of the methods and content of S & R, which can be united through a unified worldview, a philosophical system, or a Theology of Nature. Example public figures: Pierre Teilhard, Ilia Delio.

In a Student’s Words
My future goal is to attend medical school and become a family physician. Discussing the “hard” topics will be my job and being in a class with my peers where I was forced to discuss the “hard” topics has better prepared me for my future. My personal goal was to open myself to new ideas and experiences in science and religion, and I believe my instructors’ goal of challenging our written, oral, and critical thinking skills in these areas has been exceeded. I believe I have reached my personal goals, and I hope that I have not my instructors’ goals for me. Personally, I never thought I would be able to lead my peers in a class discussion, but I didn’t set out but mainly, I believe that I put a lot of effort into this course, different effort than I have put into any course before, but the change I have seen in myself definitely equals or exceeds the effort I put in.

Closing Thoughts
1. Effects of participating in these courses carry over into other courses: Truly high-impact. Conversations begun here continued both outside classroom & in other courses.
2. Extension into single team-taught experience in REL 383 Religion & Nature • Specific application of conclusions from our collaborative process.
3. BIO 383 & REL 383 recently approved as fulfillment of new “Engaging Our World” category of Gen Ed core requirements.

Course Structure
Two undergraduate courses were linked. Students were co-enrolled in REL 383 Religion & Science (Dr. Browning) & BIO 383 The Nature of Science (Dr. French). Each instructor taught their own course & was embedded in the other as a resident expert. Course activities were intentionally planned & executed to allow exploration of connections between Science & Religion and articulation of personal worldviews.

Discussion-based: Two 75-minute classes (BIO 383) & three 50-minute classes (REL 383)/week
Variety of high-impact, non-cognitive teaching practices were employed, including:
• Student-led discussions & presentations (oral communication)
• Weekly reflections (personal journal; written communication)
• Experiential learning activities – Field trips, in-class discussion with visiting experts, visual representations of perceived relationship between Science & Religion

CLOSING THOUGHTS
1. For a complete list of books used with students in these courses, along with notes about the context in which they were used, please follow the QR code at right.