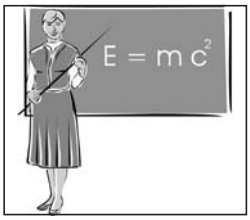

Article

Six Easy Pieces: One Pedagogical Approach to Integrating Science/Faith/Origins into College-Level Introductory Physics Courses

Sean M. Cordry

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In this article, I compare my experience having taught two different "stand-alone" science/faith/origins classes with my experience of integrating science/faith/origins issues into introductory physics courses. (Both sets of experiences have been in the context of Christian liberal arts colleges.) The latter setting proved to be quite challenging, and I have tried three approaches to meet this challenge: (1) readings from auxiliary texts, (2) student "journaling," and (3) presenting limited topical lectures. This third approach has been the most "successful" by far due to its intriguing and nonthreatening nature. I will provide a synopsis of each lecture, when each occurs during the physics course, the pedagogical structure of the presentation order, and a few caveats of which to be aware.

As educators, we want to equip our students to begin working through the same types of science/faith/origins issues that we do.

Many of us in education have multiple professional roles: scholar, teacher, Christian. As we grow in our professions and confessions, we strive to weave these roles together into a unified tapestry. Naturally, we want to equip our students to begin working through the same types of issues and questions that we do: What does it mean to be a Christian and a scientist? Is the Bible in conflict with modern science? Can a Christian believe in the Theory of Evolution or the Big Bang?

Having been a physics professor at two different Christian colleges for more than eleven years, I have seen and/or tried a variety of ways to help students work out their salvation at the stage of budding scientists or mathematicians; some of these ways are informal and some formal. Informally, students ask questions in various contexts, resulting in private or public conversations. For example, a student might ask about the age of the earth during a lecture on carbon-dioxide measurements from two hundred thousand-year-old Greenland ice cores. Alternatively, a teacher might create the opportunity to have a regular Bible-study/discussion group that focuses on science/faith/origins (SFO) issues; such groups might meet in a dorm, student union, or even someone's home.

A formal approach to addressing SFO issues with students involves a highly-structured, pedagogically sound environment for eliciting and addressing certain questions/concerns that the students have. A common, formal setting is a course solely (or mostly) devoted to SFO topics; I will refer to this context as a "stand-alone" setting. Another approach is to integrate SFO topics into an otherwise secular course; I will refer to this context as the "integration" setting.

Sean Cordry, *currently associate professor of physics at Carson-Newman College. Sean did his doctoral work in the area of physical acoustics, studying at both the National Center for Physical Acoustics in Oxford, Mississippi, and the Applied Physics Laboratory in Seattle, Washington. After completing his B.S. from Harding University and a Ph.D. from the University of Mississippi, he has pursued a career teaching physics at small liberal arts colleges. His research focuses primarily on pedagogy issues and curricular design, with several articles in* The Physics Teacher. *He is also interested in Christian responses to environmental, energy and population issues. He is married to Melynda Cordry, and they have two children: Savannah (15) and Duncan (13). All four of them have second-degree black belts in Tae Kwon Do.*

This article has three primary intentions: first, to compare my experiences in both the stand-alone and the integration settings; second, to describe one particular approach to addressing SFO issues in an integration setting; and finally, to humbly offer advice from my experience in talking with students about SFO issues.

Stand-alone Courses and the Integration Challenge

I have taught stand-alone SFO courses to both college freshmen and seniors. While these two groups have vastly different maturity levels, they share some important characteristics: they were smaller classes of around fifteen students; each group was relatively homogeneous in its own maturity level; and, the students were all highly motivated, interested (the courses were elective), and open-minded. These traits enabled me to create an intimate, seminar-style course where open dialogue and honest questioning could run to a productive end.

With the upper-division students I used a combination of texts: Alister McGrath's *Intellectuals Don't Need God and Other Modern Myths: Building Bridges to Faith through Apologetics* [Zondervon Publishing House, 1993], William Lane Craig's *Reasonable Faith: Christian Truth and Apologetics* [Crossway Books, 1994], and Theodore Schick's *Readings in the Philosophy of Science: From Positivism to Postmodernism* [Mayfield Publishing Company, 2000]. My focus in this course was to prepare these sheltered, fundamentalist-leaning students for entry into secular graduate schools. To that end, I had them write a number of position/response papers, and I made frequent use of oral exams in which students had to answer questions from me and their peers. These oral exams forced the students both to speak spontaneously about SFO issues and to formulate good questions.

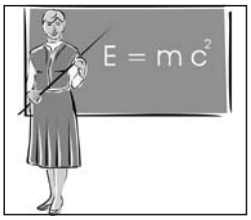
The freshman-level course was somewhat different, naturally. I used Nancy Pearcey and Charles Thaxton's *The Soul of Science: Christian Faith and Natural Philosophy* [Crossway Books, 1994]. The main focus of this course was to demonstrate the historical development of science and its roots in Christianity. I made heavy use of short, paragraph-length reading responses and group discussions. The freshmen were clearly "in a different place" than the seniors: their critical thinking abilities were not well developed, and their own faith was still largely grounded in the spiritual capital that they had inherited from their parents.

Student response to these stand-alone courses was very positive: they found the courses edifying, intellectually stimulating, and of a high personal value. The seniors found the course much more gratifying than the freshmen. However, I think this speaks to the intellectual development of the students and at what point in their own lives they are ready to rigorously deal with SFO issues. The integration setting for SFO issues, on the other hand, has proven to be a much more difficult context in which to operate; getting satisfactory student participation and feedback has been a challenge.

In order to integrate SFO topics into my introductory-level physics courses, I decided to devote the day after each major exam to various SFO issues. Logistically, this schedule worked well: I did not lose much "physics time," and the students gained a little break in routine. Initially, my pedagogical approach was the same as that for the stand-alone SFO courses: assign significant reading and reflection, and then have great discussions during class. Supplemental texts seemed to be appropriate, so one year I used Ian Barbour's *When Science Meets Religion: Enemies, Strangers or Partners?* [HarperCollins, 2000], and the next year I used John Polkinghorne's *Quarks, Chaos and Christianity: Questions to Science and Religion* [Crossroad, 1994]. The time I used Barbour's text, students were required to keep a reflection journal (but no journal was required when I used Polkinghorne's text).

Unfortunately, trying to recreate the intimate, seminar-style environment of a stand-alone SFO course failed miserably. As I reflected on this sad state of affairs, I identified three important reasons for the failure. First, and perhaps most important, I had failed to account for the dramatically different student demographics between introductory physics courses and stand-alone SFO courses. In the physics courses, the courses are more populous; the students are highly heterogeneous in their maturity, interest, and motivation; and there is a significant portion of closed-mindedness among the population—they already know the answers, or so they think. A second reason for failure was that a significant proportion of the students resented the additional readings and reflections; the extra work was seen not so much as the straw that broke the camel's back, but more like the *straw-bale* that squashed the camel. Finally, I had naively assumed that a good, comfortable working relationship in the physics conversational arena would translate into a good, comfortable working relationship in the faith conversational arena. I was wrong. As a class, we could have terrific conversations about physics, but not about our faith—the personal level of trust needed was not there.

I was committed to the idea of integrating SFO issues into my introductory physics courses, but now knew that it would not be possible to recreate the seminar-style environment that had worked so well previously. My goals would need to be more modest, so I took a different tack: topical teasers—short introductory SFO lectures "sprinkled" throughout the course. I would still devote each day after an exam to some SFO issue, but I would do most of the talking; my goal would be to stimulate interest in—rather than facilitate a deep exploration of—SFO



Article

Six Easy Pieces: One Pedagogical Approach to Integrating Science/Faith/Origins into College-Level Introductory Physics Courses

I was committed to the idea of integrating SFO issues into my introductory physics courses, but now knew that it would not be possible to recreate the seminar-style environment that had worked so well [in my "stand-alone" classes]. … I took a different tack: topical teasers—short introductory SFO lectures "sprinkled" throughout the course.

topics. Student response to this integration approach has been very positive; comments on student course evaluations indicate that they enjoy and benefit from our "Science and Faith" days—even when I present them with challenging ideas.

The Six Easy Pieces

The six topical teasers comprise the six easy pieces[1] with the first three occurring during the first semester of the course, and the remainders in the second semester. A synopsis of each piece follows, but there is an overall structure that I would like to indicate first. The first two pieces form a couplet dealing with textual biblical issues: "Erroneous Explanations of Nature in the Bible," and "*Tohu Wabohu*." The next three pieces—"Chaos and Parameter Sensitivity," "Anthropic Coincidences," and "Infinite Unobservables"—form a triplet providing a chance to talk about some of the physical and metaphysical aspects of the apparent fine-tuning of our universe. Finally, I present to them some of the reasons for accepting an "Old Earth" position in the piece "Layer by Layer."

Easy Piece #1: *Erroneous Explanations of Nature in the Bible*

Goal: Biblical explanations of nature reflect the worldview of the time

Students are often interested in interpretations of the creation accounts in the opening chapters of Genesis, and in my experience the opening creation story (Genesis One) is often a major stumbling block for them when it comes to accepting biological evolution and Big Bang cosmology. However, since the creation texts are such "hot buttons," I prefer to start with more innocuous texts—ones not normally associated with SFO issues; my favorite one being Job 38.

In the thirty-eighth chapter of Job, there are many vivid descriptions of nature: the "foundation of the earth" [v. 4], God holding back the waves of the ocean [v. 11], "storehouses of snow … hail" [v. 22], water jars in the heavens [v. 37], etc. We know positively that these descriptions are erroneous, yet they are consistent with the worldview of the time during which the text was written. As a class, we briefly discuss how we should deal with these texts; generally it is concluded that God would have spoken in ways that made sense to those people at that time. I emphasize to them the fact that the character and nature of God is not maligned by questioning the physical descriptions of nature. For some students, this is the hardest of the six pieces because it challenges them to rethink the way that they look at the biblical text itself.

Easy Piece #2: *Tohu Wabohu*[2]

Goal: (The first) creation narrative in Genesis provides an ancient taxonomic description of nature

I begin this piece by asking the students to try to read the first Genesis creation narrative as if they have never seen it before. Then the students must answer a series of questions designed to highlight some troublesome issues within the text itself: (1) What happens on each "day?" (2) What was provided as food for people? for animals? (3) How could there be night and day without the sun, moon, and stars? (4) To whom was God speaking? (5) Who is the "us" in 1:26? (6) In 1:2, what does "formless" mean? How about "void"? How does this compare to 2:1? I have intentionally chosen these questions in order to get the students to see that there are confusing aspects of the text that are completely irrelevant to any scientific issues; I hope to have them understand that this narrative has a history of being a very difficult text to understand—even before Charles Darwin's day. I then underscore my point with some of St. Augustine of Hippo's comments on this text.

I present the students with the so-called forming-and-filling interpretation[3] of the first creation narrative, which is new to most of them. This interpretation emphasizes some of the larger theological issues: creation is tidy—God is a god of order, not chaos; creation is intentional, not the result of war or destruction; there are domains of creation claimed by God himself and domains given to humanity.[4] I point out that the forming-and-filling interpretation is consistent with descriptions of nature found in other biblical passages.[5] Generally, this piece is not as challenging to the students because they are used to hearing alternate interpretations to the six-day literal interpretation. At the end of the conversation, I remind them of what we learned from the book of Job earlier: an erroneous description of nature does not malign the description of God's character.

Easy Piece #3: *Chaos and Parameter Sensitivity*
Goal: Small changes can lead to big differences.

This piece begins the next topical series and is merely a lead-in to the fourth piece—although a critically necessary lead-in. Students do iterative calculations on a simple equation:

$$y_{n+1} = r y_n (1 - y_n)$$

where the value r is a variable parameter, ranging from zero to four. Figure 1 provides a graphic representation of what the students experience as they do their calculations. For small values of r, the values of y_n converge to a single value, but as the value of r increases, the values for y_n will oscillate between two values; further increases in the value of r lead to multiple stable values for y_n, with the eventual onset of chaotic behavior.[6] See Figure 1.

Easy Piece #4: *"Anthropic Coincidences"*
Goal: The universe appears to be fine-tuned for life.

I begin this piece by reminding the students of what we learned in the last piece: that sometimes small changes can have enormous consequences. Stephen Barr has a nice discussion in his book, *Modern Physics and Ancient Faith,*[7] of several so-called anthropic coincidences—that is, facts about the universe that are critical for biological life. I use three of these coincidences that I think are accessible to my students: the number of dimensions of the reality, the strength of the nuclear force, and the three-alpha process.[8] The students enjoy this discussion because it reminds them of teleological and intelligent design arguments/discussions that they have heard before.

This piece ends with a brief discussion about the distinction between the notions of faith *affirming* and faith *proving*. As Christians, I tell them, we find these anthropic coincidences faith affirming, but not faith proving since there are alternate explanations for these coincidences that do not invoke God's power or sovereignty.

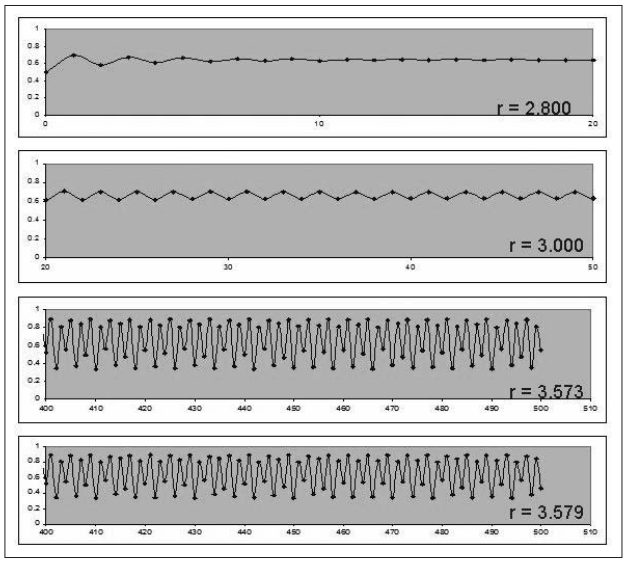


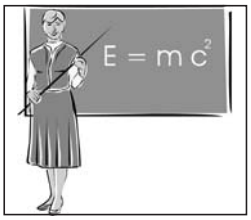
Figure 1. In the third piece, students perform iterative calculations with a quadratic equation. As one parameter in the equation, r, is varied, the calculated sequence of numbers can either converge (first graph), oscillate (second and third graphs) or behave chaotically (fourth graph). (The vertical axis represents the value of the calculation and the horizontal axis represents the iteration number.)

Easy Piece #5: *Infinite Unobservables*
Goal: We must choose between a single infinite unobservable or an infinite number of unobservables.

At this point in the second semester, students have studied electromagnetic theory, waves and optics, and our next unit includes topics in nonclassical physics. I remind the students of the behavior of light through two slits and introduce them to the idea that electrons are capable of producing the same constructive/destructive interference patterns. This leads into a discussion of nonlocality and randomness—some of quantum mechanics more "eye-popping" results. Eyes continue to pop as I explain the many-worlds interpretation of quantum mechanics, which suggests that every possibility is actualized—that "reality" is continually "splitting" into many different realities that are separated from each other. For example, if I were to roll a six-sided die, then six different realities are created: one in which the die is cast with the number one, another where the die is cast as the number two, and so on. In this hypothesis, the notion of improbable becomes problematic because all events—regardless of how "improbable"—occur in *some* reality; everyone who plays the lottery is a winner *somewhere*.

In the many worlds interpretation of quantum mechanics, each reality has the same set of physics "rules": the same gravitational constant, the same charge-to-mass ratio for electrons, etc. However, another hypothesis, the Multiverse—cousin to the many worlds hypothesis, allows the possibility that there are other realities where the "rules" may be different: a different gravitational constant, electrons with a different charge-to-mass ratio, etc. Adherents to the Multiverse idea may not be impressed by the anthropic coincidences, arguing that a universe with precisely those qualities must exist among the unlimited pantheon of universes; what is amazing, they would contend, is that we find ourselves in *that* particular universe—not that *the* universe has those particular properties which make life possible.

In this piece, I follow Stephen Barr's discussion about the conflict between a Christian worldview and that of philosophical naturalism: the former explains the anthropic coincidences via the action of a single infinite being—albeit the being is outside the realm of experimental verification; alternately, the latter suggests that the solution to the coincidences is an infinite number of universes—each of which is outside the realm of experimental verification. Barr sums it up eloquently: "It seems that to abolish one unobservable God, it takes an infinite number of unobservable substitutes."[9]



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For those who may be considering this approach (or some other approach) to embedding SFO conversations into a "regular" course, I offer some advice … I provide a list of five common postures that one could encounter … resist the urge to chase [tangents] … And finally, recognize your role as authority in the classroom.

Easy Piece #6: *Layer by layer; decay by decay*
Goal: The physical evidence for an old earth is significant and robust

My goal with this piece is to give students a glimpse of the reliability and overwhelming evidence in favor of an ancient earth; students clinging to a young-earth position need to recognize the fact that they hold such position over and against scientific evidence. I begin by talking about dating objects by layers: tree rings, stalactite rings, and ice cores. Tree rings make a particularly nice place to start because students have all seen them—their existence is undeniable. Furthermore, tree-ring time-lines (dendrochronology) extend backwards more than 12,000 years in time[10]—a tangible fact that seriously challenges those students with a dedication to a young-earth posture. Similarly, stalagmites and glacial ice-cores can be dated to 40,000 and 100,000+ years, respectively. Following the more tangible, we talk about the less tangible: radiometric dating methods, touching on issues of applicability, calibration, and contamination. I attempt to counter some of the misinformation promulgated by certain young-earth creationists.[11]

After a scientific discussion, I remind them that the controversial nature of the creation narratives in Genesis are quite ancient, predating Darwin by centuries. At this point, sometimes a student suggests that God could have made the earth to merely *look* ancient—but that it is really quite young. (If a student does not bring it up, I will.) I suggest two deep-seated flaws in a young-earth-looking-old point of view: first, God—the Father of Truth—has told the biggest "whopper" of all time and space; and second, if natural history has been fabricated by God, then why not human history as well?[12]

Caveats and Characters

For those who may be considering this approach (or some other approach) to embedding SFO conversations into a "regular" course, I offer some advice as one who has hit a few potholes, tar pits, and snags over the years. First, there are some predictable responses and "characters" likely to appear in your course. In Table 1, I provide a list of five common postures that one could encounter, as well as some words of wisdom (I hope!) for dealing with them.

Students like to chase rabbits if you get them engaged in SFO conversations, so my second piece of advice concerns tangents: resist the urge to chase the rabbits. Remember: you have an agenda that is larger than the mere academic exercise of brain-storming and "what-if" scenarios; what you want to communicate to them is important, so keep your agenda on the front burner. It is worth emphasizing a couple of points here: first, students generally bring very little other than hearsay and rumor to the discussion table; and second, even though they have seen many talk shows on television[13] and participated in many late-night dorm chat sessions, they have little experience in discussions with a destination (resolution). An inexperienced teacher, out of a sense of connecting with students, can easily fall into the trap of letting the classroom dissolve into the sharing of collective ignorance.

Tangents can also lead into traps, as mentioned above. Some students can "lie in wait" with some particularly difficult facet of the SFO issue in an attempt to push their own agenda or their favorite/interesting idea. It is both honest and expedient to tell a student that their question or comment is worth pursuing in greater detail, but that because of time considerations it cannot be explored presently. Then ask the student if he or she would like to make an appointment to talk with you at length about the question. In this way, you can allow individuals to make contributions to the discussion without allowing them to highjack the discussion.

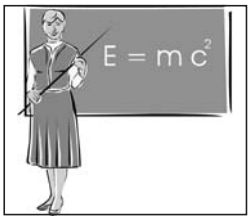
And finally, recognize your role as authority in the classroom. Even though the students know that you are flawed, you are still larger than life and were born with a natural ability to solve Maxwell's equations and the relativistic motion of an electron in a magnetic field. Expect that what you say may be perceived with more intensity than you intend; your emotions can easily be exaggerated by the students. For example, your minor annoyance at an idea can be interpreted as you thinking that such an idea is the dumbest thing you have ever heard. An actual serious criticism that you might level at an idea will be interpreted by some as a devastating logical slaughter. A gentle, humble, and patient posture can alleviate much of this type of over-reaction.

However, other students over-react to your authority role in the opposite direction: your expertise, faith, and agenda are immediately rendered suspect if you do not automatically embrace the student's personal SFO ideas. Why do some react this way? Obviously, students can have quite strong opinions on SFO issues, but what may not be so obvious is the emotional attachment that may exist between themselves and the ideas. Students are not simply an individual with their own ideas; they carry with them the knowledge and experiences of their friends and families. The ideas that they carry may be intimately connected to friends, pastors, parents, or a favorite teacher; if you successfully challenge a cherished idea, then you have created a dissonance in that personal relationship. A student might resist an idea out of sheer loyalty; challenging the idea is tantamount to challenging certain individuals in their lives.

Some students have, in fact, been pre-programmed, so-to-speak, to react negatively toward whatever you say that causes them to rethink any of their previously held faith convictions. They have been warned by pastors or parents or others that "those liberal college professors" are going to try to "undermine your faith." As I talk with students, I have found four things that help minimize negative reactions: (1) Take a posture of sharing not

Table 1. Common Characters

Character	Sounds Like and Advice
The Expert	"I know a guy who …," "My pastor said …," "I read on the internet …"
	Never argue with a fool; people might not know the difference. –An old proverb Not that the student is a fool, but that arguing is the exact wrong response—especially since the student may not be correctly remembering everything he or she heard or read. It is better to use this opportunity to talk about what constitutes reasonable and reliable authority. For example, in what areas might we expect a pastor to have "expert" knowledge? I like to use language similar to this: "We sometimes meet good, Christian people who have good intentions, but say things that are just not right."
The (Unhealthy) Skeptic	"Don't try to cram your liberal ideas down my throat."
	This is not something that I have heard directly about myself, but I know of other colleagues who have received this kind of comment on student course evaluations. See my comments on "authority" in the discussion below for ways to mitigate this problem.
The Suck-up	"I can't believe some people still think …"
	These are students who see themselves as "enlightened" and tend to look down on students with more conservative positions. These students provide an opportunity to demonstrate love and model respectful conversations. This type of response can be helpful: "It can be hard to see how someone might not be convinced by the evidence that we find convincing, but we must still love them and gracefully grant them the space to disagree."
The Zealot	Asks "baiting" questions.
	Avoid getting drawn in to a pre-existing argument or discussion—something might be happening in the hallway or dormitory of which you are unaware. Also, there could be a trap waiting for you, so tread carefully; it might be advisable to offer to meet privately with the student since your conversation with him/her might lead to unnecessary confusion and consternation for other students.
The Post-modernist	"Everyone has to find the interpretation that works for them." "You can't really tell or know for certain."
	This comment really reflects immature critical thinking skills: a cognitive developmental level where the students can recognize different viewpoints, but do not yet know how to evaluate them properly. They can just as easily feel the same way about the speed of light as a universal speed limit.[14] This position is the one general category of comment whereupon I will firmly and openly disagree with the student—in a loving, gentle manner, of course; I do not want them to think that the knowledge claims of science are merely matters of opinion where one is free to pick and choose according to one's taste. We do not yield the pursuit of truth to vagueness or indeterminacy simply because the going gets tough or we do not like where it leads us.



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I have four [suggestions] that help minimize negative reactions: (1) Take a posture of sharing not preaching; (2) Emphasize God's sovereignty, care of, and work in creation; (3) Indicate that your ideas about SFO issues are not just biblically informed but biblically grounded; and (4) Be honest about your own faith struggles …

preaching; (2) Emphasize God's sovereignty, care of, and work in creation; (3) Indicate that your ideas about SFO issues are not just biblically *informed* but biblically *grounded;* and (4) Be honest about your own faith struggles and your faith journey—you appear to them to have all the answers now, but such was not always the case, and you are still on the journey.

Conclusions

This approach to integrating SFO issues into my introductory courses has been successful as far as I can tell: students are engaged and animated during the discussions, and they give me positive feedback, both formally and informally. Here are examples of the positive comments that are typical:

- Science and faith days were excellent. They challenged me to think about my faith and beliefs in positive ways.
- These [science and faith] days were always interesting.
- I like the sci-faith [sic] presentations as a way to challenge us to think outside our box.

Even though the overwhelming majority of comments related to our SFO discussions are positive, there are some detractors. For example, despite my efforts to communicate that I was not trying to force-feed them, here was one comment from someone who did not get the message: "I know it's not a philosophy class, but sometimes it seemed like you were trying to impose your beliefs on us." (I am not sure what this individual thinks about their philosophy classes.) A few students would like to broaden discussions: "The faith and science days are good but I wish that there was more open discussion on these days to hear other people's opinion." (Note what she reveals about her critical thinking skills: she appears to regard my lecture content as "opinion," equally weighted with that of her peers.)

It would be desirable in the future to try to assess the long-term impact of the Six Easy Pieces: Do students seek out more SFO information on their own? Did the Six Easy Pieces help mold and mature their faith? How many students would be willing to take a full course on SFO issues? Perhaps someday I can collect and process such data. In the meantime, I keep trying to get a little spark started—to plant a seed, to hope for an irrigator, and to pray for growth.[15] ✭

Notes

[1]With apologies to the late Richard Feynman.
[2]A Hebrew phrase meaning "formless and void."
[3]Ronald F. Youngblood, *The Book of Genesis: An Introductory Commentary,* 2d ed. (Grand Rapids: Baker Book House, 1991), 24.
[4]This is based partly on the notion of the significance of naming objects to the Hebrews. God gives names to "day" and "night" [Gen. 1:5], "heaven" [v. 8], "earth" and "seas" [v. 10]. Also, in verses twenty-eight through thirty, God explicitly delineates the domain of humanity.
[5]Other passages have the same taxonomic descriptions of what we call the universe: Haggai 2, Psalm 8, Ezekiel 38 and Zephaniah 1.
[6]James Gleick, *Chaos: Making a New Science* (New York: Penguin Books, 1988), 176–7.
[7]Stephen M. Barr, *Modern Physics and Ancient Faith* (Notre Dame: University of Notre Dame Press, 2003), 118–37.
[8]The is the process by which three alpha particles can combine to form a carbon nucleus through a resonance-enhanced interaction. See Barr, *Modern Physics and Ancient Faith*, 121ff.
[9]Barr, *Modern Physics and Ancient Faith*, 157.
[10]M. Friedrich, S. Remmelel, B. Kromer, J. Hofmann, M. Spurk, K. F. Kaiser, C. Orcel, M. Kuppers, "The 12,460-year Hohenheim Oak and Pine Tree-Ring Chronology from Central Europe—A Unique Annual Record for Radiocarbon Calibration and Paleoenvironment Reconstructions," *Radiocarbon* 46, no. 3 (2004): 1111–22. Special thanks to Henri D. Grissino-Mayer of the University of Tennessee for this reference.
[11]Some young-earth creationist literature gives readers the impression that calibration and contamination issues are facets of radiometric dating that scientists have never thought about. John D. Morris' book, *The Young Earth* [Colorado Springs: Creation Life Publishers, Inc., 1994], contains a chapter on radiometric dating, and represents a nice example of this type of "straw-man" argument against the reliability of radiometric dating.
[12]I like to point out that human memories are physical processes. Perhaps, I tease them, you have only just been created—but with all of the memories of a complete life: all the people you have known and loved never existed, all your favorite experiences never happened.
[13]Television talk shows are notorious, in my opinion, for providing examples of how to have bad conversations. Most of these shows are structured to create dissonance and excited emotional states, which are better for attracting viewers and garnering high ratings. Some, for example Bill Maher's "Politically Incorrect," spin idea after idea with no actual deep exploration or resolution of the ideas.
[14]In physics we know that nothing can exceed 2.998×10^6 meters-per-second, but the students have seen enough science fiction programs that they can be skeptical of this well-established universal limit. The line between the statements of science and those of science fiction can be blurry.
[15]With apologies to the Apostle Paul (See 1 Cor. 3:6).