What I Learned in Science Class

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I feel very lucky to have grown up surrounded by the influence of science. My science exposure went way beyond my junior high and high school classrooms and what my teachers knew. I was the lucky one in science classes because I had a dad who was a scientist. He helped me with my very first science report in third grade on The Cell. I carefully and lovingly traced that classic portrayal of a cell and all its known components from the cover of Scientific American, I gathered information from Library books, and I interviewed my father, learning how to use the phrase "personal reference" in my bibliography. The following year my report was on Spiders, then Social Insects, and I was hooked.

Later my dad built an incubator out of a cardboard box and some light bulbs so I could conduct an experiment about the rate at which milk spoils. It even had a thermostat! He helped me build a maze to study the possible genetic basis of geo-taxis in fruit flies – that's the tendency to either want to move away from gravity (up), or with gravity (down). One night he brought home a white lab mouse from the hospital so I could have her for a pet. Her name was Amy and one weekend Dave Snapp brought his male mouse over for a sleepover with little Amy. That experiment ended fifteen baby mice later.

I have to mention my mom in this sermon too, because, of course, she also had to live through these science experiments, as the spoiling milk got smelly and the fruit flies escaped from their tubes and the baby mice grew into adult mice. Or when my pet snake got out of his cage for a few days and suddenly appeared while she was on the phone. Or the time in high school when we were asked to bring in road-kill for an advanced biology class and the only place to make sure the dead animals didn't rot over the weekend (any more than they already had) was to put them in the freezer. What a mom.

I grew up with a lot of science around. I was reading a New York Times Magazine article (while I was on vacation) about Steven Pinker and his genome, in which I discovered that one of the early influences on his lifelong scientific interest was the same series of Time-Life science books we had when I was a child. I loved those books.

On Sundays, after attending the Unitarian Church in Cleveland, one of our family customs was to ask my father, over dinner, about how things worked or were made. I distinctly remember asking him "Where does ketchup come from?" You never know what the important questions might be at any point in your life. We were always taking long walks, too, in the woods and by the streams and lakes in our area. My dad would point out all the little things that no one else would notice unless you were really looking. Tracks in the snow… Fungus on a dying tree…. To this day he has more photos of mushrooms and lichen and fungus than you would care to know about.

But you know what those photos taught me? Not only are these things in the woods interesting – they are beautiful too. You could say it was my first lesson in the balance between the material and the spiritual, the rational and the emotional, science and the philosophical.

I was a biology major in college, but under my picture in my high school senior yearbook picture, the adjectives included "philosophical." Something about the way I was raised, or perhaps a combination of that and my genes, helped me gain some intuition that nothing was separate from the scientific, just as nothing was separate from the philosophical.

When I was required to write an essay about my journey into ministry for the Ministerial Fellowship Committee of the UUA, it seemed perfectly natural to me that two out of the three greatest influences on my personal theology had to do with science and nature. I believe I grew up not knowing that anyone actually thought there was a separation between science and religion. I find it interesting that the only other new adventure I was considering, at the same time as my call to ministry was taking shape, was to become an elementary school science teacher. Ministry…… Science Teacher…… You probably sometimes think I am both!

What are some of the important ways in which I believe scientific information can inform our religious understandings?

Let me start by saying that my definition of religious may be different than what you are imagining. To me, religion is about the human need to reconnect to the oneness and the balance that is the nature of our world, from which we exiled ourselves when we evolved into sentient, that is, self-conscious, beings and began thinking of ourselves as different and separate and better than… Religion is about finding our way back into right relationship with each other, the earth, the universe, the nature of good and evil. Traditional religion is usually thought of more as a path to reconnecting with God, and returning to life in the Garden of Eden, but perhaps we are really talking about the same thing, just with different words.

Rather than the word "religion" I like to use the phrase "religious thinking," which to me is not about specific beliefs but about asking the big questions we human beings need to ask. How? When? Why? Who are we? What next? In the early days of human consciousness these questions were answered with stories, and with great imagination! Knowledge of our earth, our bodies, or our minds had not progressed to the point it has today. It is only realistic and natural that what we are coming to know as scientific fact might not agree with the creative stories of old. There are those for whom these discrepancies are unnerving and unsettling. It can be an emotional as well as intellectual struggle to let go of imbedded, systemic, ways of thinking.

For many of us, though, science has and does play an extremely important part in how we answer, for ourselves, the age-old religious questions. If two of our biggest religious questions are "How did existence happen?" and "How did life begin?" then the studies of

astronomy and physics, mathematics, chemistry and biology all play a part in finding an answer that makes sense to us. As for the questions "Why did all this happen?" or "Do human beings have a specific purpose?" I find that scientific information leads me to think there is no why or wherefore to it all – it just happened. You'll notice I said "leads me to believe," not that science is able to prove answers to either of these questions. And I am OK with that. I, and I know many of you as well, are comfortable with the uncertainty that having only partial knowledge about something creates. Even though I don't know it for sure, the laws of physics and mathematics (in as much as I understand them) tell me that time and random chance and the physical laws of the universe alone have led to the world as we know it, and that there may not be a grand design or purpose behind any of it.

Has this turned me into an amoral person who believes it does not matter how we behave? I don't think so! Conversely, it makes me even more keenly aware of my personal responsibility in all my relationships, not some responsibility put on my shoulders by anyone or anything else. It is what I learned in science class that has led me to my conclusion. Science has not demoralized me, nor has it made me cold and unemotional. Hardly! The conclusions I have come to through scientific reasoning have drawn me closer to what is real and present in my life, what is here and now, what is the most important thing in my life – my relationships.

I've been thinking through the years about the effect that some religious beliefs might have had over thousands of years on our basic assumptions about how we fit into the scheme of things as human beings. Is it possible that believing in the depravity of humanity and the baseness of this material life on earth might have contributed to the kind of disconnect from our real life relationships that allows people to wage war in the name of their exclusive God or that allows us to neglect our environment because we are only waiting for another life in the hereafter? For me, religious thinking should be for re-connecting, not for dis-connecting; for enabling relationships, not for keeping people apart. Imagining things that divide us or alienate us from the natural world is not what is going to bring us back to the proverbial Garden.

I mentioned that I was a biology major in undergraduate school. But biology majors at my school were also expected to take courses in mathematics, physics, chemistry, geology, environmental science, statistics, and experimental design, as well as the usual selection of electives that a liberal arts college encourages.

You know the most important lesson I learned in my classes? That it's all one giant connected system. Every aspect of my studies, including sociology and psychology, ethics and even music appreciation had something to say to me about the interconnectedness, and interdependencies around and including me. It's our UU seventh principle about the web of existence. What I do, what you do, what we do together, makes a difference because we are connected by both visible and invisible strands of the web. My exposure to science is the major influence in my theology of relationship.

The subjects, many of them scientific, I have studied in my life also speak to me of fascination and wonder and especially humility. If these are not also aspects of our human spiritual needs, in addition to asking big questions, I don't know what is.

I've mentioned this before, but it is science itself that is beginning to discover the human propensity for the spiritual – that our minds are somehow hard-wired to enable the positive emotions of trust, hope, love and joy – because these things are at once pleasurable and also critical to our evolution and survival. (http://scienceandreligiontoday.blogspot.com/search/label/Neuroscience)

In today's world we need science to help inform many of the decisions we need to make in our lives – both on a daily basis and about larger, more global, issues such as planetary warming. In a democracy and in the democratic process which we Unitarian Universalists covenant to affirm and promote in our fourth principle, knowledge is indeed essential to making informed decisions. Our recent election provides what I think is a frightening illustration of the need for education in the sciences. Martin Robbins, a scientist with a background in complexity and ecology, wrote in an essay about "Why Science, Effective Democracy Depends On It," "A week before the election Sarah Palin commented that she felt it was appalling that taxpayer's money was being wasted on 'things like fruit fly research.' That a person who was two steps away from the White House was unaware of the fact that research into fruit flies is pivotal to things like crop protection and the broader genetics research vital to medicine was shocking enough, but her ambiguous comments about creationism in the classroom and 'skeptical' position on climate science were intolerable to the scientific community." (http://whyscience.co.uk/2008/12/martin-robbins-effective-democracy-depends-on-it.php)

Remaining informed, having a basis of knowledge including that of the scientific literature, is one way to better live out the principles that help us all get along and keep our society honest and compassionate. Robbins continued "An understanding of science is vital to an understanding of politics, and not just in the obviously scientific issues such as global warming, obesity or stem-cell research, but in areas such as the economy, city planning, disaster management, and of course energy. Science gave us the industrial revolution and the information age, and if we are to thrive in a post-oil world with new sources of energy then it will be science that shows us how." It can be downright dangerous, as we have seen, when those in power have an inadequate scientific background.

That is one reason I was so pleased to read the remarks about science that President Obama wrote for his website called change.gov. He said "Promoting science isn't just about providing resources – it's about protecting free and open inquiry. [another UU principle!] It's about ensuring that facts and evidence are never twisted or obscured by politics or ideology. [religion] It's about listening to what our scientists have to say, even when it's inconvenient – especially when it's inconvenient. Because the highest purpose of science is the search for knowledge, truth and a greater understanding of the world around us."

(http://change.gov/newsroom/entry/the_search_for_knowledge_truth_and_a_greater_understanding) Sounds like religion to me. Our new president is some preacher!

What I learned in science class has helped me to understand that there are no distinct lines of demarcation between areas of study – or between the various aspects of our everyday lives. It is all connected.

What I have learned in science class tells me that the differences human beings imagine between themselves (racial differences being one huge example) are just that – imagined – and a product of our ever so needy egos.

The immense library of scientific knowledge, and the even larger list of remaining questions, brings me to my knees with humility for the complexity of our world.

What I have learned connects me in intimate, not just abstract, ways to the earth and to all the animals and plants and other human beings that lives on this planet with me. I am bound by the laws of interdependence to make it my personal responsibility to improve the world around me as best I can.

There is always more to learn, more wonder to experience, more respect to be had and more appreciation to feel. This thing called life is an awesome thing. From the choral anthem: "Out of our hearts cry wonder; sing that we live." (Out of the Stars)

These are some of the things I have learned in science class. May my experience be of some use to you.