

Dr. Paul A. Khavari
Stanford Memorial Church
February 11, 2007

This morning I speak to you as a person who practices science but who is also a believer in God. For Faith, I will draw on the Baha'i Writings, from a religion that embraces all the major religions as truth. The Baha'i Faith, however, does not have any professional clergy so, while I speak to you as a professional scientist, I am simply an individual believer.

There are 3 topics within the theme of Science and Faith I'd like to discuss briefly today, 1) a great fundamental similarity between Science and Faith, the progressive, as opposed to absolute, nature of Scientific and Religious Truth 2) ways Science and Faith can peacefully coexist in the same life and 3) the positive synergy and benefits of having both Science and Faith.

For this morning, Science will be defined as "a systematic approach to gaining knowledge of the physical universe". By definition, then, Science is directed at the physical reality, using measurement, hypothesis-testing and data to give us insight into mechanisms by which the physical world operates, an arena where Science has proven spectacularly successful. Science has proven impotent, however in discovering any meaning in this physical existence, which has instead been the purview of Faith. The understanding of Faith will be drawn from the Baha'i writings, which state that "the core of religious Faith is that mystical feeling which unites [us] with God", a feeling that can be developed and maintained chiefly through prayer and meditation. This mystical feeling relates to a deep sense of connectedness to something transcendent that even agnostic colleagues confess to, although they prefer to de-identify with organized religion and simply call it "spirituality". The Baha'i Writings further state, "By Faith is meant, first, conscious knowledge and, second, the practice of good deeds." This is a far cry from a conventional understanding of Faith – belief in things unseen. Specifically, it does not include adherence to rigid doctrines, practicing any rituals or obeying any particular individual. Such an understanding of Faith provides great comfort to the skeptical scientific believer.

The First topic is the relative, as opposed to absolute, nature of Scientific and Religious Truth. There are furious pitched battles going on today between Scientists and Believers, something we are attempting to address in a program at the Medical School this month, entitled "Science and Religion; Danger at the Extremes". In spite of these seeming disagreements, Science and Faith share great commonalities, including their progressive nature. There were incremental steps in my own journey towards belief in Science as a powerful way to understand truth but one event stands out that is relevant to the topic of Evolution Sunday. Graduate work found me testing the hypothesis that a core component of a molecular engine that drives gene expression is conserved throughout evolution. Single celled baker's yeast – an

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organism which is separated from us by a billion years of evolution – possess this gene and I was searching for it's homolog in human beings. The moment of truth came late one night in front of the film developer, waiting for DNA sequence from the hoped-for human counterpart. The sequence came out to be a conserved gene that, when swapped into the yeast counterpart, functioned perfectly well. Put differently, the human and yeast gene sequences were not only written in the same molecular language, they conveyed the same meaning to human and yeast cells. This came as a personal thunderbolt the way that only something you do with your own hands can – a lesson in the clear phylogenetic and molecular relatedness of all life that can only result from common descent.

As a student, I remember one of my friends coming back from history class and stating that she had lost her religious faith that day after hearing a lecture about the medieval history of her church. But her church had not stood still; it has grown past many of the issues that caused her to lose Faith. Like religious Faith, however, Science is in a continual process of change. Ideas previously accepted as virtually dogmatic articles of scientific faith frequently disintegrate before the onslaught of new knowledge. Knowledge in biology doubles approximately every 12 months now and many insights today were totally inconceivable even 5 years ago. Thus, the nature of our understanding of science is relative and progressive.

I submit to you that the same is true of religious Faith. Please think back to a time when you were younger and consider where you are now in your spiritual journey compared to then. Has your understanding grown? Dean Scotty McLennan spoke at our Diversity Committee Meeting at the Medical School some years ago, stimulating many of us to read his wonderful book, "Finding Your Religion", which frames a person's religious journey in developmental stages. Just as walking the path of Scientific knowledge has provided insight into biology and medicine beyond what I could have ever imagined as a student, so has walking in the path of Faith provided peace, happiness and love as well as a resilience to life's challenges that I could never have conceived of while standing outside these doors for the first time. It has also demanded continual growth and revision of understanding of spiritual and moral truths. In this journey of Faith, one particular message of love stands out as a wonderful blessing, whose meaning continues to expand over the years. Baha'u'llah, regarded by Baha'is as the Great Divine Educator for this Era of Humanity, taught that as we love God so will His love be able to reach us. With teachings such as this, Faith "as conscious knowledge acted upon" provides a paradigm can take one down a beautiful path filled with love, understanding, tolerance and joy. Thus, Science and Faith share something very important; our understanding of their Truths is relative and progressive, rather than absolute and unchanging.

The Second topic relates to how Science and Faith can peacefully coexist within the same life. A brief look in the news media paints a picture of enormous conflict today between Science and Faith, with current flashpoints that include the Teaching of Evolution in schools and Stem Cell Research. Historically, the battlefield involves religious thinkers formulating absolutist and rigid doctrines about elements of the physical universe which are evidently false, as revealed by clear scientific data. The trial of Galileo for refuting the Earth-centric view of the solar system and the so-called Scopes Monkey trial in our country related to the teaching of evolution in the last century come to mind. In each case, transient religious doctrines strayed from the timeless messages of Faith, which relate to love, kindness, compassion, goodness and connection with a higher purpose. Nothing in Science, however, makes Faith - as defined here - impossible. Addressing this, Abdu'l-Baha, the leader of the Baha'i Faith who visited Stanford 95 years ago at the invitation of Stanford President David Starr Jordan to address the faculty and staff here in this very Quad, stated, "If religious beliefs and opinions are found contrary to the standards of science, they are mere superstitions." He also said, "Religion and science walk hand in hand, and any religion contrary to science is not the truth." In other words, Science and Faith are 2 distinct and preciously complementary spheres, with true Faith never contradicting evident scientific fact and true science being used to advance the well-being of humankind in the spirit of service and beneficence embodied in every religion. From personal experience, this is a very comfortable paradigm for a believing scientist to embrace. No need for a Science/Faith split personality that resembles a family with 2 feuding relatives who must be kept separate from each other. Rather, the most seemingly disparate personalities, practical Science and transcendent Faith can gather together in harmony, delighted by the uniqueness that each brings. One thus can take the most skeptical and iconoclastic Scientific approach to life and still be in harmony with a vigorous and dynamic personal religious Faith.

The Third topic concerns the benefits and synergy of having both Science and Faith. Faith and Science are compared in the Baha'i Writings to two wings of a bird with which human progress can soar. With only Faith, superstition, irrationality and disconnection from reality may seep in, while with only Science, materialism and a deadening of the human spirit may occur. In a potential commentary on the latter, WHO statistics demonstrate suicide rates are highest in countries representing a wide array of cultures that share in common low levels of belief in God. More concerning is the rapid pace of destructive technological progress uncoupled from a spirit of beneficence to humanity. The Baha'i Universal House of Justice writes, "In every sphere of human activity and at every level, the insights and skills that represent scientific accomplishment must look to the force of spiritual commitment and moral principle to ensure their appropriate application." In this light, laboratories within a

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stone's throw of where we sit today are bending their energies to benefit humanity rather than destroy it.

Having both Science and Faith in one's life can also be of particular personal benefit to the individual working in science. For example, I periodically find myself sitting right there in this church pondering difficult problems, scientific and otherwise. Last week, I found myself making the familiar 12 minute walk from my lab here to seek inspiration by meditating on the next steps in a specific line of scientific research in the lab. Speaking of this meditative process, the Baha'i Writings state, "This faculty of meditation frees [us] from the animal nature, discerns the reality of things, puts [us] in touch with God. This faculty brings forth from the invisible plane the sciences and arts. Through the meditative faculty inventions are made possible, colossal undertakings are carried out". Many of my own ideas in science have come directly from personal spiritual practice. So a reflective, spiritual life can also be a personally invaluable element in a scientific path and Science and Faith can not only coexist, they can synergize.

To summarize, our understanding of truth in Science and Faith is relative and progressive, Science and Faith can co-exist in peace, and having both Science and Faith can provide great balance and synergy to advance human progress. I close with this quotation from the Baha'i Writings: "*When religion, shorn of its superstitions, traditions, and unintelligent dogmas, shows its conformity with science, then will there be a great unifying, cleansing force in the world which will sweep before it all wars, disagreements, discords and struggles--and then will [humanity] be united in the power of the Love of God.*"