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## MIND/LIFE CONFERENCE

By Avery Solomon

Dharamsala, India Sept 30-Oct 4, 2002

Every year or two since 1987, several top western scientists meet for a week with His Holiness the Dalai Lama, other Buddhist Lamas, and observers to have a dialogue between Buddhism and Science. Transcripts of previous dialogues have been published as books, starting with *Gentle Bridges* in 1992. This year, the focus topic was the nature and origin of life. Several monks from the Science/Math for Monks Program with whom I have been working were invited to the conference. By good fortune, I was able to attend.

It was a three-day trek to Dharamsala in northern India. In October, the weather in Dharamsala is about as nice as it gets—mostly 70-degree days, with clear skies and 20,000-foot peaks looming in back of 6,000-foot peaks.

We met every day for five days in the quarters of His Holiness the Dalai Lama. On the first day, we were searched before entering the private compound of several acres. Present in the colorful private quarters were 18-year-old incarnate lama Karmapa, five western scientists, two translators, a Western lama, a western Philosopher, and the organizer Adam Engle, sitting around on comfortable chairs and couches. Around the outside were observers. On one side, there were about 20 Buddhist monks and lamas, translators from LTWA, and people from the math/science program. On the other side were former participants in the conferences, families of the current presenters, and several others including Richard Gere and Goldie Hawn.

Everyone stood as His Holiness entered the room. He gave an opening statement. The purpose of the conference was twofold: to share knowledge on various topics related to the universe and individual human beings and to interact on issues of ethics

and life of concern to both science and humanity as a whole. His Holiness made clear that the conference was not for him personally, but for the possibilities that could unfold that would be of benefit to many.

Each morning, for about 2½ hours, one of the scientists presented the cutting edge of science, on the theme of what is life, how does it evolve, and where does it come from. Each afternoon for two hours there was a dialogue on questions raised in the morning, or directed to His Holiness for response. Two world-famous biologist/geneticists, the head of the MIT genome lab, in the forefront of the world genome-sequencing project, a Nobel physicist, were among the presenters. Also participating were three translator lamas, all holding western Ph.D.'s in physics or molecular biology, and a well-known philosopher of science. Quite a crew! For most of the time I sat about 8 feet from His Holiness, behind the presenter's chair. Sometimes during entries, tea break, and at the end of the week, there were personal greetings or interactions.

Each presenter had a Power Point setup and LCD projector and designed the presentation for His Holiness, who followed intently everything that is said. Sometimes His Holiness would listen for a half hour without comment or translation. Sometimes the presenter would say two sentences, and His Holiness and translators would go into a huddle for a few minutes to discuss a point, sometimes asking for clarifications. Sometimes he would actually cut through what was being said and get right to the point of the presentation by asking a direct question.

Luigi Luisi, a long-time friend of His Holiness, presented to us the nature of the cell as the basic building block of life. What makes something "alive" and sentient? What is the origin of life? How could it emerge from non-life 3.5 billion years ago? What is the relation of life, consciousness, and matter? In the tea break I had a heated discussion with

Luigi about life and emergence. "That's Poetry, not science," he quipped at one point. A critique or compliment? I wondered later as he actually quoted poetry himself. Luigi turn this conference transcript into a book later.

In the afternoon there was a magical interaction on the notion of life: the Buddhist view that life can only come from life is distinct from the scientific view that somehow life is an "emergent" property of matter. My interpretation of the Buddhist view is that there is a continuous or subtle stream of life/consciousness which flows or lives through the organism and expresses itself more and more as the organisms evolve enough to support more complex forms. But life can only come from life.

The second day, molecular biologist Ursula Goodenough presented a molecular view of life. She described the genetic code that contains instructions for molecules of protein to be produced, as well as the switches that tell the instructions to be read. Through the process of random mutation and selection of most adaptable, fittest, etc., there is a natural evolution of forms of life. But why and how does this happen? At the cellular level, cells have organs for interacting with the environment—but do they have a "cognition" or "recognition" of the environment? There was quite a discussion about whether this is conscious cognition, instinctual or merely automatic response. Ursula also presented the evolutionary "tree" with three basic forms of life and when these separated at different time frames. How and why does evolution happen? There was much talk about emergent properties: how do qualities of compassion, consciousness, and joy arise from matter?

Eric Lander, professor and head of the MIT genome lab, with a Ph.D. in Mathematics, presented the story of the genetic sequencing on the third day. He used fascinating analogies to the Tibetan Buddhist Bible, which helped the lamas

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understand the scale: the genetic book of code is about 6 times as large. We have now about 97% mapped out. He used an analogy of how the hand copying of the book often gave rise to mistakes: some did not affect the meaning, and some did. So likewise, some genomic shifts affect big changes, and some are negligible. Humans have the least variation in genetic makeup of any species. *Homo sapiens* have had only 3,000 generations since we were all in Africa, about 75,000 years ago. So our genetic sequencing differs only by about 1 in 1,000. The average Tibetan has closer sequence to the average African than the variation among Tibetans or among Africans.

That afternoon, His Holiness and the lamas addressed many ethical issues of stem cell research, genetic engineering, and so on. At what point in the embryo development can we definitely say the embryo will be human? Cells divide identically up to about 64 cell mass. Then, subtle variations in environment, such as heat, proximity to the center or outside of the mass, etc., induces certain of these cells to throw a switch which causes certain proteins to be produced, which takes the cells down the path of differentiation. From there on the characteristics of being a human form emerge more and more. So is that the point at which taking the life would be unethical? Many times, His Holiness brought up the suggestion that the motivation for the research must be questioned. Science is neutral, but how we make use of it, and why we are doing it is important. There was a discussion of the role of sentient beings and karma. Where does karma begin to affect the changes in the genes? How do sentient being plug in to the natural order of the universe? Then mutation comes in.

Steven Chu, Nobel Prize physicist, gave a view of the atomic basis for life on Thursday. What is it possible for science to know? How does it make sense of things? How much information can we really know about how the

millions of molecules move around the cell? What is the power of mathematics in exploring science? Actually, we can only track up to 8 molecules and their relative positions, so it seems very difficult and too complex to build up the possible life processes of a cell from the molecular and atomic movements.

In the afternoon, there was a brief but beautiful presentation of the Buddhist view of emotions and ethics. Research on the effects of meditative states using brain scan and EEG was mentioned. Can consciousness be a separate principle from matter? Would it contradict any known views? How would we prove such a principle? His Holiness brought it back to the ethical point: whether consciousness comes from matter or not, how will we live our lives is the important question. Buddhism has explored the nature of mind, but ignored the physical universe per-se. Science has studied the physical universe, but ignored the person doing the science. So these could work together.

On the last day, Arthur Zajonc presented some views of dynamical systems, exploring how to model the way complex forms could come from simple processes repeated over and over.

Translator/scientist Alan Wallace and Western lama Mathieu Richard presented brief but powerful views of

Buddhism in the afternoon. Science explores the nature of the world in order to understand the world and what is happening in the world. Buddhism explores the world in order to understand the nature of the world-appearance, to get to the source of the world, and the perspective that will help us alleviate the suffering caused by the ignorance of the true causes of the world-appearance. Buddha found that the causes of the problems of world-appearance had to be found in ourselves, within the mind of the person. The conference ended with each person receiving the personal greeting and blessings of His Holiness.

During the meals, we all ate together, and there were many inspiring conversations and new friendships. Some germinal ideas floated around about a venture to interrelate mathematics and Buddhism, studying foundational ideas about proof and understanding in Buddhism, science and mathematics, and some possibilities to turn video footage of the presentations into curriculum for the monks and others. I left with a renewed sense of the way our Earth has become more of a one-world. Centuries-old Buddhist tradition met centuries-old scientific tradition, and there was real listening and dialogue. This is very hopeful for humans.



Avery Solomon (left); Dalai Lama (right)

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