

# Interview with Lewis Wolpert

Professor Lewis Wolpert discusses his controversial ideas about belief, science education and much more with **Vienna Leigh** from the European Molecular Biology Laboratory.

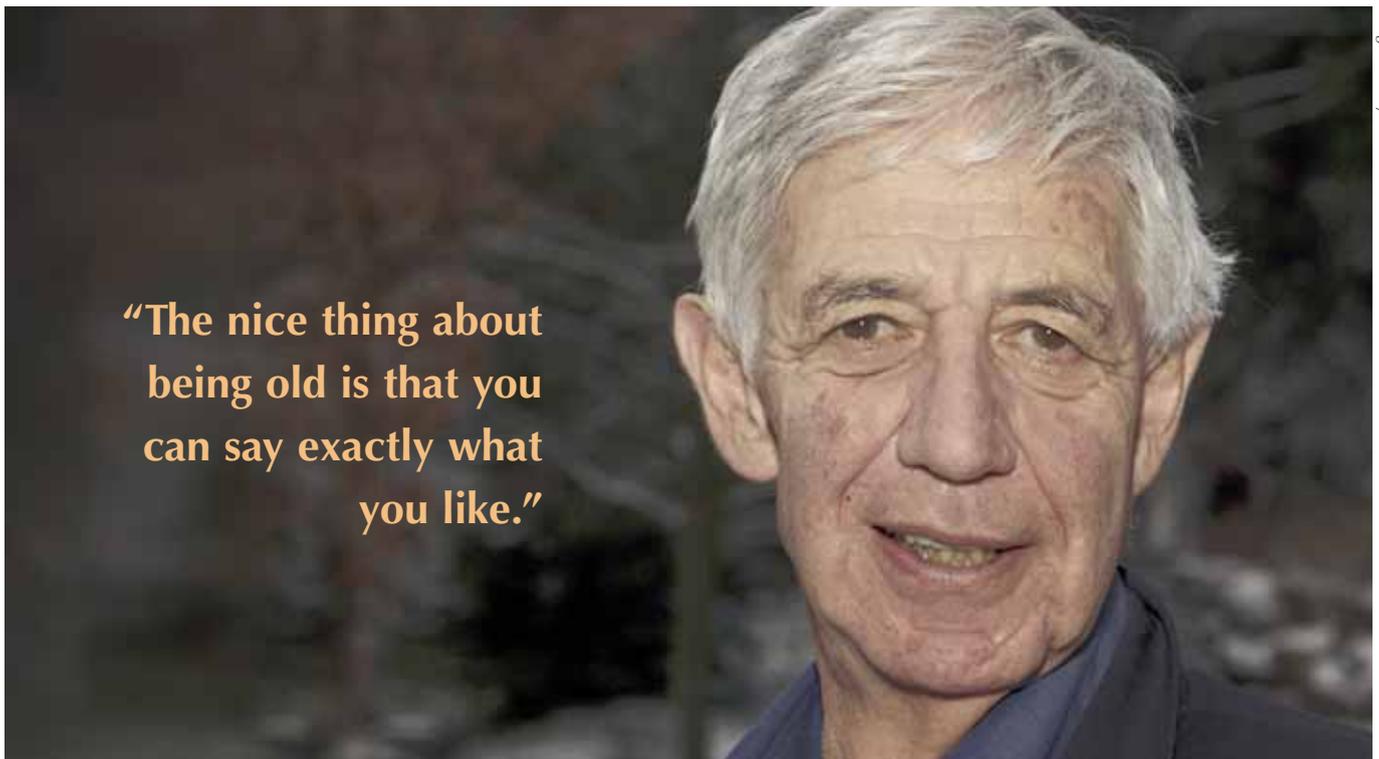


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**“The nice thing about being old is that you can say exactly what you like.”**

However you describe Lewis Wolpert, make sure you never call him a philosopher. The distinguished broadcaster and developmental biology professor from University College London, UK, has no patience with that sort of thing. “The philosophy of science is useless and gives no insight into the process of science. No scientist takes it seriously.”

In fact, about most things, Professor Wolpert is not afraid to say what he thinks. “Psychoanalysis? A load of nonsense!” “A postmodernist? That’s

even worse than being agnostic! Oh, dear me, no!” “Telepathy... oh God, no...” “Memes? Impenetrable!” And all this in just a one-hour conversation in which he set the world to rights in a forthright, straightforward and frankly very refreshing manner.

Author of the recent bestseller *Six Impossible Things Before Breakfast: the Evolutionary Origins of Belief*, Professor Wolpert is a scientist with a life-long interest in the effective and straightforward communication of science and the study of human psychology, in this case causal beliefs. Despite his

opinionated manner about subjects from religion and euthanasia to the teaching of science and the existence of ghosts, one thing is clear – he’s not a bigot. “Religion, memes, the existence of UFOs – they’re all sets of beliefs, and if you can understand why people want or need to believe them, then that’s fine. That’s what we’re interested in: why people believe, rather than whether what they believe is true.”

Despite the book being described in UK newspaper *The Observer* as “singularly welcome to those of us who



## Lewis Wolpert

Lewis Wolpert is an author, broadcaster and professor of biology as applied to medicine in the department of anatomy and developmental biology at University College London, UK, where his research interests lie in the mechanisms involved in the development of the embryo.

Born in Johannesburg in 1929, he originally trained as a civil engineer but changed to research in cell and developmental biology at King's College London in 1955. In 1966 he was appointed professor of biology at the Middlesex Hospital Medical School. He was made a Fellow of the Royal Society in 1980 and awarded the Commander of the British Empire in 1990.

Currently, he and his research group are working on several questions. Together with Michel Kerszberg from the Pasteur Institute in Paris, France, they are investigating the extent to which diffusion determines the spatial organisation of the developing embryo. Can cells reliably recognise gradients of chemical concentrations and use this to lay down the pattern for the organism, e.g. the vertebrate limb or the wing of a fly?

Another field of interest for Lewis is the evolution of development itself. He and his co-workers have proposed a new model for the origin of multicellular organisms: in hard times the cells could eat each other, giving multicellular organisms an advantage over their unicellular competitors. He is also interested in the evolution of larval forms and the origin of gastrulation (when the surface of the embryonic ball of cells folds in on itself, giving a multilayered organism). "It is not birth, marriage, or death, but gastrulation, which is truly the most important time in your life," he is reported to have said.

He is also interested in the evolutionary psychology of depression. If sadness is an adaptive emotion (i.e. can be beneficial) and depression is pathological sadness, perhaps the negativity of depressed patients is a way of rationalising that pathological sadness?

Outside the laboratory, Lewis has presented science on both radio and TV, and stood for five years as chairman of the UK Committee for the Public Understanding of Science. He wrote about his experience of clinical depression in his book *Malignant Sadness: The Anatomy of Depression*, which was published by Faber in 1999. This was the basis for a series of programmes on UK television called *A Living Hell*, which Lewis presented himself.

His other books include *A Passion for Science* and *Passionate Minds*, both with Alison Richards, which are compilations of interviews with scientists, published by Oxford University Press in 1988 and 1997, respectively. *The Triumph of the Embryo* was published by Oxford University Press in 1991, and *The Unnatural Nature of Science* was published by Faber in 1992. *Principles of Development*, of which he is principal author, was published by Faber Current Biology in 1998. From 2001-2005, he was a regular contributor to the science and technology section of the UK newspaper, *The Independent*.

His latest book is *Six Impossible Things Before Breakfast: The Evolutionary Origins of Belief*, published in 2006. He was made a Fellow of the Royal Society of Literature in 1999.

### BACKGROUND

have suffered many dreary years having God's message stuffed down our throats by the religious self-righteous", Professor Wolpert doesn't take the church-bashing stance that someone like Richard Dawkins upholds. *Six Impossible Things Before Breakfast* concludes that humans alone have a unique ability to comprehend the concept of cause and effect. This allows us to think about the world in abstract terms, design and use tools,

hold beliefs and practice science, and drives us to find explanations for everything. Every culture has its set of beliefs about the cause of things, usually invoking gods who would be able to set events in motion.

"I'm not against religion," he explains. "Invoking God to explain evolution and the origin of life doesn't help one iota, but it makes people feel better. That's the point, you see? I'm only against religion when it starts to

interfere with other things, like telling people they can't use contraception, or banning abortion, or stopping euthanasia. These bloody religious nuts in Parliament! Nobody else, other than the Catholic Church, ever went around saying a fertilised egg was a human being, and now people are starting to believe it. Authority plays a big role in our beliefs."

He's currently working on a new book about the cell, aimed at the

general public, and is the author of another basic science text, *The Triumph of the Embryo*.

As a proponent of the clear and transparent communication of science, Professor Wolpert has a lot to say about how science is taught in schools. "In Britain, at least, they have the lunatic idea that children should be discussing the ethics of science. How can you discuss stem cells and cloning if you know nothing about developmental biology? It's mad beyond words. It's moral masturbation, to borrow a phrase from Mark Twain!

"What children should be taught is something about the processes of science... how discoveries were actually made, the history of things, rather than being presented with a fait accompli in a textbook. They should be taught about clinical trials, peer review, and what it's all about to be a scientist, and above all, that science is a group activity, where numerous scientists try to convince each other of their theories; if history were re-run, the discoveries would remain the same but the names would not. Science teaching is very lacking at the moment.

"It would also be helpful for children to be told that science goes against common sense. It's not common sense to think that Earth orbits the Sun and not the other way around. Science is counter-intuitive, and they need to learn that, and that science is hard. It'll make them feel better."

About some things he concedes defeat himself. "This molecular stuff that you're all doing at the European Molecular Biology Laboratory, well, I'm out of my depth. That's real molecular biology, hunting for enhancers and hybrids and DNA searching... I can't do that... I don't understand it, you know," he confides in a stage whisper. "When you look at the journals now, you can fall asleep, it's all so detailed. Unless it's the sys-



REVIEW

Readers who are not familiar with the work of Lewis Wolpert should read his biographical summary first and then read the interview to find out something about the opinions of this eminent scientist and science communicator. The provocative comments on science education for the real world, communication, religious beliefs and ethics should inspire debate about syllabus review and for classroom use.

This article introduces the human element of science, in this case embryology. It is applicable to many topics, for example the philosophy of science, science and ethics, science communication, science and religion or science in the future. It could be used in a debate on the differences between science and pseudoscience or as the basis of a discussion about the opinions of one scientist.

Possible comprehension questions include:

1. What are the main conclusions about humans that Lewis Wolpert reaches in his book *Six Impossible Things Before Breakfast*?
2. Do you agree with the author's assertion about Lewis Wolpert that "one thing is clear – he's not a bigot"? Give reasons for your answer.
3. In what ways does Lewis Wolpert think science education could be improved?
4. "You know, the nice thing about being old is that you can say exactly what you like, and be as badly behaved as you like." Do you agree with this statement? If everyone shared this opinion, would life become very difficult for scientists trying to help the ageing population?

Marie Walsh, Republic of Ireland

tem you're actually working on, you couldn't give a hoot about it, don't you agree? They're very boring, the journals! I said to one of the editors – I won't say which one – Jim, I said, 'I just throw almost all of it away! Detail! Infinite detail!' Not unimportant... but who cares? In the old days we were looking for general principles. It was great fun. Now it's very different."

Our time is up, but we could have gone on. As Professor Wolpert takes his leave, with a twinkling smile, he adds: "You know, the nice thing about being old is that you can say exactly what you like, and be as badly behaved as you like."

### Note from the editor

What do you think about Lewis Wolpert's opinions? For example, do you agree that children are not knowledgeable enough to discuss the ethics of science? Do you think science has become more detailed and less interesting? Why not leave your comments online: [www.scienceinschool.org](http://www.scienceinschool.org)

### Resources

Lewis Wolpert's 2002 essay on the responsibility of scientists in society is available on the Nobel Prize website: [http://nobelprize.org/nobel\\_prizes/medicine/articles/wolpert/](http://nobelprize.org/nobel_prizes/medicine/articles/wolpert/)

