

## The world according to de Duve

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**Vital Dust: Life as a Cosmic Imperative** by Christian de Duve. Basic Books, 1995, 362 pages. \$25.00 hardcover (ISBN 0-465-09044-3).

An unprecedented advertising blitz in many of the major biological journals heralded publication of the first edition of *A Genetic Switch*. Soon afterwards I spotted the author, Mark Ptashne, emerging from his silver Porsche at the 1986 Gordon Conference on Nucleic Acids. Hoping to be polite I called out “I bought your book,” and without missing a beat Mark hollered back “Everybody’s bought it, but nobody’s read it.”

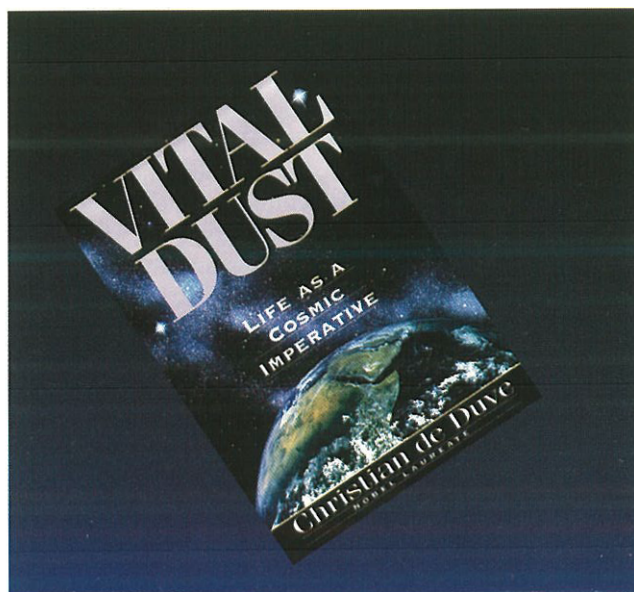
Who then will buy, or read, *Vital Dust* by Nobel Laureate Christian de Duve? Let us examine the book to find out. The book is subtitled *Life as a Cosmic Imperative*, suggesting that we have only physical laws, and not our stars or deities, to thank for the gift of life. Creationists, beware! The dedication is ‘To Life,’ reinforcing the impression that deities are unnecessary when the Force is with us.

The book itself attempts to provide a narrative history of life on earth, beginning with the Age of Chemistry (the usual prebiotic soup seasoned with thioesters), the Age of Information (did RNA really antedate protein?), the Age of the Protocell (better get a membrane around that genome!), the Age of the Single Cell (eukaryotes emerge from a prokaryotic world), the Age of Multicellular Organisms (how did we all get so complicated?), the Age of the Mind (are we part of biology or do we transcend it?), and ending with the Age of the Unknown (what does the future hold in store?). Clearly, this 362-page book has scope.

de Duve is a marvellous prose artist. The pages sparkle with carefully crafted phrases, although sometimes he cannot resist waxing a bit arch, as in the following snippet from the Preface. After a lifetime of scientific achievement, de Duve is delighted to have finally found the time to put it all together. Describing the larger rhythms of his life, he writes:

...the duties and obligations of academic life, the additional burden of founding a biomedical research institute in Brussels, and, in the middle of it all, a disruptive trip to Stockholm in 1974, all conspired to keep me busy with day-to-day problems, leaving little time for wider issues. (page xiv)

Nothing like a Nobel Prize to obscure the “wider issues.”



de Duve works hard to entertain, if not coddle, his audience. For example, in explaining the protonmotive force by which “electron transfer is obligatorily coupled to proton translocation,” de Duve writes:

The higher the proton concentration created in this way, the stronger the acidity (and the lower the pH, an expression swimming-pool owners will understand). From the tangy sourness of lemon juice (citric acid) or vinegar (acetic acid) to the metal-biting causticity of nitric acid, it is all a matter of proton concentration. (page 100)

This kind of information will not be much help to those in the trade, but it may provide a lifeline for lay readers, especially those who own swimming pools.

The book also builds important bridges. Readers will immediately recognize that the author enjoys a first-rate classical education, a cosmopolitan sensibility, and an admirable impulse to share the pleasures of modern cellular and molecular biology with a larger audience. For example, while speculating on the origins of diploidy, de Duve describes the primitive mitochondrion-less microsporidian *Giardia* as follows: “In technical jargon, each nucleus is haploid (from the Greek *haplous*, single), and the cell is diploid (from the Greek *diplous*, double)” (page 156). A dash of Greek may not be strictly necessary here, but it certainly helps to remind us that all human knowledge is fundamentally one. When basic science comes under attack in the hallowed halls of congress as an

'arcane' enterprise, and federal purse strings are being pulled tight, an appeal to higher principle may have just as good a chance of justifying the scientific enterprise as strident claims that only more science can save the world.

Any attempt to render much of biochemistry, cell biology, molecular biology and evolutionary biology into mere words (no matter how elegant) is bound to disappoint those of us who know that the real stuff consists of mathematics, physics and chemistry. But then again, this book is not for us. It is far too easy, and not particularly useful, for practicing experimental scientists to deride 'coffee table' books aimed at a lay audience. *A Short History Of Time* by Steven Hawking now decorates many a bookshelf, but surely this national bestseller has been "more honored in the breach [admiring the dust jacket] than in the observance [reading it]." Still, if our non-scientific brethren (especially those in high political and appointive office) can be persuaded that the scientific enterprise is worth funding, not just for the practical rewards (miracle drugs and high tech weaponry) but

because curiosity about the natural world is a defining characteristic of our species, the persuading will probably be done by *Vital Dust*, *A Short History Of Time* and *Jurassic Park* (either the book or the movie), not by the fifth edition of *Molecular Biology of the Gene*.

So my recommendation is that you buy this book and spend an hour browsing around in it, but be sure to wash your hands first and be careful not to break the spine. When you're done browsing, tastefully gift-wrap the book and bestow it on the most influential layperson you know (perhaps one with a swimming pool; see above). The recipient will be flattered by your gift, and intrigued by the possibility that science might be fun or even comprehensible. And you will have done your part to make the world safe for basic science.

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Alan M Weiner, Department of Molecular Biophysics and Biochemistry, Yale School of Medicine, PO Box 208024, 333 Cedar Street, New Haven, CT 06520-8024, USA.