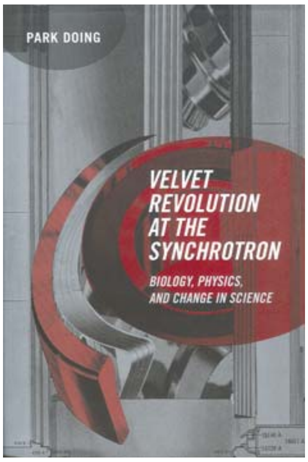


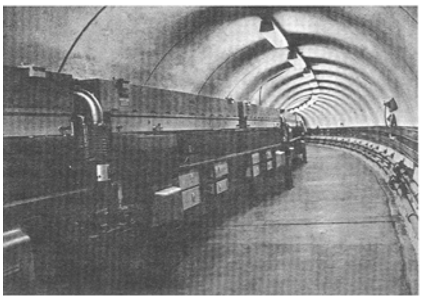
Velvet Revolution at the Synchrotron: Biology, Physics and Change in Science. Park Doing. The MIT Press, 55 Hayward Street, Cambridge, MA 02142, USA. 2009. viii + 155 pp. Price not mentioned.

The book under review highlights the working atmosphere and life in general in a synchrotron source where biologists, physicists and scientists from other branches work together with the help of a large pool of 'supporting staff'. I was interested to review this book particularly because it has an account of the 'supporting staff' of this kind of facility where I have worked frequently. However, it turned out that it is not an easy reading book – extensive quotations from other sources and repetition of themes across the chapters made this book difficult to read. For example, from p. 24 to 39, extensive quotations have been used to construct the chapter 'Practice and product'.

The author has written this book based on his experience at the synchrotron source at Cornell University, USA, and he has for some reason assumed that the scientists working in these kind of facilities do not have sufficient technical knowledge about the instruments they use. In a sense, this book generalizes the behaviour of such users across the various synchrotron laboratories based on the experience of the author in a particular facility at a particular time. The conclusions drawn by the author from his own experience are rather dramatic in nature. For example, in p. 62 the author writes a stunning series of sentences – 'The operators, too, were conducting identity(!) work with regard to the scientists. The way the operators saw it, their heads were ignored by scientists, some of whom, at least, were the type of people who were unwilling or unable to learn from equipment in the proper way. Scientists were "educated fools" (as the machinist Walt Protas referred to them) who didn't understand the real world of scientific instrumentation. Their adherence to the text-book and their narcissism with respect to their own knowledge was what kept them from being legitimate knowledge producers.'

However, some parts of this book are interesting to read, particularly the portions about the joining-phase and leaving of the author from the synchrotron facility are described well. Another interesting portion of this book is the description of the development of protein crystallography around a synchrotron facility. I provide below the detailed portion of the book that may be of interest to the general readership.

'As more and more structures were solved faster and faster, protein crystallography gained a significant measure of scientific and public acclaim and became a prominent aspect of research at the Cornell X-ray lab. The lab touted protein crystallography's potential when promoting itself to the public, and it cited the crystallographers' scientific successes in reports and proposals to the X-ray lab scientific board, to the university, and to funding agencies. In the 1990s, protein crystallography began to far outpace the other kinds of work at the lab, and workdone at the Cornell lab became prominent in the protein crystallography field as a whole. By 1999, more than half of the beam time allotted at the laboratory was for protein crystallography work and more than one-fifth of the "important" structures solved in the field were solved with data collected at the Cornell lab.



The tunnel in the 1970s before the storage ring was built. This photo hung in a hallway of the laboratory. The device in the tunnel is the 10-GeV synchrotron.

In the years 1997–1999, crystallography work at the Cornell lab resulted in solved structures that were featured in 23 separate articles in *Science* and *Nature*. Very often, distinguished visitors to the university (including trustees) were brought into a special "theater" in which "bio-x" researchers could show off three-dimensional projections of molecules that had been solved. With its connections to the synchrotron and to the latest computing technologies, protein crystallography was readily placed at the heart of the biotech and information-technology revolutions. During this period, a new director for the X-ray lab was hired. Known for his work in developing the CCD detectors used in protein crystallography experiments, he had many connections to this rising field. The retiring director, whose work was in the general physics of X-ray matter interactions, had pushed the initial proposal for the Cornell X-ray laboratory in the 1970s and had played a major role in the build up of the lab from its beginning. After his arrival, the newly hired director wrote an article for a Cornell University newsletter in which he asserted: "The largest user community at CHESS [the Cornell High Energy Synchrotron Source] are the scientists who determine the atomic structure of proteins are (!) viruses by X-ray crystallography. The biological revolution that is sweeping the world is based upon two technological developments: genetic engineering and protein crystallography. CHESS was centrally involved in the development of the cryo-freezing and X-ray detector methods that most protein crystallographers now use to determine molecular structures" '.

Overall, this book may be of interest to those people who are entering into the field of synchrotron science for the first time and would like to know about the basic knowledge they should gather before embarking on such mega-science activities.

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