Book review

Of Flies, Mice, and Men

F Jacob (translated by G Weiss)

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In his most recent book, François Jacob has expanded upon some themes of his earlier works to produce a series of essays that present his reflections and opinions on the nature of the scientific process. Organized around the gene and its functions, the book is also pleasantly illuminated with learned references to the classics, modern literature, the arts, and history. At first glance, the essays may seem to treat disparate topics, ranging from mice to morality, but several themes flow through the book, presented as dialectics that overlay and intersect with each other.

One such dialectic is between similarity and diversity, which is exemplified by that between the commonalities of structure and function and the complexity of life forms and processes they generate. Jacob draws examples from the genetics of development (eg, homeotic genes) to demonstrate how recombination and differential regulation of molecular modules figure in biochemical evolution.

Another theme running through the book is the tension between the unpredictable and the certain, an issue that intersects with other dialectics – pure and applied science, good and evil – that are also discussed. Jacob contrasts the significance of surprise in the laboratory with the predictability that many persons expect science to provide. He draws two moral lessons from the disparity between the image and reality of science. First, our inability to predict the consequences of scientific applications means that we should not presume to know where controversial topics will lead and thus should not deter basic research in any area, even though it may generate new ethical challenges. Second, Jacob stresses that

it is incumbent upon scientists to be candid about their work, neither making fantastic promises nor disguising potential liabilities. The author's faith in his fellow scientists may seem a bit naïve, particularly since he himself provides examples of the vicissitudes of politics to which science is subject.

Jacob admits that the public persona of science as a cut-and-dried producer of certainty is the result of its own self-presentation. In one of the more evocative images in the book, the contrast between 'day' and 'night' science, he presents the scientific process as a dialectic between logic and imagination. In Jacob's view, the crucial role of imagination in science is inadequately acknowledged as a result of publication practices. Even so, it seems that the book itself reinforces 'day' science and its predictive ability.

Of Flies, Mice, and Men is somewhat fragmented in nature because it is a collection of essays that appear to have originated as talks given at different times. Occasionally, points seem contradictory from one part of the book to another, for instance, the distinction between pure and applied science is clear-cut in one section but blurred in another. Some concepts are repeated in different chapters with varying degrees of information in them. The science, which is easily accessible to the layperson, may prove elementary for the professional. The overall effect is that this collection lacks the analytical depth of *The Logic of Life* and the artistry of *The Statue Within*. Nonetheless, the imagery, cultural references, and the interplay of the themes make it a pleasurable read. It is a delightful and stimulating engagement with the thoughts of a scientist who is continually surprised and awed by the natural world.

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