

Craig Holdrege and Steve Talbott: *Beyond biotechnology: the barren promise of genetic engineering*

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The new science of genomics has an important contribution to make to the development of agriculture in the “Third World” and thus to improving the livelihoods of many of the poorest people on earth. The persistence of poverty demonstrates, however, that this contribution is not yet being made. Craig Holdrege and Steve Talbott, therefore, in the book under review, attempt to examine the web of connections between the two and enquire whether they could be strengthened in some way, perhaps by the addition of what Reece and Haribabu (2007) call “some vital ‘missing link’,” so that the contribution from genomics can be maximized. They evaluate the current state of genetic science and examine its potential applications, particularly in agriculture and medicine, as well as the possible dangers.

This book is divided into four parts (14 chapters). The main concern of part I is to demonstrate that the implications of genetic engineering (GE) cannot be understood unless we view GE within larger biological, organismic, ecological, economic and societal contexts. A lack of awareness and understanding of these broader contexts becomes responsible for the emergence of the problems of GE. The authors demonstrate that it would be illusory to “...imagine GE as a way of making neat and discrete changes in organisms that contribute to just as neat and discrete programs for, say, solving world’s hunger problem” (p. vii). Putting it succinctly, “feeding the world is not just a question of increasing yields” (p. 40), especially when our technological interventions are deeply embedded

within a complex of relations—social, economic, political, cultural, ecological, etc. The authors seem to opt for an ecologically sustainable approach. The focus is not on individual causes but on orchestrating the whole system. The whole is embodied in its interactions and in the synergies that arise out of these interactions. The ecologically sustainable model has the adaptability to take local conditions (including culture and people) into consideration. Further, the authors advocate for constructive interventions by the government as well as by civil society to make the world of agriculture sustainable.

Recent developments in applied molecular biology have opened up new ways of looking at life processes and led to the appearance of new technologies. The potential of the new knowledge inevitably raises questions related to the social process of production and application of knowledge in wide-ranging areas. Further, the resulting reactions at the level of policy-making and implementation are important in the sociology of science and technology. For example, applied researchers in developing countries have been attempting to employ molecular biology tools in order to understand the biology of the rice plant. Their ultimate aim is to improve the rice crop through biotechnology-based interventions. In this context, “improvement” refers to yield and other desirable traits necessary to meet the needs of a burgeoning population in India and other countries (Haribabu 2000).

GE is based on the premise that a gene is a clearly defined entity carrying out a specific function and, when transferred into a different organism, will perform the same function in the new context. That such manipulation often does not work according to plan can be viewed, theoretically, as a technical problem to be overcome. But scientists who have been doing basic genetic research since the development of the WTO provisions on Intellectual Property Rights have come to

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recognize that the gene itself is “context-dependent”—which has been well captured in Part II. Research in molecular biology and plant breeding is both a science and an art (Kloppenburger 2005). Indeed, a good part of the “art” of GE entails limiting the implanted gene’s responsiveness to its new and ever-changing context.

The ever-changing context also changes our perceptions on organism/s (Part III). Part IV portrays, in a concrete way, the fundamental qualities of wholeness and integration that characterize each organism, each in its own individual way. Each of these studies “entails a shift [radical] in awareness from ‘entities’ to relations, qualities and contexts—precisely the kind of awareness that is missing in what drives GE and, more broadly, our ego-centric, utilitarian approach to the world” (p. viii). The radical shift is also concerned with an evolution of science—and more generally, human understanding—to encompass the qualities of the world. Further, the authors emphasize that Goethe’s approach to science is itself a fertile idea that still has ample life to unfold.

This book is truly interdisciplinary in intent and reach. Scholars drawn from life sciences, humanities and social sciences will certainly find it extremely useful in research practices.

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