

Sukhendu B. Dev

*A Critical Analysis of the New Biology and the Biological Revolution:
Their Impact – From Medicine to Evolution*

Abstract. In this article, I critically analyze the impact of the new biology and the biological revolution. I argue that indiscriminate use of the words such as ‘interdisciplinary,’ ‘integrative,’ and ‘revolution’ has caused only confusion when applied to biology. The recent debate, especially after the exploding field of systems biology, has brought back the controversy whether molecular biology is reductionist or holistic. I look at the issues involved critically. I discuss the problem of defining the word ‘gene’ and argue that recent attempts to redefine the central dogma of molecular biology about the information flow from DNA to RNA to protein are not justified. I support my view with comments from the scientist who discovered RNA splicing. Several aspects of evo-devo, a new branch of biology, are discussed. I give examples from this evolution-developmental biology to show how some of Darwin’s inspired guesses have had resounding victory when it was found that specific genes during embryonic development of the Galapagos finches decided the size and shape of their beaks. I discuss the recent publications which show that the conditions in the island, such as wet to dry to wet season, can bring about evolutionary changes from year to year. Thus it is essential to monitor both short and long-term evolutionary changes to get the full picture of evolution.