



The Divorce between Science and “Culture”

Bertrand Russell

There was a time when scientists looked askance at attempts to make their work widely intelligible. But, in the world of the present day, such an attitude is no longer possible. The discoveries of modern science have put into the hands of governments unprecedented powers both for good and for evil. Unless the statesmen who wield these powers have at least an elementary understanding of their nature, it is scarcely likely that they will use them wisely. And, in democratic countries, it is not only statesmen, but the general public, to whom some degree of scientific understanding is necessary.

To insure wide diffusion of such understanding is by no means easy. Those who can act effectively as liaison officers between technical scientists and the public perform a work which is necessary, not only for human welfare, but even for bare survival of the human race. I think that a great deal more ought to be done in this direction in the education of those who do not intend to become scientific specialists. The Kalinga Prize is doing a great public service in encouraging those who attempt this difficult task.

In my own country, and to a lesser degree in other countries of the West, "culture" is viewed mainly, by an unfortunate impoverishment of the Renaissance tradition, as something concerned primarily with literature, history and art. A man is not considered uneducated if he knows nothing of the contributions of Galileo, Descartes and their successors. I am convinced that all higher education should involve a course in the history of science from the seventeenth century to the present day and a survey of modern scientific knowledge in so far as this can be conveyed without technicalities. While such knowledge remains confined to specialists, it is scarcely possible nowadays for nations to conduct their affairs with wisdom.

There are two very different ways of estimating any human achievement: you may estimate it by what you consider its intrinsic excellence; or you may estimate it by its causal efficiency in transforming human life and human institutions. I am not suggesting

that one of these ways of estimating is preferable to the other. I am only concerned to point out that they give very different scales of importance. If Homer and Aeschylus had not existed, if Dante and Shakespeare had not written a line, if Bach and Beethoven had been silent, the daily life of most people in the present day would have been much what it is. But if Pythagoras and Galileo and James Watt had not existed, the daily life, not only of Western Europeans and Americans but of Indian, Russian and Chinese peasants, would be profoundly different from what it is. And these profound changes are still only beginning. They must affect the future even more than they have already affected the present.

At present, scientific technique advances like an army of tanks that have lost their drivers, blindly, ruthlessly, without goal or purpose. This is largely because the men who are concerned with human values and with making life worthy to be lived, are still living in imagination in the old pre-industrial world, the world that has been made familiar and comfortable by the literature of Greece and the pre-industrial achievements of the poets and artists and composers whose work we rightly admire.

The separation of science from "culture" is a modern phenomenon. Plato and Aristotle had a profound respect for what was known of science in their day. The Renaissance was as much concerned with the revival of science as with art and literature. Leonardo da Vinci devoted more of his energies to science than to painting. The Renaissance artists developed the geometrical theory of perspective. Throughout the eighteenth century a very great deal was done to diffuse understanding of the work of Newton and his contemporaries. But, from the early nineteenth century onwards, scientific concepts and scientific methods became increasingly abstruse and the attempt to make them generally intelligible came more and more to be regarded as hopeless. The modern theory and practice of nuclear physicists has made evident with dramatic suddenness that complete ignorance of the world of science is no longer compatible with survival.

The above is the text of an address delivered by **Bertrand Russell**, on receiving the Kalinga Prize for the Popularization of Science, at UNESCO Headquarters on 28 January 1958.

