The Three Cultures

Natural Sciences, Social Sciences, and the Humanities in the 21st Century

JEROME KAGAN

Revisiting C. P. Snow

CAMBRIDGE www.cambridge.org/9780521518420

This page intentionally left blank

THE THREE CULTURES: NATURAL SCIENCES, SOCIAL SCIENCES, AND THE HUMANITIES IN THE 21ST CENTURY

In 1959 C. P. Snow delivered his now-famous Rede Lecture, "The Two Cultures," a reflection on the academy based on the premise that intellectual life was divided into two cultures: the arts and humanities on one side and the natural sciences on the other. Since then, a third culture, generally termed "social science" and comprising the fields of sociology, anthropology, political science, economics, and psychology, has grown in importance. Jerome Kagan's book describes the assumptions, vocabulary, and contributions of each of these cultures and argues that the meanings of many of the concepts used by each community are unique to its methods because the source of evidence contributes to meaning. The text summarizes the contributions of the social sciences and humanities to our understanding of human nature and questions the popular belief that biological processes are the main determinant of variation in human behavior.

Jerome Kagan is a developmental psychologist, a member of the Institute of Medicine of the National Academy of Sciences, a Fellow of the American Academy of Arts and Sciences, and emeritus professor at Harvard University. He has received the Distinguished Scientist Awards from the American Psychological Association and the Society for Research in Child Development. Jerome Kagan has written several books dealing with the assumptions of the social sciences. He is best known for his research on moral development, infant cognition, and temperamental biases in children.

The Three Cultures

NATURAL SCIENCES, SOCIAL SCIENCES, AND THE HUMANITIES IN THE 21ST CENTURY

Jerome Kagan
Harvard University

CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE UNIVERSITY PRESS
Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo

Cambridge University Press
The Edinburgh Building, Cambridge CB2 8RU, UK
Published in the United States of America by Cambridge University Press, New York

www.cambridge.org
Information on this title: www.cambridge.org/9780521518420

First published in print format 2009

ISBN-13 978-0-511-51800-3 eBook (NetLibrary)

ISBN-13 978-0-521-51842-0 hardback

ISBN-13 978-0-521-73230-7 paperback

Contents

Preface

On a gray March afternoon in 2006 I saw a copy of C. P. Snow's *The Two Cultures* on a shelf above the location of the two books I was searching for in the cavernous Widener Library at Harvard. Recalling the debate it provoked when published more than fifty years ago, and aware that I was looking for a theme to probe during the coming summer, I added it to the pair of books I had come to borrow. After reading Snow's essay the following weekend, it became clear that the changes in the sciences and research universities over the past half-century had rendered Snow's analysis a bit archaic, and a comparison of his views with the current reality seemed to be a worthwhile pursuit.

The most obvious change was the ascent of big science projects in physics, chemistry, and molecular biology that required expensive machines and teams of experts with varied talents and motives. The typical scientist during my graduate years went to the basement of the university building where the shop was housed and constructed himself, or had built by the department's technician, whatever apparatus was required for an experiment designed and run by the faculty member or with the help of a graduate student who assisted with the gathering and analysis of the evidence and the writing and rewriting of a paper reporting an interesting result. Two minds and four hands, often with no outside funds, performed all the work. Under these conditions the pride savored if the experiment were successful, or the blend of frustration and sadness if not, was restricted to a pair of agents.

These emotions are seriously diluted when hundreds of experts design experiments to be executed by teams visiting the international space station, preparing the Hadron Collider for probes that might reveal new particles, documenting the human genome, or studying the brain with magnetic scanners. The joy or pain felt in these settings is dispersed among many, not unlike the mood of the bank managers who bundled and sold thousands of mortgages to hedge funds in order to reduce the risk of any one of them defaulting.

The observations produced by the machines of big science have changed the ease of imagining the concepts invented to explain the mysterious signals they produced. Strings oscillating in ten dimensions, the Higgs boson, and genetic drift in a population are examples of concepts that are more difficult to imagine than concepts like bacteria, planetary orbit, molecules, or genes. A majority of scientific ideas, from Galileo to Mendel, were friendly to the human capacities for imagery and, therefore, easier to understand and to explain to a curious public.

The machines created two additional problems. Their high cost meant that investigators needed large grants from the federal government and/or private philanthropies, and only the small number of fortunate investigators working at settings with these machines would be able to make important discoveries. Thus, a young, ambitious scientist had to be at the right place in order to enjoy the advantage of these magical, powerful probes. This situation created a division between the small number of privileged investigators and the majority interested in the same question who happened to be too far from the action. The odds of a monk in an isolated monastery making a major discovery in genetics are far lower today than they were when Mendel experimented with pea plants.

It did not take long for deans and provosts to appreciate that their physicists, chemists, and biologists were bringing large amounts of overhead monies to their institutions, and they felt an obligation to reciprocate the kindness by allowing them more relaxed teaching