BOOK REVIEWS

Science in Nine Nations

Scientists and the State. Domestic Structures and the International Context. ETEL SOLINGEN, Ed. University of Michigan Press, Ann Arbor, 1994. xii, 259 pp., $49.50.

How can we analyze the relations between science and politics? The traditional approach proceeds via nationally focused descriptive case studies, but the cases are inevitably out of date and rarely say anything generalizable. The alternative route lies through comparative studies—a familiar enough approach in the study of politics, but with familiar problems also. Either the cases chosen suffer procrustean agonies and are stripped of complexity in order to fit the framework or the framework is treated more as a backdrop than a scaffolding, leaving the authors free to dart hither and thither with only an occasional backward glance at their designated terms of reference. This book is of the latter genre.

The national cases have been well chosen to reflect diversity of political systems. The United States, France, Japan, China, the (former) Soviet Union, Brazil, Germany (itself subdivided into Weimar, Nazi, and Federal Republic), India, and Israel make up the set. The authors are also well chosen, being knowledgeable and interesting. Bruce Smith, for example, takes us through some of the main developments in the United States from the Founding Fathers to the Bush Administration (but may a Mancunian reviewer be allowed the quibble that it was not from here that Priestley fled to the United States after incurring local wrath for supporting the French Revolution? The Priestley Riots of 1791 were in Birmingham, an altogether different place). Baumgartner and Wilsford offer a subtle description of what they call the caste system of French science. They become a little equivocal, however, with regard to explaining success and failure when they say (pp. 83–84) that "While what the French call the 'classical nuclear' industry has been a relative success, the fast-breeder technology has shown the pitfalls of the French emphasis on high-prestige, technologically complex projects with risky commercial futures." This sentence leaves hanging the question of why the "French emphasis" works when it works and doesn't when it doesn't.

On Japan, Low reveals the long-lived interest of former prime minister Nakasone in atomic energy (even extending to a summer school at MIT in 1953). He also disagrees with the editor's prediction that military-industrial complexes are likely in general to decline, observing that in Japan's case the end of the Cold War has not reduced the threats posed by China and North Korea. He is on more debatable ground in suggesting that if Japan became seriously interested in the defense business the nature of Japanese R&D would change as well. As Richard J. Samuels has shown in *"Rich Nation Strong Army": National Security and the Technological Transformation of Japan* (Cornell University Press, 1994), Japan is already heavily involved in the defense business, although not as an exporter of finished systems. However, in contrast to the United States or the United Kingdom, Japan draws the relevant capability from a strongly integrated national technology base rather than from distinct civil and military bases. This is one of its great assets in global competition and would have no need of change.

Of the more autocratic states, Germany (in the Nazi period), the former Soviet Union (pre-Gorbachev), and China present interesting contrasts, not least in the way (not drawn out in the book) there seem never, despite periods of Chinese isolation from the international mainstream, to have been ideological drives toward a purely "Chinese science" or against certain varieties of "alien" science, as occurred under Stalin and Hitler.

The detailed analysis of possible relations between the content of science and its political context is not, however, a central concern of the book. Pfetsch, writing about Germany, does acknowledge in his bibliography the work of Forman, who tried to show the relations between the Weimar regime and the rise of quantum physics, but does not follow up the lead. Josephson, in a perceptive chapter on Soviet science from Lenin to Gorbachev, comes closer when he warns today's Russian and Ukrainian scientists not to fall into the trap of thinking that the end of the Soviet system means the end of ideology in science. He recommends that they read the chapters in this book in order to "contemplate the ways in which scientific activity is influenced by the political economy of every system" (p. 169).

For this reader, what emerges from the book is precisely this diversity of experience. To take just one point, some authors (Steinberg on Israel, for example) are comfortable discussing relations between the "scientific community" and the state. Others, notably Kapur, are not. In his opening sentence, he rejects the term as unhelpful in the Indian case. His picture is of concentric circles of actors, with the inner circle containing the only people that matter, the "dominant scientist-politician coalition," who settle privately the main lines of (nuclear-dominated) Indian science and technology policy. Like India, France also has a core elite and a (relatively) silent outer group, but this elite-mass system has been built since Napoleonic times through long-established educational pathways and therefore has a quite different dynamic from the Indian case: it is structural, rather than contingent on the personalities of the day.

Solingen's comparative framework attempts to order this diversity. She distinguishes four models of state-scientists relations (ideal-types rather than empirical descriptions) which span a spectrum from autonomy to accountability (or control) of scientists. At the autonomy end we begin with "happy convergence," which, we are told "assumes a high degree of consensus between state structures and the interests and aspirations of scientists" (p. 15). Those interests and aspirations are never properly defined but seem to be those set out long ago by Robert Merton (and since challenged by others) in his well-known norms of science. We move via "passive resistance" (as in the benevolent periods of Soviet history) to "ritual confrontations" (where we see regular expressions of animosity between scientists and state officials), arriving finally at "deadly encounters" (Stalinism or the Chinese Cultural Revolution).

Can such a framework handle the complexity of reality? For example, the degree of homogeneity implied in the "scientific community" seems to this reader to be excessive. Whether someone works on science or technology, is a researcher or an administrator, is employed in government, industry, or university, are among the cleavages within the "scientific community" that might, *prima facie*, affect relations between "scientists" and the state. All these types are met in the book, but without clear theoretical anchorage.

Placing a particular emphasis upon physicists, as the book does (despite its title), does not really help. It leaves one wondering how the picture of science-state relations in particular cases would look if we brought, say, modern biology (and debates about genetic engineering) to center stage

instead of physics, with its focus upon nuclear and space debates.

Certainly the authors of the national case studies (or "empirical plausibility probes," in the editor's characterization) have some difficulty with the framework. Thus, while Solingen summarizes Kapur's analysis of India as showing not merely the convergence of state and science, but even that (p. 16) "scientists *captured* political power by creating a state within the Indian state," one can also read Kapur as demonstrating dissent within the elite coalition and more than a little divergence between the "interests and aspirations" of scientists in the elite and outside it. Is it really valid, or analytically helpful, to escape from this problem by positing "happy convergence" for the insiders and "ritual confrontation" for the outsiders (p. 18)? More generally, is convergence equally "happy" in the cases (both found in the book) of no dissenters existing and of the dissenters having no voice?

This surely cannot be the end of the analysis. Nevertheless, the editor has assembled a worthwhile book, with much of interest in it. The analytical framework is provocative, and the effort to move toward serious comparative analysis is commendable.

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Vignettes: Explanatory Approaches

One makes a mess of the question "How does the heart pump blood?" by starting with facts about human social structures critical for food production sufficient to nourish functioning human hearts. But these are nonetheless factors in a complete explanation of the pumping of blood. Biological "systems" are simple only if their environments are not included in the description.

—*James R. Griesemer*, in *Are Genes Us? The Social Consequences of the New Genetics* (Carl F. Cranor, Ed.; Rutgers University Press)

A reversal of the differentiation of biology and sociology is as unlikely as the return of the Neanderthal. Both disciplinary discourses will continue to develop as separate interpretative resources that modern societies will draw on. The problem left is to account for the apparent cycles of attention experienced by biologistic explanations of social phenomena. Under which social conditions are biological explanations considered appealing, and which are typical for the prevalence of sociological explanations?

—*Peter Weingart*, in *Modernist Impulses in the Human Sciences, 1879-1930* (Dorothy Ross, Ed.; Johns Hopkins University Press)

Childhood Upheavals

"Daddy's Gone to War." The Second World War in the Lives of America's Children. WILLIAM M. TUTTLE, JR. Oxford University Press, New York, 1993. xvi, 365 pp. $30 or £25.

Every historical era is unique, but the World War II period can certainly lay claim to extraordinary differences. In America, millions of men and women left their homes and families to fight a war in distant countries. In addition, millions of families moved to strange, and often inhospitable, communities. They migrated to be near their loved ones who were in the service or to defense plants and the jobs made available by them. Our industrial heartland shifted from the manufacture of cars, stoves, refrigerators, and washing machines to the production of ships, planes, tanks, and guns. Last, but not least, millions of women, many of them mothers of young children, joined the work force.

In *Daddy's Gone to War*, William Tuttle attempts to capture the effects of these momentous transformations and dislocations upon the American children who were born before or during the war years. His prime database is letters, elicited by ads in hundreds of mainstream and minority newspapers around the country, in which readers who had lived through the war as children shared their stories. Some 2500 people responded and wrote movingly of their memories of the war and of its aftermath.

In a masterly way Tuttle has fashioned these reminiscences, together with a great deal of factual information about the war years (number of families who moved, housing, child-care, and recreational problems, racial upheavals, and so on) into a social history of this period. Although the focus is on how the war impacted upon children at different age levels, Tuttle also uses his material to illuminate the gender, racial, and religious prejudices and attitudes that were, in many ways, sharpened by the tension of war. It makes for fascinating reading, particularly for those readers, like myself, who also experienced the war as children.

Tuttle organizes his material in a roughly chronological order. The early chapters deal with the beginning of the war, the rapid induction of men and women into the service, and the housing, schooling, health, and recreational problems confronting the many families who migrated from their own communities to be near the training camps or the defense factories. Later chapters deal with the war years from the perspective of children and adolescents. Many writers recalled the air raid drills, the bond drives, and the efforts to collect and recycle scarce materials like the silver foil of cigarette packages. Other correspondents remembered the movies, the radio shows, and the comic books heavily freighted with war news and patriotic messages. The later chapters deal with the end of the war. Here we relive the joys and problems created when service men and women returned, after years of separation, to families that were accustomed to living without them and to whom they were almost complete strangers. Looking at all of these events through the eyes of childhood memory offers a fresh perspective on a war perhaps most familiar from its novelistic portrayals by the adults who fought it.

Of particular interest is the attention the author gives to the issues of gender bias and stereotyping and to the racial and religious bigotry that were also part of the consciousness of children and adolescents growing up during the war years. Children experienced these prejudices in their own ways. Girls, to illustrate, told of not being allowed to play soldier but only to take the role of nurses. Japanese Americans who had been interned as children recalled their struggles to understand why they were removed from their homes in California and shipped off to camps in the Midwest. Black and Jewish children revisited the fear and anger they felt as the targets of name-calling and vicious racial slurs. While gender bias and religious and racial and ethnic intolerance are always with us, these hateful sentiments were apparently exaggerated and magnified by the war. Perhaps the social permission to publicly hate an enemy gave license to other hatreds as well.