

Robert McC. Adams

Comparative Studies of Technological "Punctuations" in History



Born 1926 in Chicago, Illinois (USA). Ph.B. 1947, M.A. 1952, Ph.D. (Anthropology) 1956, all at the University of Chicago. Member of the faculty of the University of Chicago 1955-1984, successively as Instructor, Assistant Professor, Associate Professor, Professor, and Harold H. Swift Distinguished Service Professor, in the Oriental Institute and the departments of Anthropology and Near Eastern Languages and Civilizations. Concurrent periods of service as Director of the Oriental Institute, Dean of the Division of Social Sciences, and Provost of the University. Secretary of the Smithsonian Institution (Washington, D.C., USA) 1984-1994, since then Secretary emeritus. Adjunct Professor of Anthropology, University of California, San Diego, 1994 —. Fields of research: Agricultural, urban, and techno-economic history and archaeology of the Middle East; historical and social contexts of technological and industrial innovation; institutions and policies for the support of research. Books: *City Invincible* (1960, co-ed.), *Land behind Baghdad* (1965), *The Evolution of Urban Society* (1966), *The Uruk Countryside* (1972, co-author), *Corners of a Foreign Field* (1979, co-ed.), *Heartland of Cities* (1981), *Behavioral and Social Science Research: A National Resource* (1982, co-ed.), *Paths of Fire: An Anthropologist's Inquiry into Western Technology* (1996). — Address: Department of Anthropology, University of California, San Diego, La Jolla, CA 92093-0532, USA.

A year or so ago, I anticipated having more or less completed work on a lengthy manuscript on technological change by around the time of my arrival in Berlin. Thus I expected to take up a substantially new research direction. The self-imposed deadline was met, but then ensued a lag of several months before the publisher's editorial processing could begin. This left open an opportunity for further revisions, an opportu-

nity that turned out to be irresistible. With additional time needed for subsequent stages of editing later in the academic year, the result was that the greater part of my year at the Wissenschaftskolleg was devoted to the earlier undertaking. *Paths of Fire: An Anthropologist's Inquiry into Western Technology*, published by the Princeton University Press in October 1996, is a significantly better book because of this. But it is a source of regret that research on the project that was to follow is correspondingly less advanced.

Underway for several years, the book now in press concentrates on the innovation-led, "punctuated" or irregularly impulsive, "path dependent" character of industrial development in Britain and the United States over the course of several centuries. Taking a contextual, *longue durée* perspective, it traces the remote origins and slowly accelerating growth and institutionalization of links between industrial R&D and government-supported, academically-based research. Also followed are long-term changes in the scale and composition of industrial production and in the structure of enterprise.

Developing fairly naturally out of this study is the supplemental one that I originally planned. With the excellent library staff and facilities of the Wissenschaftskolleg, and with the same general approach in mind, I have been able to read widely on the comparable set of developments in Germany. In particular, my interests focus on the broad context of German economic and industrial growth from the mid-19th through the early 20th centuries, a period of sustained advance at a rate that matched if not exceeded its equivalents in England and the U.S.

As long as the door remained slightly open to further revisions of the earlier study, my growing familiarization with the German trajectory of growth in the nineteenth century invited continuing tinkering with interpretations I had already arrived at for the British and American examples. No less a source of small but significant reformulations were my wife's and my months of day-to-day exposure to Berlin. It is an extraordinary city, to which no one — certainly no social scientist — can remain indifferent. Its clamorous signals jam every human receptor-sense with reminders that great cities everywhere have always been identified with the peaks of human achievement. At the same time, Berlin epitomizes many of the tensions and contradictions that make the contemporary German milieu distinctive.

From the vantage point of my own set of interests, German and American societies are obviously in the grip of broadly parallel sets of convergent, socioeconomic pressures. Both countries are caught up in an intensifying, competition-driven round of technological change. Shortening product life-cycles in the dominant high-technology sector

increasingly require massive, up-front investments in research and development. Also required are corporate strategies that can shift rapidly, relocating industrial facilities and aggressively employing buyouts and licensing arrangements in pursuit of "increasing returns" in global markets. However, the forces of global competition whose American impacts I had already considered play out differently here – on the whole, with more immediately serious consequences that have yet to be effectively dealt with.

These developments place both societies under considerable stress. But while the U.S. has managed largely to match its losses of employment with new job creation (with some losses of job security and other benefits), unemployment in Germany remains at an unsustainably high level. More efficient U.S. capital markets provide more encouragement to small start-up firms, and to quicker, more fundamental shifts into new technological processes and applications. But especially with regard to the continuing cross-fertilization of science and technology, the prognosis in both countries is at best guarded.

For much of the post-World War II period, the demand for trained scientists and engineers grew consistently in both countries. As costs have continued to rise, however, employment opportunities even for highly-trained graduates newly entering the labor market have stabilized and even begun to erode in both. Long-term, relatively more basic research in industry gives way to shorter-term efforts, more directly concerned with the development of new products and guided primarily by marketing considerations. It is doubtful whether the present scale of basic research and graduate education enterprises that is concentrated in universities can be maintained under the new conditions.

German-U.S. divergences in meeting these common challenges reflect deeper, systemic patterns that may be subject to change only slowly and at the margins. In general, U.S. institutions, universities as well as corporations, exhibit greater flexibility and resilience. At any rate, they have been able to make choices within a wider array of options than the German public currently seems to find acceptable. Other substantial differences include the greater, but inherently more risk-averse, managerial role of German banks and the wider circle of "stakeholders" who participate in German corporate decision-making. Also without U.S. counterpart is the extent of state support for educational and workforce-training programs, and the stiffer resistance offered to industrial concentration, relocation and "downsizing." Only a few years ago all these features were commonly reckoned as German strengths. Now, at least until the dominant direction of advance changes once again, they are regarded as weaknesses.

Alongside this dominant stream of thought and work, I have engaged in another one at the Wissenschaftskolleg that has turned out to be equally challenging. The book now in press deals very briefly, in no more than a few pages near the beginning, with much earlier pulsations of change that occurred only at relatively long intervals. The Near East was for many years my central field of concentration, but it is one that in more recent years I have largely neglected. Residence in Berlin has led to renewed contacts with colleagues specializing in that field here and other European cities, and consequently to invitations to travel and lecture on it. Independently rather than within the framework of the book itself, ancient punctuations of technological change (or in the case of the Graeco-Roman world, the relative rarity and weakness of them) have now become a rewardingly renewed subject of my research, on which I have a lengthy article in preparation.