PAUL A. DAVID – Brief Biography

Paul A. David is Professor of Economics (emeritus) and Senior Fellow (emeritus) of the Institute for Economic Policy Research at Stanford. He is also a Professorial Fellow of the United Nations University-MERIT, in Maastricht NL, Professor Emeritus of Economics and Economic History in the University of Oxford and an Emeritus Fellow of All Souls College, Oxford. He holds a Ph.D. from Harvard University, and an M.A. from Oxford, and held visiting teaching and research appointments at Harvard, the University of Cambridge, the University of Paris, IX (Dauphine), l'Ecole Polytechnique and Telecom-Paris_Tech, and the University of Maastricht. David has served on the editorial boards of many scholarly journals in the social sciences, and is a co-founding editor of the international journal *Economics of Innovation and New Technology*.

The author of more than 225 journal articles, chapters in edited volumes, and memoranda and research monographs for national and international government agencies, David has authored and edited 8 books, including *Technical Choice, Innovation and Economic Growth* (1975, reprinted 2007), *and The Economic Future in Historical Perspective* (2003), *The Economics of Knowledge and the Knowledge-Driven Economy*, 4 vols. (2015, co-edited with C. Antonelli), and other forthcoming works. He is an elected Fellow of the International Econometrics Society (1975), the American Academy of Arts and Sciences (1979), the British Academy (1995), and the American Philosophical Society (2003). He is also former Vice-President and President of both the Economic History Association (1988-89) and the Western Economic Association International (2009-2011), and was awarded a doctorate *honoris causa* by the University of Torino (2003).

Following his undergraduate studies at Harvard College, graduate training as a Fulbright Scholar at the University of Cambridge (1956-58), and a Salant Graduate Economics Fellowship at Harvard University (1958-1960), David joined the Economics faculty at Stanford in 1961. He soon emerged among the small cohort of young pioneering practitioners of the "new economic history" in the U.S., and has become well-known internationally for wide-ranging contributions in the fields of American economic history, economic and historical demography, and the economics of science and technology and long-term economic growth in the economies of the West. Investigation of the conditions that give rise to 'path dependence'—the persisting influence of historical events -- in micro- and macro-economic phenomena and socio-political processes—has been a recurring theme in his theoretical and empirical research in these diverse fields, which have drawn support by the numerous research fellowships he has held from private foundations (including the Ford, Guggenheim, Rockefeller, and Mellon foundations, the Center for Behavioral Sciences) as well as governmental agencies and institutes in the US and abroad.

David's persisting central interest in the evolution of diverse technologies, their reflexive dynamic relationships with institutional structures, and their economic and societal consequences has been pursued through the series extended multi-investigator research projects that he directed in different technical domains. Especially notable among these were (i) the Stanford/SIEPR Study of Information Technologies and Organizational Impacts on Productivity (1988-1993, NSF/IRIS-funded) – focused on the experience of nuclear-powered electricity generating stations in U.S., and the 2001-2009, NSF/CISE- funded international project based at Stanford on The Economic Organization and Viability of Open Source Software Development. During the past decade David's research and writing has focused increasingly upon issues central to meeting the challenges of stabilizing the global climate, a shift reflected in his recent affiliation with the Stanford Woods Institute for the Environment. His contributions on the economics of climate policy, not surprisingly, have been directed towards clarifying the role of R&D in expanding the world's portfolio of efficient techniques for exploiting non-fossil energy sources, and the dynamics of the capital formation required to deploy both familiar and novel technologies for migrating industrial emissions of CO2; the most recent papers (co-authored in collaboration with Adriaan van Zon, at the University of Maastricht, NL) employ computational techniques to investigation the requirements of programs for coordinated and timely use of the technological practices that could avert the onset of irreversible, runaway global warming. These are novel in several regards: most prominently, they deviate from the dominant approach in the economics literature on Integrated Assessment Models (IAMs), maintaining instead that a more pragmatic point of departure for policy design is the delineation of the dynamic integrated system requirements (in terms of resource investments and reallocation of resources to exploit and add to the existing technology portfolio) that would suffice to halt the rise in the atmospheric concentration of CO_2 before crossing tipping point(s) that could push Earth's climate system into catastrophic irreversible warming. Understanding what must be done should be the premise for developing policy instruments, and political will to do it. The implementation of this "DIRAM" (dynamic integrated requirements analysis modelling) approach in a succession of coupled global macroeconomic-climate system models, each solved by application of multi-phase optimal control methods, has shown, *inter alia*, that a portfolio of functionally distinct technologies using fossil-fueled and renewable energy-sources could substantially reduce the per capita social welfare costs of achieving a timely transition to climate stability, the precondition for entering an epoch of global sustainable economic development. It is expected that further research along this modelling trajectory will articulate how potentially still larger net welfare gains could flow from policies that prioritized

reallocation of global investments and energy sector capacities in order to optimally exploit presently available negative carbon technologies and explore the future possibilities of their further evolution.