

Promoting Equity,  
Cooperation and  
Innovation in the Fields of  
Transboundary Waters and  
Natural Resources  
Management

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*The Legacy of  
Dr. David J.H. Phillips*

STEPHEN C. McCAFFREY, JOHN S. MURRAY,  
AND MELVIN WOODHOUSE (EDS.)

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# Promoting Equity, Cooperation and Innovation in the Fields of Transboundary Waters and Natural Resources Management

*The Legacy of Dr. David J.H. Phillips*

*Edited by*

Stephen C. McCaffrey

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Melvin Woodhouse



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*David J.H. Phillips 1952–2014.*

## Foreword

*J.A. (Tony) Allan*

With the passing of Dave Phillips one regrets not having asked him why he did all that he did with so much ambition, so much focus and so much energy? The moment never seemed right. When with him we were always in the middle of hectic professional processes which he had almost certainly conjured. Or we were enjoying some intense social moments. It was never the right time to ask. We were overwhelmed by the ambitious ideas generated by day and the intensity of conversations over dinner. We found many understandable underlying ideas on which we could converge. There were evident facts, data and trends captured by the probabilistic sciences of the bio-chemist and the environmental scientist. In these arenas he operated as an exceptional international exponent. It was over contested politics that we struggled.

By the time I met him in 1999 the debates we shared in professional and social time were dominated by the contradictions of real life politics and by the constraints and unfairness of asymmetric power. Another question I would have asked Dave is why did he move from the researchable challenges of biochemistry and water quality where life was challenging enough? What tempted him to cross over into the realm where uncertainty reigns and constructed knowledge overwhelms observed science?

By reading the unique contributions in this collection of essays we can begin to answer the questions at least partially. One will also know much about the topics Dave analysed during his four decade professional career. A more complete answer would come from inputs of those who loved him. They knew the demons that drove him to herculean feats of leadership, productivity and self-destruction.

One senses that Dave discovered sometime in the 1990s that he had a very rare suite of professional skills. He had found that he had a knack of consistently pleasing clients by delivering very authoritative and superbly communicated analysis ahead of deadline. Most of all he answered all the important questions they had posed or that he had reshaped as better questions. He even answered many others that had not been included in the terms of reference. No one thought it was effortless. But what he delivered was always impressive and clients came back for more. Dave was also confident that he could communicate fluently and to very good effect indeed. And in his late career he found that he had an additional precious and significant comparative advantage in being able to cope with the impossible demands of inter-disciplinarity. He found he

could mediate the unhelpful tendencies of reductive science expressed in its different language registers. Without his intervention the teams he led would have produced unhelpful cross-sterilising outcomes.

Dave's wonderful prose is inimitable. This final paragraph is a poor attempt to match it. In his professional life Dave was always inspired and ready to provide leadership. Always totally responsible in deploying concepts, methods and evidence and very responsible on truth. And he was an exceptional, imaginative and innovative scientist. He was technically capable and at the same time well able to handle the moments when even more leadership was needed. He spoke truth to all sorts of power. No deadline was missed. No sentence misunderstood. No client disappointed. Few fools were suffered. But Dave knew the ones to ignore, sometimes punish and those to help. Socially he could be very direct and a bit macho. His directness and irascibility were always forgiven, accommodated and finally appreciated. He was famously not good on the work-life balance. We were fortunate that his stamina was super-human. But he was too ready to outdo the ultimate test. One wishes that he had been as responsible about his health as he was about his search for truth and justice. Those who loved him and those who loved to work with him would have him with us still.



# Preface: A Full and Productive Life

*Stephen McCaffrey, John Murray, Melvin Woodhouse*

This book honors the memory and legacy of Dr. David J.H. Phillips, an extraordinary scientist, consultant, mentor and friend with whom the editors and contributors to the volume had the pleasure to work and interact during a life that was cut short much too early.

Dave Phillips was a remarkable man who lived life to the utmost. He was a scientist of exceptional quality, dedicated to the practical study of aquatic environments, be they marine, freshwater or virtual. His meticulously researched work, exemplified in his many publications and also in reports prepared for governments and other clients, provides a rich trove for future scientific studies in the area.

Dave was always “larger than life”—a man who was hard to keep up with—yet through his scientific talents and ability to synthesize material from different fields in a readily understandable way, he created a depth of understanding seldom matched by others. All who knew Dave and his work deeply mourn his sudden and unexpected loss. His untimely death is also a significant loss for those who rely on transboundary fresh waters, people who will never benefit from the innovative solutions that Dave might have come up with had he lived longer.

In the book we trace the arc of Dave’s working life, beginning in Australia, passing through Hong Kong, San Francisco and the UK, and ending in Africa. These were, however, only places Dave actually lived. The list of countries or regions in which he worked is much longer (as is seen in the excerpts and essays to follow, plus in Dave’s CV in Appendix A) and includes Europe, the Middle East and South Asia.

The substantive focus of Dave’s work also evolved, from an early focus on marine biology and pollution monitoring to an expanded range of issues and tasks later in his career, including everything from environmental issues in privatization and the physical impact of mineral extraction policies, to the sharing of transboundary fresh water resources.

The same pattern of change can be seen in the institutional settings in which Dave worked. He built his knowledge and experience as an employee working in governmental agencies and non-profit organizations, transitioning after a little more than twelve years to work as a senior scientist for corporate environmental companies for almost six years, and finally becoming a freelance consultant for the last two decades, where he could go after jobs that

challenged him, accept contracts that fit his standards, and manage his own work and travel schedule.

The present volume attempts to capture these paths of Dave Phillip's life through presenting both Dave's own published words and the thoughts and reflections of his colleagues. Part I looks at the early years of Dave's career, largely spent researching marine pollution issues in Australia, Hong Kong and San Francisco.

Part II follows Dave's work for consulting concerns in England and also covers his transition from working for others to self-employment as a free-lance consultant. It is in this period that Dave became more deeply involved with highly significant issues in the field of transboundary waters, such as international water law and benefit sharing among Nile Basin countries.

Part III focuses on Dave's work in the Middle East, in particular for the Palestinians, for whom he helped craft a strategy for Permanent Status Negotiations with Israel on water and developed proposed solutions for water sharing in the region as a whole. Part III also covers Dave's contributions to thinking about benefit sharing as a means of conflict prevention and dealing with power asymmetry and hegemony as well as achieving equity in water sharing for Palestinians, especially in Gaza.

Part IV chronicles Dave's long-running work for Adam Smith International, a British international development firm, on a variety of issues and in multiple locations. It also provides insight into Dave's work on water-sharing issues in Southern Africa, where most countries share freshwater resources with others, and looks at Dave's work on operationalizing equitable and reasonable utilization of shared freshwater resources. It touches on what Dave was working on during his final months, challenges presented by attempts to understand and manage the links between basic national interests, freshwater resources, mineral extraction, energy production and food security.

True to the legacy of Dave Phillips, this book is about water in its many forms—blue, green, grey and virtual—and the impact these water resources have in our lives, on our lifestyles, and for our future. The excerpts and essays describe what scientists and policy analysts have been and are working on to provide for a more equitable and sustainable environment. This volume identifies those areas of special interest:

- identifying and exposing the disquieting truth about levels of contamination in our seas, estuaries and rivers, and how they can be managed for the benefit of the ecosystem as well as human health,
- bringing to light and clearly describing the inequities that more powerful riparian states impose on the less powerful in a basin, and what steps might be taken to develop a positive-sum outcome (PSO) for all concerned,

- generating an easily used and practical formula for analysing transboundary waters so that riparian states can be encouraged to engage in cooperation, sharing and expanding benefits for everyone in the basin, and
- working diligently to find innovative ways to ensure that water, whether blue, green, grey or virtual, is strategically managed to produce sufficient energy and food effectively for all peoples, especially the poor.

The writings—and Dave’s legacy—point readers toward seeing the same data from new perspectives, seeking different data from related and interlinked yet unexplored fields, and recognizing opportunities to contribute to making the world’s environment better for all.

It is perhaps obvious even from this superficial overview of what is to come that Dave Phillips had enormous capacity to deal with a wide range of issues—from the highly technical to the almost entirely conceptual. He was in many ways an academic without appointment; he published more material, and of consistently higher quality, than many present-day full time academics.

But Dave would have chafed under the strictures of academic life just as he chafed under the conditions of employment earlier in his career. It is abundantly clear in retrospect that he served humanity and the intellectual communities in his chosen fields better and more effectively in his own, inimitable, free-lance way than he would have as a conventional academic or employee. He did things because he wanted to do them, not because someone wanted him to.

The products of Dave’s life are resources we editors felt should be preserved for posterity. Perhaps more importantly, we felt that they should be pulled together for those working in the fields to which Dave contributed and for applied scientists in general. In addition, this volume attempts to document the mechanics and style of one who was highly successful in the practical application of science in the real world. The way in which Dave approached complex challenges was both unique and successful. In sum, we expect that at least some of Dave Phillips’ remarkable qualities will emerge for the reader. They are touched upon in a number of his colleagues’ essays, but could never be captured entirely.

This book offers readers a front-row view of the personal abilities and habits, analytic genius, innovative ideas and proposals, incredible frankness and honesty, indestructible spirit, firm commitment to equity and justice, and supportive relationships of David Phillips, a truly gifted scientist and activist.

## Notes on Contributors

*J.A. (Tony) Allan, Ph.D.*

Professor Allan heads the London Water Research Group at King's College London and SOAS. He specialises in the analysis of water resources in semi-arid regions and on the role of global systems in ameliorating local and regional water deficits. He pointed out that the water short economies achieve water and food security not on the basis of their own water endowments but by importing water intensive food commodities. His analysis of the critical situation of the water resources of the Middle East is set out in *The Middle East water question: hydro politics and the global economy* [2001]. His most recent book is *Virtual water: tackling the threat to the planet's most precious resource* [2011]. In 2008 he was awarded the Stockholm Water Prize in recognition of his contribution to water science and water policy.

*Adam Smith International (ASI) Staff and Advisers*

ASI is an international development agency based in London, England, and has projects throughout the world. Dave Phillips, as senior environmental consultant, was contracted often by ASI for over fifteen years in many countries in Southeast Asia, the Middle East and Africa. The following colleagues and advisers on several ASI projects contributed to Essay 7.1.

*Elliott Cappell*, ASI Project Director

*Lois Hooge*, ASI Adviser

*Laura Hopkins*, ASI Project Director

*Andrew Kuhn*, ASI Director, Government Reform

*Sher Parwiz Noorzad*, World Bank Adviser, Afghan Ministry of Mines and Petroleum

*Catherine Ogden*, ASI Project Director

*Shaddad Attili, Ph.D.*

Former Palestinian Minister of Water and Head of the Palestinian Water Authority (PWA) from 2008 to 2014, during which he championed water law reform in the Palestinian Authority, enhanced efficient and effective PWA services for Palestinian residents, and strongly defended Palestinian water rights against oppressive actions by the Israeli occupation. Before that, Shaddad served eight years as principal policy adviser on water issues for the PLO's Negotiation Support Unit (NSU). Currently Shaddad is lead Palestinian negotiator for water (if/when permanent status negotiations resume with Israel) and an international activist and consultant in the fields of environment, equitable

water rights, and responsible water and wastewater facilities development. In honor of his many contributions and accomplishments, Dr. Shaddad Attili was awarded France's highest decoration, the Legion d'Honneur, by French President Francois Hollande in 2013.

*Stephen Boyall, M.Sc. Water Security & International Development*

Senior consultant with Adam Smith International. A research analyst specialising in using Virtual Water Trade and Water Footprinting to map the Water Security risks and opportunities inherent in the Agricultural Commodities Trade, and the relationships between all stakeholders within the value and supply chain, including suppliers, consumers, environment, Government and commercial enterprise.

*Natasha Carmi, M.Sc.*

Ms. Carmi, an engineer by education, holds a Master's Degree in Hydrology for Environmental Management from Imperial College. She is currently Policy Advisor on Water & Environment to the Palestinian Negotiations Support Project (PNSP) and has been a "water team" member on the PNSP for the past six years. Ms. Carmi has worked with water resources and environmental challenges in the Middle East for the past 20 years. She serves frequently as a faculty member for conferences and workshops dealing with transboundary water resources, presenting the perspective of a country in which all of its water resources are transboundary, where water is a core political issue and international water law is a necessary framework for resolving conflicts and identifying opportunities and solutions.

*Jay A. Davis, Ph.D.*

After obtaining a Master's degree in Environmental Management from Duke University in 1986, Jay Davis joined the Aquatic Habitat Institute (AHI) and shortly thereafter began working with Dave Phillips. After an absence to work on his Ph.D., Dr. Davis returned to AHI in 1995, which had transformed to become the San Francisco Estuary Institute (SFEI). Dr. Davis received his Ph.D. in Ecology at the University of California, Davis in 1997. Dr. Davis is Lead Scientist of the Regional Monitoring Program for Water Quality in San Francisco Bay, a comprehensive water quality monitoring program. He is also lead scientist for bioaccumulation element of the Surface Water Ambient Monitoring Program, which conducts statewide surveys of contaminants in aquatic food webs. Dr. Davis is also the co-director of SFEI's Clean Water Program. His work primarily focuses on monitoring the accumulation of persistent contaminants in aquatic food webs of the Bay, its watershed, and aquatic ecosystems in California.

*Anders Jägerskog, Ph.D.*

Counselor for Regional Water issues in the Middle East and North Africa (MENA) region at the Embassy of Sweden in Amman, Jordan. He is currently on leave of absence from his post as Director, Knowledge Services, at the Stockholm International Water Institute (SIWI), where he headed the Transboundary Water Management Unit. The views he expresses in this volume do not necessarily reflect the views of the Swedish International Development Cooperation Agency (Sida) nor the Swedish Government.

*Rob Jordan*

A Chartered Civil Engineer. Following an early career in design and construction of transport and public health infrastructure, Rob became involved in environmental policy strategy and regulation with the Hong Kong Government, after which, he worked in a consultancy role on projects in the Far East, the Middle East and Europe. Rob is now retired and lives in Devon, England.

*Elizabeth J. Kistin Keller, Ph.D.*

Born and raised in New Mexico, Elizabeth Kistin Keller received her B.A. in Political Science and Latin American Studies at the University of North Carolina-Chapel Hill and her Masters and PhD in International Development Studies at Oxford University. Elizabeth spent several years working on economic development and natural resource governance in North America, Southern Africa and South and South East Asia before returning to New Mexico. She currently works in the Systems Analysis Department at Sandia National Laboratories where she focuses on global security, policy analytics and strategic foresight. She also serves as an adjunct professor at the University of New Mexico and an affiliate of the Utton Transboundary Resources Center.

*Stephanie Koury, J.D.*

Currently the Principal Political Affairs Officer for the United Nations Special Envoy for Syria. Previously she worked for the UN in Yemen, Libya and Iraq on issues of transition, including supporting elections and constitution drafting process; political participation and political isolation legislation; power-sharing, and land disputes in sectarian or ethnic based communities. Prior to joining the UN, she worked in Palestine for 8 years as legal adviser to the Palestinian negotiation team and with NGOs in community development and in advocacy for enforcement of international humanitarian law.

*Stephen C. McCaffrey, Distinguished Professor of Law*

Professor McCaffrey teaches at the University of the Pacific, McGeorge School of Law in Sacramento, California. He served two terms on the International

Law Commission, chaired that body for one of its sessions, and was the Commission's special rapporteur on international watercourses. Professor McCaffrey is a member of the Implementation Committee of the UNECE Water Convention. He has served as counsel to States in cases before the International Court of Justice and the Permanent Court of Arbitration and has published widely in the field.

*William Morrison*

Executive Chairman of Adam Smith International (ASI), having risen through the ranks after 20 years with the organisation. His first love was the political economy of South Asia where he has worked extensively. A more recent focus has been helping to set up and support central government offices in the Middle East and Africa. A bon vivant and keen cricketer, William lives in Sussex.

*John S. Murray, J.D.*

Senior Consultant since 1999 with CMPartners, a conflict management firm, where he specializes in negotiation skills training and advice in transboundary water conflict situations. Recent clients include the World Bank, USAID and DfID, on projects that involved Palestine, Afghanistan, Kashmir, Kyrgyzstan, Ethiopia and Uganda, among others. Before retiring from academic life in 2005, he served as professor of practice at the Maxwell School and the American University in Cairo, president of the Conflict Clinic at George Mason University, and full professor of law at Texas Tech Law School.

*Bruce J. Richardson, Dip. Tchg., B.Sc.(Hons), Ph.D.*

Studied for his BSc (Hons) in Botany and Microbiology at the University of Canterbury, New Zealand, and also qualified as a Secondary Teacher at the Christchurch Teachers' College before moving to Melbourne, Australia, in 1976 to undertake a Ph.D. program at La Trobe University. Upon completion of his doctorate, Bruce worked for the Marine Science Laboratories of the Victorian Department of Conservation, Forests and Lands as a marine scientist. In 1985, he took up an academic position at Deakin University, Geelong, where he remained until 1995, when he was appointed Associate Professor in the Department of Biology and Chemistry at City University of Hong Kong. He is currently the "Baseline" Editor of the international journal *Marine Pollution Bulletin*. His research interests include the design of monitoring programs for estuarine and marine environments; the use of living organisms as monitors of environmental contamination; and monitoring the effects of trace organic contaminants in aquatic environments. Bruce retired from academia in 2013, and currently lives in Menzies Creek, Victoria, Australia.

*Yusaf Samiullah, OBE, CEng, FICE, CBiol, MIBiol, MCIWEM, MIEMA*

Director of Y&D International Consulting Ltd, has 35 years professional experience in international development and has worked in over 30 countries worldwide, from the USA to China. He has a PhD in Ecotoxicology and Environmental Science and is a Fellow of the UK Institution of Civil Engineers. He has been an Academic in the University of London sponsored by UNEP and WHO, a private sector environmental and engineering practitioner and for 15 years worked for the UK Department for International Development (DFID). He worked with David Phillips directly between 1989 and 1994 and then intermittently as a professional international colleague and friend over the next two decades. Dr. Samiullah now provides strategic international development advice through his own consultancy company.

*Michael Talhami, MA Environment and Development, B.Sc. in Environmental Engineering*

Joined the ICRC in June 2011 to support ICRC's Water and Habitat activities in the region, which aim to ensure that victims of armed conflict have access to water, sanitation and a sustainable living environment. Michael is currently ICRC Regional Water & Habitat Advisor (Near and Middle East) and provides informed support aimed at helping to orient ICRC's water and habitat programmes in Syria, Iraq, Lebanon, Jordan, Yemen and the occupied Palestinian territories. Prior to starting with the ICRC, Michael worked for five years as a policy advisor in the Middle East with such organizations as Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), United Nations Development Programme (UNDP), as well as international consultancy firms. His primary focus during this time was on water diplomacy and governance with responsibilities covering negotiation support, institutional assessments, technical and policy support, and capacity building. Before that, he worked for seven years as an environmental engineer in Canada, U.S., Oceania, and parts of Eastern Asia, where he managed pipeline leak detection projects and conducted environmental site assessments. Michael holds a Masters in Environment and Development from King's College London specializing in water resources and water policy with a regional focus on the Middle East.

*Anthony Turton, D.Phil.*

Former intelligence operator turned peace-maker and scientist, Anthony now holds two professorships in the Centre for Environmental Management at the University of Free State and in groundwater studies at the University of Western Cape. Having been directly involved as an intelligence operator in the Cold War in Southern Africa, and later in the peace process that ended



the civil war in Mozambique; the war of liberation in Namibia and Angola; and the negotiated transition to peace in South Africa, he has direct personal experience of strategic level drivers acting across sovereign borders. He has first-hand experience of securitization and desecuritization dynamics as they apply to water resources. Today he straddles the academic and the commercial world through his work on water as a boardroom risk and opportunity. He is the director of various companies and serves on the editorial board of international scientific journals.

*Melvin Woodhouse, B.Sc., M.Sc.(eng), LL.M*

Is currently an independent consultant with over 30 years of global practical experience in the fields of water resources engineering, management, policy and law. He has lived for 20 years in Africa and has consulted globally for a range of small and large organisations and programmes. His earlier work began with water supply construction and development and progressed to water resources management, institutional development and policy. He has subsequently led the drafting of water law in a number of countries and worked on water rights reform as well as the interface between law and practical interventions at local, national and transboundary levels. His current research interests include strategic water resource management.

*Mark Zeitoun, Ph.D.*

Co-founder of the Water Security Research Centre, and Professor of Water Security and Policy at the School of International Development, University of East Anglia. His research investigates three streams: a) development of theory and case-based research on international transboundary water management; b) examination of the influence of armed conflict on water and other essential urban services, and c) water security and management in development, post-conflict, and conflict contexts. This stems from his work as a humanitarian-aid water engineer, and advisor on water security policy and transboundary water negotiations throughout the Middle East and Africa. He has a B.Eng in civil engineering and an MSc in environmental engineering from McGill University, and a PhD in human geography from King's College London.