

A photograph of a long, dimly lit underground tunnel. The tunnel has a series of tracks on the floor and overhead pipes with lights. The walls are rough and rocky. The lighting is warm and focused on the tracks, creating a sense of depth and perspective.

MODERN MANAGEMENT IN THE GLOBAL MINING INDUSTRY

ROBIN G. ADAMS

ASSISTED BY

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assisted by Christopher L. Gilbert and Christopher G. Stobart



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About the Authors

Robin G. Adams was born in England in 1946 but was brought up in Bulawayo, now in Zimbabwe. He studied at Oxford where he gained a double first in PPE and was Treasurer of the Oxford Union. He spent most of his adult life working as a Minerals Economist with Citibank, his own company Resource Strategies and the CRU Group both in England and the



United States. His work included consulting to mining companies, to fabricating and manufacturing companies as well as to international organizations. He also helped to facilitate investment agreements between host governments and multinational companies, resolve commercial disputes between companies and governments, and was also called upon to provide expert witness testimony on environmental issues related to mining and processing. He died in 2014.

Christopher L. Gilbert is Adjunct Professor at the Bologna Center of the Johns Hopkins School of Advanced International Studies. He previously held professorial positions in London, Amsterdam and Trento. He is a Non-Executive Director of CRU International Ltd.

Christopher G. Stobart worked in the publishing industry and then as a financial journalist before joining CRU International in 1976. He has worked for that company in a variety of capacities since that date.

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Foreword

Robin Adams was an exceptional man and an inspiring force. Our paths first crossed in the 1970s when Robin came to join CRU back in its fledgling days. One could not help being struck by this tall impressive fellow. He had a top first from Oxford in PPE, was self-taught in advanced statistics and maths, and widely read in history, politics and sociology. One of his great gifts was his ability to bring insight and enrichment from many other subjects to his application of economics.

This interdisciplinary approach is in evidence throughout the book you hold in your hand. It forms an introduction to the approach Robin and CRU adopted in different types of assignments; how we applied our methodologies to gain understanding and use the results to help clients manage risks more effectively and better assess likely developments and future trends. Robin was also keenly interested in the forces that engender change in society, industries and markets, both national and local.

CRU was established in 1969 and was the first research company to specialise in metals, minerals and mining, advising governments and corporates active in these sectors. Much of that advice came from applying principles of economic analysis to deal with business challenges that are typical to natural resource industries. In the extractive industries, for example, issues can arise from the immovability of assets such as mines or reserves, or the occurrence of rent and consequently the generation of super-normal profits. Other issues include the susceptibility of primary commodities to market cycles, severe short-term price volatility and, not least, to the impact of innovation and substitution in changing demand for raw materials offering similar properties.

Robin spent some 25 years with CRU. After an initial period, he left to work for Chase Manhattan Bank (now part of JP Morgan) before establishing his own company in Pennsylvania, Resource Strategies, which CRU acquired in 1995 as part of its expansion in North America.

Robin made his distinctive presence felt across the spectrum of CRU's activities. Initially the focus was on non-ferrous industries such as copper

and aluminium but, by the time Robin re-joined, CRU had expanded its coverage to the steel complex, energy industries and agricultural sectors. As our client base grew so our challenges became more diverse. Robin played a leading role in that expansion process and helped to develop new methodologies that had the breadth of scope and sophistication needed for our new markets. Robin for instance pioneered applying systematic econometric modelling to competition between materials in electricity, transport, construction and packaging markets. He was also instrumental in developing what we called CRU's Compass methodology and applying it to long-term forecasting. Similarly, he was involved in improving the company's risk-adjustment methodologies and its value-based costing system for competitive analysis as between mining operations. Robin also led CRU in developing its value-in-use models for negotiating iron-ore and metallurgical coal off-take agreements between western producers and Chinese counterparties.

He particularly enjoyed applying analytical economics to resolve disputes between parties active in natural resources industries. He would facilitate negotiations by identifying what he called Bargaining Zones to achieve win-win outcomes. Robin would frequently be retained to help resolve fiscal differences between host governments and foreign investors in connection with existing or planned mining and infrastructure developments, the merits of more downstream processing, and on matters relating to transfer pricing.

The book draws on all this work, focussing particularly on the characteristics of primary commodity markets and the political economy of extractive industries. Robin puts great emphasis on the range of talents that a mining company executive needs to be able to deploy if he or she is to deal with the complex issues that mining throws up. These can be geological, metallurgical, management, economic, political, social, environmental, regulatory and financial. He states that mining companies need to be led by Renaissance men and women. There is no doubt that Robin Adams was such a person.

Robin was greatly respected and admired by his colleagues. All who worked with him gained from the experience and benefitted from the thoughtful and considerate way he interacted with others. He is remembered as a person who was generous with his time and enjoyed sharing with others what he knew. He was a great mentor both in the office and when it came to outdoor activities, especially deep-snow skiing which he did frequently and expertly in the mountains near CRU's offices just south of Seattle. CRU's US West Coast offices were located on Whidbey Island next to where Robin and his wife Judith, a writer and poet, chose to

build their home. There was a deep and fulfilled marriage that thrived on the complementary combination of their talents and strengths.

Robin often took it upon himself to act as advisor to parties who had been disadvantaged by contamination or pollution resulting from mining and processing operations. In one such case his clients, mainly bondholders and environmental agencies, had been defrauded into bearing heavy costs which should rightfully have been borne by the shareholders. Only two weeks before he died, in spite of his deteriorating health, Robin made an extraordinary effort to give a deposition which was crucial to the cause he felt so strongly about. (This book concludes with one of Judith's poems, reprinted with her permission, that memorialises Robin's deposition.) As a result of the deposition the shareholders were found guilty and required to pay out over \$215 million. They were refused appeal to the US Supreme Court.

To me personally, Robin was a close colleague and greatly valued friend. He was a source of sound and impartial advice and a person I valued for his warmth and integrity as much as for his brilliance. Even today at CRU one of our key steps in resolving analytical problems is to ask: "How would Robin have approached this?"

Well, this book provides some answers.

Robert A. Perlman
Chairman, CRU Group

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Acknowledgements

It is a privilege for me, as Robin's wife, to write this acknowledgment on Robin's behalf. I know Robin was immensely grateful for all the help he received while writing this book. I know that he would wish to thank also those who helped him during his entire career in the field of mineral economics which was, in fact, much wider than the material he covers in this book. He met many interesting people who cared about the industry and the ethics of working in the mining industry.

Robin started to write this book after he received his terminal diagnosis of a period of only a few months. He worked on the text while undergoing treatment and the book was completed the day before he died. The hospice overseeing his care administered Ritalin to enable him to finish. Robin was keen to pass on what he had learned during his career which he told me again and again he found fascinating, rewarding and always interesting. It would have distressed him not to acknowledge all those who helped him get this book to print and, as his wife, I am deeply honored to write this on his behalf.

Robin would first have wished to thank Linda Jennings, his remarkable assistant, who dealt with the management of the office. Linda had inexhaustible patience and exercised a calming effect on Robin who at times felt so strongly about things that he could almost levitate. He would also have particularly wanted to thank Stephanie Ryan, a dear friend of ours, who despite having plenty of her own work to do, sat by his bed during the last days taking dictation on her computer as his voice became weak and less distinct. I am not sure he knew who would take on the Herculean task of editing his book but he would have been both thrilled and relieved that two brilliant colleagues would make sure it was finished and in a publishable form. Thanks then to Christopher Gilbert, who was at Oxford with him, and Christopher Stobart, who worked with Robin for a very long time. This book would not be with us if it were not for them. Most importantly, he would like to thank his long-time friend, also his boss, Robert Perlman, who was so much more than a boss and a colleague but a

true friend. They had an exceptional bond for they both felt deeply about ethics both in the work place and in their lives. They shared a special relationship both at work and as friends. I also know that Robin would like to thank Taylor Shively who came to work for Robin out of graduate school. Robin would bounce his ideas off Taylor and get reliable feedback. He would also have thanked the young people he mentored from time to time. The promise they showed gave him hope for the future of the mining industry. Robin would also thank the liberal community on Whidbey Island who surrounded him with encouragement, accepted his eccentricities and challenged his ideas.

Lastly, I know deeply that he would have thanked me for putting up with his sometimes very late arrival home, his booming voice waking me from sleep when he enthusiastically announced his latest idea and for loving him in the way that I did; his elder daughter, Laura, who challenged every idea he had, and was like him in her debating acuity; his son William who, unlike his father, was less of a student but much more of a party guy, who inherited his father's free spirit and occupies himself in saving lives jumping out of a helicopter on a rescue team; and lastly his younger daughter, Rachel, who taught him about so many things including flamenco dancing, how to handle his emotional Portuguese heritage, and who for a while worked for him. One day Rachel reported to me "Mum, dad is an absolute power house at work. I don't how anyone keeps up with him." Robin was proud of his children especially because they, as Carl Jung once said, "lived their parents' un-lived lives"!

I know I have missed out many people in the industry who influenced him, taught him and who touched him over the years. I know he would have wanted to thank the publishers for taking on his book so that his thoughts did not go unheard into his grave on the hill on Whidbey.

Judith Adams

Praise for Modern Management in the Global Mining Industry:

‘Robin Adams was one of the great mineral economists of our times. Drawing on his many years as an industry consultant and his strong knowledge of economics and business administration, Robin has, with the help of Christopher Gilbert and Christopher Stobart, given us a book that provides a wealth of information on mineral commodity markets. Anyone striving to understand the behavior of mineral commodity markets and gain an insight into the mining industry should read this book’.

John E. Tilton, Emeritus Professor, Colorado School of Mines, USA

‘This book is a must read if you are planning a career in the minerals industry. Its author, Robin G Adams, with more than 20 years’ experience at CRU, one of the world’s most prominent consulting firms in the field, exhibits mastery in disentangling the intricacies of this important industry to the lay reader. Complex issues like metal price formation, measurement of production costs, or the myths of resource depletion are straightened out so as to be accessible even to my grandkids, yet with no loss of realism. I am full of admiration’.

Marian Radetzki, Professor of Economics, Luleå University of Technology, Sweden

‘Robin understood the mining industry better than most of those working in it. In these pages, he tells, with characteristic clarity and vigour, of his personal journey to uncover the economics of the mining industry, to establish where it differs from other industries, and to develop the intellectual tools required to pinpoint where value can be found and how it can be extracted in an effective and responsible fashion’.

Dr David Humphreys, Former Chief Economist of Rio Tinto and Norilsk Nickel