

Jim Wark
Richard Woldendorp
Karlheinz Spitz
John Trudinger

"A feast for the eye for anyone interested in mining, landscapes and photography. Perfectly suited as an information source for primary and secondary school education purposes as well."



The World of Mining

"If this was a natural feature and not man-made, people would travel from all over the world just to look at it"

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A BALKEMA BOOK





Shaded valleys are evidence of the results of an intense summer snowmelt. Mining and processing plants are scattered throughout the mountainous terrain.

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The World of Mining

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The World of Mining

Jim Wark
Richard Woldendorp
Karlheinz Spitz
John Trudinger

The idea for this book stemmed from a conversation between John Trudinger, Jim Wark, a professional photographer, and Jim's son John Wark. Admiring one of Jim's images of a mine in the Arizona desert, John Wark observed **"If this was a natural feature and not man-made, people would travel from all over the world just to look at it."**

"This book shows that mining and associated activities can be impressive, attractive, and even spectacular."

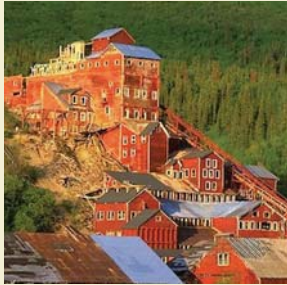
There is no single photographic book dedicated to the fascinating world of mining. This further inspired Karlheinz Spitz and John Trudinger, the authors of the definitive text book 'Mining and the Environment - From Ore to Metal', published by Taylor & Francis in 2008, to engage in producing this coffee table book 'The World of Mining', joined in this endeavor by two internationally renowned, award-winning photographers.

"A feast for the eye for anyone interested in mining, landscapes and photography. Perfectly suited as an information source for primary and secondary school education purposes as well."

The book also benefits significantly from the active support of the Snowden Group, an Australia-based worldwide consultancy, as it can draw from thousands of outstanding photographs submitted to the annual Snowden Photography Competition (www.snowdengroup.com).

The main purpose of the book is to show that mining and associated activities can be impressive, attractive, and even spectacular. The authors have included photographs which illustrate most if not all aspects of mining and mineral processing, in all its variety, and from different environments throughout the world. The book has 300 pages, mainly photographs with text only as necessary to identify and explain the images.

Chapters Outline



The History of Men and Mines

This Chapter illustrates the colorful history of mining and its importance to the development of civilization as we know it. Dating from the Stone Age, mining was among the earliest of man's activities and has been a feature of almost all human societies since then. Mined materials are exceeded in

importance only by food and water. Without mining, we would have remained in the Stone Age.

Without mining, we would also be unable to support the needs of an ever-increasing human population. Until late in the twentieth century, and in many countries to this day, a mine was left without any special after-care once mining became uneconomic or once the ore body was depleted. Much of

what is found at a former mine site can be divided into two general categories: remains related to mining processes and remains related to habitation at the mine site.

On occasion, these remains are in form of ghost towns – abandoned settlements associated with a bygone mining era. Some historical mine sites have become tourist attractions; others are now defined as cultural heritage sites.



Traditional Mining

Traditional mining is defined as small-scale mineral extraction, using mainly manual methods, carried out by individuals or small family groups. The main products of traditional or artisanal mining are gold, silver (usually as a by-product), tin and gemstones, although coal is also produced by small-scale miners in China and Indonesia. This Chapter illustrates

two contrasting categories of artisanal mining: the 'Gold rush', which is a relatively short term phenomenon, characterized by large influxes of mainly unskilled, transient people hoping to 'strike it lucky'; and traditional small-scale mining by skilled practitioners, using methods adapted to local conditions, usually operating within an established mineral field, sometimes for generations.



Corporate Mining

This Chapter illustrates the wide range of activities in a mining project, from exploration to mine closure. Many years of exploration may be required for a new orebody to be discovered, and once discovered, it commonly takes a decade or more before production commences. Once production ceases the mine and its facilities are either placed on 'care and maintenance' pending recommencement of ope-

rations, or the Mine Closure Plan is implemented. Mine closure activities may themselves continue for many more years.

Exploration may involve a range of geological, geophysical and geochemical studies, selection of which will depend on the geological setting and on the anticipated nature of mineralization. Construction is the stage when the first significant surface disturbance occurs. Ideally, mining and associated processing operations

continue until all the identified ore has been extracted. Accordingly, the duration of operations varies widely from one project to another. Some small gold mining projects are completed in less than one year. On the other hand, some projects continue for more than 100 years. The Rio Tinto mining area in Spain has supported mining operations intermittently for more than 3000 years and gave rise to one of the largest mining companies – the Rio Tinto Group.



Mines Vary Widely

Unlike traditional mining which has changed little over the centuries, corporate mining has been revolutionized over the past 50 years. Mines are now characterized by huge investments, economies of scale made possible by development of some of the world's largest machines, the application of highly advanced

technologies, and work-forces that include a wide variety of semi-skilled, skilled and highly specialized occupations. There are many different types of mines, each with their own characteristic such as:

- ▶ Open Pit or Open Cut Mines ;
- ▶ Open Cast Mines represent a variant of Open Pit Mines;
- ▶ Underground Mines;
- ▶ Placer Mines;

- ▶ Solar Evaporation ponds;

This chapter, however, also acknowledges that not all metals are produced from mines. The term 'urban mine' has been coined to reflect the increasing importance of metal recycling. Recycling, other than for gold a relatively recent development, is the most common way of extending the useful life of mined products.



Mining in Different Landscapes

This Chapter illustrates that mining activities take place throughout the world with the notable exception of Antarctica. Mining takes place under water, at the top of mountains, and in all terrains between. Climatic conditions also vary widely. Mines are found in the dry and hot areas of Africa and Australia, on the wet tropical islands of Indonesia or the Philippines, and in

the frozen wilderness of Canada or Russia. Mining also competes with other land uses that form our landscapes: housing, farming, transportation, forests, conservation and wilderness areas are some examples. Mining has the potential to interact with all these activities, and many aspects of the host environment influence mining.

In mining, access to the ore body is important. Sometimes access only means developing an earth road over

flat terrain without notable vegetation. Sometimes developing mine access requires engineering skills comparable to those required for mining: rivers are diverted and swampy areas are crossed, tunnels penetrate beneath unstable slopes, heavy machinery and equipment negotiate steep and hostile mountain ranges, or, as is the case in hard-to-reach Northern Canada, sub-zero conditions and permafrost preclude the use of conventional vehicles and equipment.



Minescapes

Notwithstanding a hundred-fold increase in the rate of mine production over the past century, the total area affected by mining remains surprisingly small. Mining affects less than one hundredth of one percent of the Earth's land surface, much less than other important human activities, such as agriculture (which affects about 60%

of the land surface), followed by water storage, urbanization and transportation.

Yet, when mining occurs, it changes the land surface and possibly the landscape, often irreversibly. Mine waste disposal create new mountains; open pit mining leaves scars on the Earth' surface, some of them visible from space.





Miners and Their Machines

Strange and wonderful machines have been invented to access, excavate, process and transport ores and mineral products more efficiently and safely. As mines have become larger and deeper, larger, more specialised and increasingly sophisticated machines have been developed.

Miners have always been innovative when it comes to the tools that make their jobs easier. Historically, miners used simple but ingenious techniques to extract ores and liberate their valuable constituents. Modern mining has continued this tradition with the assistance of the newest technologies. Modern mining equipment is also more comfortable and easier to handle.



Mining Communities

As with the mines on which they depend, mining communities vary widely in size and nature, as illustrated in this final chapter. At one extreme are 'shanty towns' which, to this day, are characteristic of Gold Rushes. Also at the low end are temporary, demountable mining camps erected to accommodate the workforce of small, short-lived mining projects. In contrast are large cities such as Johannesburg that have developed over a long period

to meet the needs of multiple large mining operations. Some towns and cities, originally founded on mining, have reinvented themselves after mining ceased. Whereas previously, mines had been developed close to existing communities, the advent of the steam engine enabled the transportation of mined products by land and sea to more distant markets. As a result, today's mines are created in areas where coal and metallic ores are accessible, and new communities are created to sup-

port these mines. People attracted to mining communities are typically optimistic, adventurous and resourceful. More often than not, mining communities are multi-cultural, with workers from many parts of the globe. And, as more and more of these communities are being established in remote areas and developing countries, they are increasingly being populated by Indigenous Peoples. Accordingly, mining communities continue to be colorful and vibrant.

Authors

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Richard Woldendorp

named 3 times photographer of the year in Australia, specializes in aerial images. Richard holds photo exhibitions in Australia and abroad, and has published 18 photo books. Examples of his work can be seen at: www.richardwoldendorp.com.

Karlheinz Spitz

is an international consultant and co-author of two text books on Ground Water Modeling and Mining and the Environment – From Ore to Metal (www.miningandtheenvironment.com). He has worked in Europe, Canada, Australia, and close to 20 years in Asia.

John Trudinger

initially trained as a geologist, is an international environmental consultant with more than 45 years of experience in Australia, North America and Asia. Also co-author of "Mining and the Environment – From Ore to Metal", his particular interest is the management of mine wastes in the mountainous wet tropics.

The World of Mining



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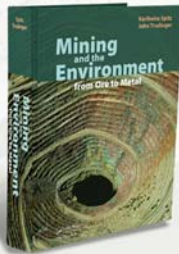
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March 2012
BALI, INDONESIA

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- Mine waste management development planning
- Mine investment, communities, and development



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