

Mining God's Way

by Terry Garde



Mining is often considered to be one of the least ethical industries, where pollution and exploitation of the local poor are rife. Terry Garde, himself a mining engineer, outlines an alternative. It is a successful and increasingly acceptable way of mining, based on biblical principles and responsibility before God.

Working in minerals is a tough business, and trying to think about it biblically is even tougher! There are at least four major theological issues: questions about the environmental impact in removing a non-renewable resource; the ethics of mining as a business; artisanal mining and poverty alleviation; and the social impact of sudden wealth on traditional communities. According to the *Breaking New Ground* report on Mining, Minerals and Sustainable Development (referred to from now onwards as MMSD), the minerals industry, which consists of mining, smelting, refining, use and disposal of minerals, faces some of the most difficult challenges of any industrial sector and is currently distrusted by many people. It has come under tremendous pressure to improve its social, developmental and environmental performance. The litany of concerns is long, not the least of which is the media portrayal that minerals can be a 'resource curse'. This is described as the case when the oil or mineral wealth of a nation either fails to improve or even reduces the population's standard of living due to the appropriation of this wealth into the hands of others¹.

Introduction

Whilst managing a large ferrochrome smelter and related mines in Zimbabwe, I tried to help a group of small-scale miners who were supplying us with chrome ore. I started by purchasing appropriate mining

machinery, designing and managing the manufacture of new equipment, and applying known technology in novel ways. I also organised technical and life skills training for the miners, and planted a 'Miner's Church' in a nearby village.

As a result of these experiences and in an attempt to change the profile of the mining industry from 'curse' to 'blessing', as God intends², I initiated the 'Four Circles' model below. Discussions with Brian Oldreive of 'Foundations for Farming' in Harare (which deals with peasant agriculture) further developed the model:

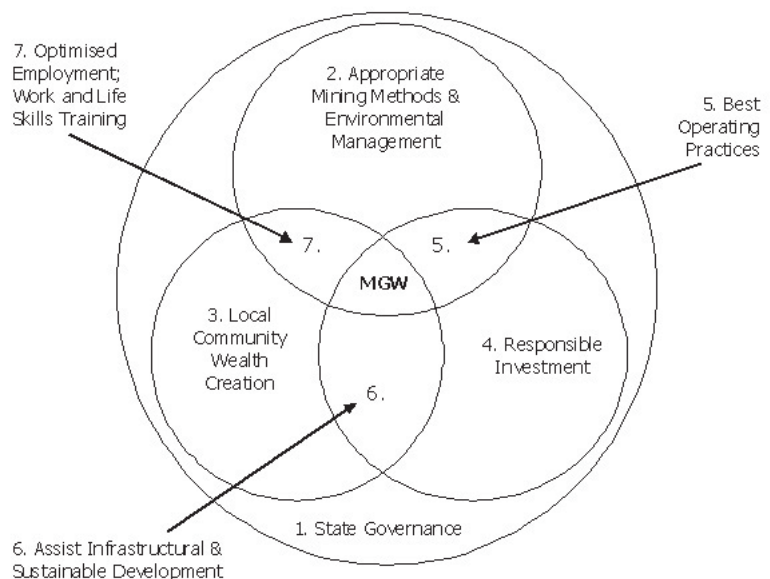


Figure 1: A Model for Mining God's Way



- When all of the above are being striven for simultaneously, the centre of balance can be regarded as mining God's way – what I call MGW for short. The MGW approach produces a new model for Biblical ethics dealing with the four theological issues mentioned in the opening paragraph.

Later I came across Christopher Wright's *Old Testament Ethics for the People of God*, in which he writes: "Theology and ethics are inseparable in the Bible. You cannot explain how and why Israelites or Christians lived as they did until you see how or why they believed as they did.... Old Testament ethics are built upon Israel's worldview."³ He goes on to claim that the three pillars of Israel's worldview were God, Israel and the land, and that we can 'examine Old Testament ethical teaching from the theological angle (God), the social angle (Israel), and the economic angle (the land).'⁴ He conceptualised these as a triangle of relationships:

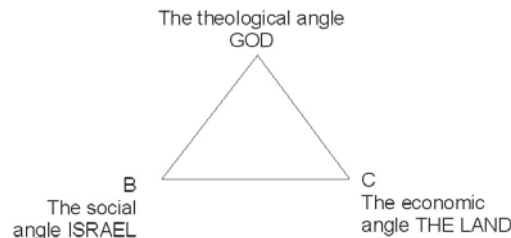


Figure 2: The Ethical Triangle

It is interesting that this model can be transposed into the MGW approach by the insertion of a fourth point, not to make it square but to turn the triangle into a pyramid, thus adding an entirely new dimension with A as the apex, and resting on triangular face BCD. We can then flatten the pyramid from the top down and reshape the four triangular faces to become the four overlapping circles of MGW!

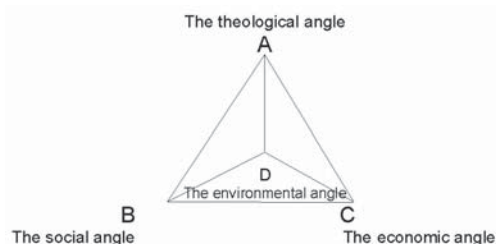


Figure 3: An Ethical Pyramid

Coincidentally, the MMSD report made a similar analysis to the MGW model, using 'four dimensions of sustainable development', which they labelled the 'Economic Sphere'; 'Social Sphere'; 'Environmental Sphere' and 'Governance Sphere'.⁵

1. State Governance

Because mineral deposits cannot be moved, often take years to come to production, and are generally mined for decades, one of the most important criteria in improving mining is some political and legal security. Without consistent application of leadership morals, no industry, including mining, can perform ethically, hence the all-encompassing nature of this particular circle.

In the Old Testament, we find certain leading individuals offering a moral apologia: Samuel ('...from whose hand have I taken a bribe to blind my eyes with it?')⁶ and Job ('...I was a father to the needy, and I championed the cause of the stranger'⁷). These are not just listed for their own self-defence, but offer biblical criteria which apply universally to all leaders (including those in government). In a statement that also applies to many other parts of the developing world, Tim Butcher observes: "To make up for decades of misrule and exploitation, Africa needs help in installing meaningful legal systems that hold their leaders to account and ensure that national funds are spent on public projects, not just funnelled into private bank accounts".⁸



President Mwai Kibaki of Kenya displaying the new Kenyan constitution designed to combat corruption

▶▶ Government has an influence through a national, provincial and local component. All of these must be addressed to enhance mining ethics. National governments are usually responsible for setting their legal and fiscal regimes (as well as enforcing international conventions to which they are signatories), within which mining companies must abide, e.g. tax, labour, land and business laws. Provincial governments (or decentralized national agencies) are typically responsible for enforcing these rights and compliances, such as revenue collection. Local government (formal or cultural) tends to broker communication in cases of dispute resolution with indigenous communities and in the promotion of joint decision-making by the parties involved. This kind of delegation of officialdom is biblical: see Jethro's advice to Moses: "Look for able men among all the people, men who fear God, are trustworthy, and hate dishonest gain; set such men over them as officers"⁹.

2. Mineral deposits and their environment

The right to mine resources from the earth was given to Israel¹⁰ when God promised them a good land where the rocks of iron and copper can be dug out of the hills. The antiquity of mineral wealth can be inferred from Genesis 2:11-12 and 4:23 where humanity's third listed skill (after farming and making music) is that of Tubal-Cain, who forged tools out of bronze and iron. In what is, arguably, the oldest book in the Bible¹¹, Job describes the vocation of mining in matter of fact terms¹² which indicates familiarity on the part of his listeners. This is not surprising, because in modern parlance: "If it ain't grown, it must be mined!"

Economic deposits of minerals, unlike factories, cannot be moved to more convenient locations, but have to be exploited within the environment in which they are located. This is both obvious and unavoidable. So with the rights to mine, either from God¹³ or the state,

come a wide range of responsibilities to the land and its other users and owners¹⁴. Mitigation of the environmental and social impact must therefore be managed.

3. Local Community

Local communities of indigenous peoples commonly claim the environment of a mineral deposit as theirs in the belief this resource was given to them by their gods, traditional ownership or nature. They are keen to improve their standard of living, like poor people everywhere, whilst retaining certain cultural aspects of their lifestyle and respect for their ancient beliefs and values. As a result they seek to benefit



*"For the Lord your God is bringing you into a good land, a land whose stones are iron and from whose hills you may mine copper."
Christmas Copper Mine, Gila County, Arizona.*

from this wealth, but are usually caught in a poverty trap because their artisanal mining activities are often deemed illegal by their Governments. Not only would the miners benefit from 'fair trading' but the national finances would benefit from the taxes and revenues that would be derived from the value added activities of legal mining and trading. "In biblical economics, wealth that God has enabled us to produce must always be held and used with a compassionate heart and hand."¹⁵ Instead traditional communities in whose land



- mineral resources are found are invariably treated badly. This is contrary to God's mandate¹⁶ because He is compassionate¹⁷ and calls on those in power to behave similarly¹⁸.

4. Investors and Corporate Governance

Nicholas Hunter argues that most artisans are trapped in the slow lane, i.e. containing costs at the expense of time, using secondhand equipment, relying on their hands. Although starting production with some skills, some tools and lots of time, they are always underfunded, and there is little help for these miners as improvements require capital¹⁹. As a result artisanal miners are commonly treated simply as suppliers of cheap minerals, but if efforts are made to improve their mining techniques, investment is required, however small.



Child artisanal miner, Zimbabwe

The essential roles of investment are to raise necessary financial capital and then build value for all stakeholders, i.e. the investor has an important role in determining how the deposit is mined and how the environmental and social impacts will be managed. It is here that the sins of the boardroom have an impact, where lack of care for the poor and the environment is manifest, and where greed is disguised as 'Return On Investment' or 'profits to be distributed to the shareholder'.

This is where faith and business are truly integrated and Christians would be wise to heed God's advice to wealth creators: "Do not

say to yourself: 'My power and the might of my own hand have gained me this wealth...'"²⁰. Worse yet is God's rebuke to the arrogance of Pharaoh: "Thus says the Lord God: I am against you, Pharaoh king of Egypt, the great dragon sprawling in the midst of its channels, saying, 'My Nile is my own; I made it for myself.'"²¹, which could be applied to the selfish finders or buyers of minerals.

5. Mining and environmental practices

Subterranean ore deposits can only be quantified through taking geological samples, for example from drill cores, exploration trenches, tunnels or shafts, or seismic probing. The first inherent risk lies here, in the estimation of ore tonnage and grades. Secondly the mechanics of the behaviour of the host rock at depth can only be guessed at by referring to the observed behaviour of similar rocks at other mining locations, creating a risk when choosing an economic mining method. The third major risk is in the extractive metallurgy of the contained minerals, which may result in unexpectedly difficult processing and refining. In terms of revenue gained from product sales, mining is a 'price taker, not a price maker', i.e. the market, not a cartel of producers, generally controls the sales price tag. This is another great risk to be factored in.

Nevertheless, when exploiting the non-renewable asset of a mineral deposit, good mining practices include reducing these risks, as well as the 'professional responsibility to maximise the opportunity and not waste it before closure.'²² This means avoiding mining the high-grade material at high profit and leaving behind lower-grade material which cannot, on its own, be economically extracted. Management is responsible for setting standards to comply with imposed laws, and normally to exceed the minimum, which involves independent audits and assessments. Good practices also include, more obviously, investing in the best and newest appropriate technology and equipment, high standards of employee health and safety protection, generous staff benefits and excellent training²³, and environmental stewardship²⁴. ►►

►► The International Finance Corporation (IFC) have now published Environmental, Health and Safety Guidelines for Smelting and Refining, which are expected to have far-reaching consequences for the mining business. They must be adopted by projects funded by them, even where the host country's national standards are less stringent than those of the IFC²⁵.

6. Direct infrastructural and sustainable development

There are several examples of sustainable development which include improvements in infrastructure from different parts of the world. In Afghanistan a copper mine currently under development includes building a railway (the first in the country), a dedicated power station that will supply excess electricity to Kabul city, a large coal mine to fuel the generators and a training centre for the thousands of employees needed for this US\$3 billion investment.²⁶ In Zambia, another new copper mine includes the first town to be built since Independence in 1964 at a cost of US\$70m, and a water storage dam on a nearby river that can be used for fishing, irrigation and other commercial activities²⁷. In Zimbabwe, a platinum mine company built a 70 km tarred road for ore transport, but it can be used by any vehicles *ad infinitum*.



The new town at the new Lumwana copper mine in Zambia with 1,000 houses, commercial and retail areas, schools and healthcare facilities

Whilst it can be argued that these additions to the infrastructure are necessary to implement new mining projects, this kind of capital expenditure usually far outlasts the life of the mine, and if well planned, leaves the nation-state with enhanced infrastructure.

Having said that, these improvements to the infrastructure will not necessarily benefit the immediate community (e.g. a port built to export minerals by sea has limited impact on people living inland), and extensive consultation may show that expected outcomes from mining operations radically differ between stakeholders. Ethical mining now includes assistance with site-specific sustainable opportunities for life after mining; in the case of Ok Tedi mine in Papua New Guinea sustainable development projects are expected to benefit the community for up to forty years after mine closure.²⁸ ►►



The Ok Tedi mine in Papua New Guinea where sustainable development projects are expected to benefit the community for up to forty years after mine closure

►► “In a growing number of situations, obtaining the sustainable-development keystone – ‘a social licence to operate’ – from project stakeholders is now as critical to a mining company as a mining permit”²⁹. MMSD list 18 guiding principles for sustainable development spread out over their four ‘spheres’ but argue that these ‘should be applied in an integrated manner in decision making’³⁰. Most of the larger mining companies have now formally incorporated sustainable development in their published company policies, report on performance and interact freely with all stakeholders on this issue.

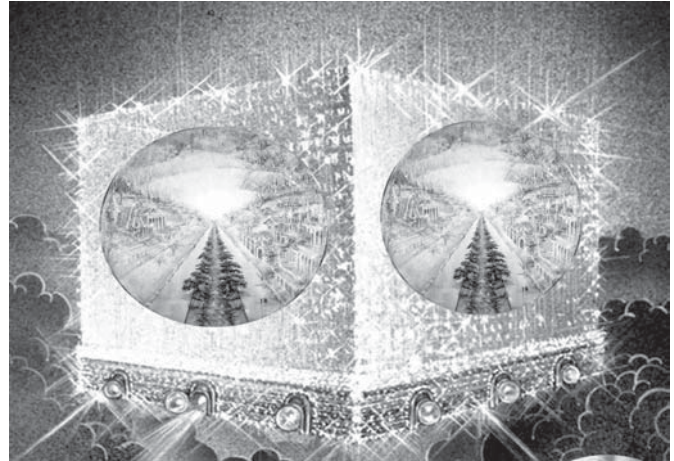
Development, it seems, is a partnership between God and humanity³¹, which has subordinate dominion³². The biblical journey from Genesis to Revelation is not a return to the garden paradise of Eden, but moves toward a future symbolized by the existence, building or restoring of a city,³³ even using precious stones³⁴, thereby linking mining, construction and the eschatological dwelling together of God and his people.

7. Local Community as Beneficiaries

As well as the basic respect required in section 3 above, indigenous communities usually expect a suite of physical benefits such as shops, clinics, schools, recreational and worship facilities (e.g. mosques) to be built. They also look to the mine to give training and preferential employment to their community.

Unfortunately, new-found wealth can lead to a wide variety of negative behaviours such as alcohol and substance abuse, which produce violence and dysfunctional families. The planting of a ‘Miner’s Church’ in such communities may help to minimise these abuses and destructive behaviour through encouraging a biblical

lifestyle³⁵. Where such Christian initiatives are banned, as in Islamic nations, efforts must be made to grow holistic mature lifestyles, based on needs as raised by traditional leadership, village nurses and social workers.



A modern interpretation of the New Jerusalem, complete with precious stones

8. Conclusion: Mining God's Way

Over the past decades the following initiatives attempted to improve the practices of mining:

- i) Health, Safety and Loss Control (arriving in the early 1970s)
- ii) Total Quality Management (late 1970s)
- iii) Strategic Planning (early 1980s)
- iv) Appropriate Technology and small scale mining (late 1980s)
- v) Environmental Impact and the green movement (early 1990s)
- vi) Women in Mining and 'Diversity' (mid 1990s)
- vii) Mining and Communities i.e. social responsibility (late 1990s)
- viii) Millennium Development Goals and poverty alleviation (early 2000s)
- ix) Fair trade, Kimberly process (early 2000s)
- x) Mining and Sustainable Development (early 2000s)
- xi) International Transparency in Extractive Industries (mid 2000s)

►► The need for the above has not gone away. These initiatives have simply been added to the ethical 'lode' to be mined by our industry. Additionally, the ethics of mining is continuously measured by the media; there is no escaping their assumed 'omnipotence'!

This article has not addressed all these issues. If however the stakeholders converge (i.e. their respective circles overlap) then priorities can be set that will allow the industry to improve ethically. The extent of overlap is a measure of unselfishness on the part of the parties involved; and where selfishness is kept to a minimum, we have increasing harmony (see the centre of figure 1).

As a mining engineer whose world view is influenced by Christian faith, I believe a balanced approach, Mining God's Way, can

be developed to address most of the ethical issues in mining, and that increasing the harmony of stakeholders reflects the will of God³⁶.

When the logos took on flesh and dwelt among us, he embodied an ethical lifestyle and calls upon us to imitate him, to 'Love your neighbour as yourself.' Applying this call will result in ethical behaviour. There are some aspects of commerce and industry that are commented on specifically in the Bible and others on which it is silent. This silence on specific aspects of the practical world however does not mean licence to be unethical. Instead it begs us to be driven by the honest application of God's ideals: those moral principles that lie behind the exhibited character and nature of Jesus, even in the mining industry! ■

1 John Kay, *The future of markets*, Financial Times, November 11th 2009 p.11.

2 'If you heed these ordinances, he will bless the fruit of your ground', Deuteronomy 7:12.

3 Christopher J. H. Wright, . 'Old Testament Ethics for the People of God', Inter-Varsity Press, Leicester, England, 2004, p.17.

4 Ibid. p. 19.

5 MMSD op. cit., p. 24.

6 1 Samuel 12:3.

7 Job chapters 29 and 31.

8 Tim Butcher, 'Blood River. A Journey to Africa's Broken Heart' Vintage Books, London, 2008, p.335.

9 Exodus 18: 13-26.

10 Deuteronomy 8:9.

11 Philip Yancey, 'The Bible Jesus Read' Zondervan Publishing House, Grand Rapids, Michigan, USA, 1999.

12 Job 28:1-11.

13 'The heavens are the Lord's heavens, but the earth he has given to human beings.' Psalm 115:16.

14 Psalm 24:1-5.

15 Wright, op. cit., p.167.

16 Proverbs 31:8-9.

17 Exodus 34:6.

18 Deuteronomy 15:11.

19 Nicholas Hunter 'Small/Medium Scale Mining as a Business: Slow Build or Fast Track?' Guidelines for the Development of Small/Medium Scale Mining, United Nations Interregional Seminar, Harare, 1993.

20 Deuteronomy 8: 17-18.

21 Ezekiel 29:3.

22 *Engineering and Mining Journal*, Mining Media Inc., Colorado USA, October 2009, p.31.

23 Deuteronomy 24:14-15.

24 *Engineering and Mining Journal*, October 2008, p.11.

25 *Engineering and Mining Journal*, October 2008, p.54.

26 http://iwaweb.org/index_en.html (Integrity Watch Afghanistan).

27 *Engineering and Mining Journal*, July/August 2008, p.39.

28 <http://www.bhpbilliton.com/bb/investorsMedia/News/2002/bhpBillitonWithdrawsFromOkTediCopperMineAndEstablishesDevelopmentFundForBenefitOfPapuaNewGuineaPeople.jsp>

29 *Engineering and Mining Journal*, September 2009, p.28.

30 MMSD, op. cit., p. 24.

31 Genesis 3:5, Acts 15:28.

32 Wright, op.cit., pp.121ff.

33 Micah 7:11, Isaiah 58:12, Amos 9:11, Zechariah 8:4-8.

34 Isaiah 54:11-12, Revelation 21:18-21.

35 1 Thessalonians 5:5-11, Jude 1:17-23.

36 Genesis 1 & 2.

Terry Garde was born, raised and mostly educated in Zimbabwe, except for his studies in Mining Engineering at the University of the Witwatersrand. After graduation he worked in the base metal industry, co-founding Maranatha Ferrochrome. He is now an advisor to the Ministry of Mines in Afghanistan and working towards a PhD in theology.

