

Malcolm Scoble

Specialty: Surface and Underground Mining Methods; Sustainable Mining

Professor and holder of the Robert E. Hallbauer Chair in Mining and Sustainability

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Additional Responsibilities

- Federal-Provincial Environmental Impact Assessment Panel, proposed Kemess North Mine, BC: Panel duty ended with submission of the Final Report in September 16th 2007.
- Adjudication Committee, Mining & Sustainability Award, BC Department of Energy and Mines, Mining Association of BC: 2007, 2008.
- Board of Directors, Mining Industry Human Resources Council, (1 of 7 Federally-funded industry sector Councils) 2007, 2008.
- B.C. Mining & Exploration Sector Human Resource Planning (HRP) Task Force, Mining Association of BC, Service Canada Agency, 2007, 2008.
- Advisory Committee, B.C.I.T. Mining Program, Vancouver, 1997 to date.
- Adjudication Committee, Mining and Sustainability Award, 2007, 2008, BC Department of Energy and Mines-Mining Association of BC.
- Board of Directors, Canadian Mining Innovation Council, elected 2007.
- Member, External Reference Group to the Assistant Deputy Minister, Natural Resources Canada, 2007, 2008.
- Member, Canadian Business Ethics Research Network, 2008.
- Mining and Sustainability BC, Working Group, BC Department of Energy and Mines, 2008.

Biography

Education:

Camborne School of Mines, U.K., A.C.S.M., Mining Engineering

Leicester University, U.K., M.Sc., Mining Geology and Mineral Exploration

Nottingham University, U.K., Ph.D., Mining Engineering

Academic Experience

Lecturer, 1972-1983

Department of Mining Engineering, Nottingham University, UK (Tutor, Earth Sciences, Open University, UK)

Professor, Webster Chair in Mining Engineering

Director of Mining Engineering Program, 1983-1997

Department of Mining and Metallurgical Engineering, McGill University, Canada

Professional Mining Engineering Experience

Employment at various mines: Canada (Hudson Bay Mining & Smelting Ltd), Sweden (Tuolluvaara AB), Portugal (Beralt Tin & Wolfram Ltd.), UK (Geevor Tin Mine, English China Clays Ltd).

Consultancy with various mining and related companies, including: INCO Ltd., Outokumpu Oy., Placer Dome Inc., Golder Associates, Ken Mathews Associates, Control Data Corp., Rio Tinto Ltd.

Academic services such as external examiner and consultant for Universities: CEAB, TUNS, UofA, Queens, Laurentian, Nottingham, Lulea, Aachen, Melbourne, Mining Education Australia.

Research collaboration with industry has included: Fording Coal Ltd., Highland Valley Copper Ltd., British Steel Corp., National Coal Board, INCO Ltd., Falconbridge Ltd, Noranda Ltd., Teck Cominco Ltd., AMEC Ltd., Suncor Ltd., Placer Dome Inc., CIL Ltd.

Research collaboration with other organizations has included: World Bank, NRCan, HRDC, MABC, APEGBC, QMA, CAMA, MMSD.

Awards and Distinctions

Awarded Robert Hallbauer Chair in Mining and Sustainability at UBC, 2006.

Elected a Member of the Canadian Academy of Engineering, 2007.

Current Research Interests

In the role of the Hallbauer Chair Mining and Sustainability I am currently conducting research in four areas, often in an interdisciplinary mode, as follows:

- Mining with Communities

- Mine-Mill Integration
- Workplace Safety
- Mining Innovation

Past Research Interests

- Sustainable Mining
 - Early leadership role: integrating mining, environmental and socio-economic research
 - Program Leader for two NCE applications for a Canadian Network for Sustainable Mining
 - Formative work on mining with communities and Aboriginal peoples and qualitative research methods
- Rock Fragmentation
 - Basic fundamental research into ground characterization for blast design and structural control
 - Early Formative work on Diggability Assessment by empirical methods
 - Contributed to the advancement of blast fragmentation prediction
 - Early development and application of digital analysis techniques for fragmentation measurement
- Rockmass damage
 - Development of a field procedure for damage assessment and audit
 - Formative studies of structural control over damage
- Blast optimization
 - Early work on linking production, economic and environmental factors in global optimization
- Mining automation
 - Founding member: Canadian Centre for Automation and Robotics in Mining
 - Maintained the continuation of 7 Canadian Symposia on Mining Automation
 - Pioneered Drill-shovel monitoring technology in surface mining
 - Supported first comprehensive underground communications development
 - Associated with first successful teleoperation of mobile underground machines from surface
 - Formative work on the concepts of the “digital mine”
- Mining methods and planning
 - Early design criteria for distress blast design in highly stressed ground
 - Formative work on reliability of excavations and integration into mine production simulation
- Mine Backfill
 - Formative work on design criteria and engineering
 - Paste backfill design
 - Delayed consolidation of backfill
- Slope Stability

- First UK coal mining characterization of instability mechanisms, analysis and monitoring

REFEREED PUBLICATIONS

Refereed Journals

9. Bamber, A., Klein B. and M. Scoble. Integrated Mining and Processing of Base Metal Ores. Paper accepted for Transactions Institute of Mining and Metallurgy, London, 2007.
8. Costa, S. and M. Scoble, 2006. A Multidisciplinary Approach to Integrating Sustainable Development into Mining Engineering. *Jnl. Cleaner Production*, Elsevier, 14, pp. 366-373.
7. Bamber, A. and M. Scoble, 2005. Sustainable Innovation in Underground Hardrock Mining Technology. *Bulletin Can. Inst. Min. Metall.*, Montreal, 98, 1085, pp. 77-84.
6. Kent, A., Ringwald, J. and M. Scoble, 2004. Potential Role and Contribution of the CIM in the Evolution of Sustainable Mining Practice. *Bulletin Can. Inst. Min. Metall.*, Montreal, 97, 1083, pp. 38-45.
5. Handelsman, S., M. Scoble and M. Veiga, 2004. Human Rights and the Minerals Industry: Challenges for Geoscientists. *Exploration and Mining Geology*, Can. Inst. Min. Metall., Montreal, 12, 4, pp. 5-20.
4. Kazakidis, V., Mayer, Z. and M. Scoble, 2004. The Analytic Hierarchy Process in Mining Engineering. *Mining Technology*, Transactions Inst. Mining and Metall., London, 113, pp. A30-42.
3. Kazakidis, V. and M. Scoble, 2003. Planning for flexibility in underground mine production systems. *Mining Engineering*, Am. Inst. Min. Metall. Pet. Eng., 55, 8, pp. 33-39.
2. Dessureault, S. and M. Scoble, 2003. Data Infrastructure for a Tactical Mine Management System. *Mining Technology*, Transactions Inst. Mining and Metall., London, 112, pp. A1-13.
1. Vagenas, N., Kazakidis, V., M. Scoble and S. Espley, 2003. Applying a Maintenance Methodology for Excavation Reliability. *Int. Jnl. Surface Mining*, Swets and Zeitlinger, 17, 1, pp. 4-19.

Conference Proceedings

20. Van Zyl, D., Scoble, M. and G. Wilson, 2007. Mine Life Cycle Systems Models and Integrated Mine Closure for Sustainability. *Proc. Int. Conf. Mine Closure*, Santiago.
19. Nelsen, J. and M. Scoble, 2007. Research Studies on Building Social License within Mineral Exploration. *Proc. 2nd Int Symp Sustainable Development Indicators in the Mining Industry*, Milos, Elsevier.
18. Mottola, L., Kent, A. and M. Scoble, 2007. Innovation in the Design of Sustainable Mining Systems. *Proc. Int. Conf. Intelligent Processing of Metals and Materials*, Univ. Salerno.
17. Sweeney, D. and M. Scoble, 2007. A New Approach to Mine Accident Analysis: A Case Study of a Mine Cave-In. *Proc. 1st Int. Symposium on Block Caving*, South

- African Institute of Mining and Metallurgy, Cape Town.
16. Costa, S. and M. Scoble, 2007. Mine Accommodation Strategies - Case Studies from Developing Countries. Proceedings Int. Mine Management Conference, Australian Institute of Mining and Metallurgy, Melbourne.
 15. Sweeney, D. and M. Scoble, 2006. Back Analysis of Risk and Decision Error Analysis in Profiling Uncertainty in Deep Mining. Proc. Int. Conf. Deep Mining, CIM, Quebec City, Sept. 2006.
 13. Bamber, A., Klein, B. and M. Scoble, 2006. Integrated mine-mill systems. Proc. Int. Conf. Deep Mining, CIM, Quebec City, Sept. 2006.
 12. Bamber, A., Klein, B., Scoble, M. And J. Vary, 2005. Integrated Underground Mining and Processing of Massive Sulphide Ores, Proc. Can. Canadian Mineral Processing, oct. 2005.
 11. Bamber, A., Klein, B., Morin, M. and M. Scoble, 2005. Integrated mining and processing of massive sulphide ores: reducing mining costs. Proc. Symposium on Mine Planning & Equipment Selection, Banff, Nov. 2005, CD ROM.
 10. Scoble, M., 2005. A lifelong learning approach to training and development in mining. Proc. Can. Appl. Computers in Mining, Banff, Nov. 2005, CD ROM.
 9. J. Nelsen and M. Scoble, 2005. Social License to Operate Mines: Issues of Situational Analysis and Process. Proc. Symposium on Mine Planning & Equipment Selection, Banff, Nov 2005.
 8. Odell, C. and M. Scoble, 2005. Integrating Sustainability Issues into Mine Design. Proc. 32nd Conf. Computer Applications in Mining (APCOM), Univ. Arizona, Balkema, pp. 125-131.
 7. Morin, M., Bamber, A. and M. Scoble, 2004. System Analysis and Simulation of Narrow Vein Mining with Underground Preconcentration. Proc. 2nd Int. Conf. Narrow Vein Mining, NRCan, Val d'Or, CD ROM.
 6. Bamber, A., Klein, B., Morin, M. and M. Scoble, 2004. Narrow Vein Mining – Decreasing Selectivity in Mining through Preconcentration. Proc. 2nd Int Conf on Narrow Vein Mining, NRCan, Val d'Or, CD ROM.
 5. Thrift, A. and M. Scoble, 2004. Stakeholder Involvement through Multi-attribute Decision Analysis. Proc. Int. Ass. Impact Assessment, Vancouver, CD ROM
 4. Rubio, E., Caceres, C. and M. Scoble, 2004. Towards an Integrated Approach to Block Cave Planning. Proc. 4th Int. Conf. MassMining, Chilean Inst. Min. Eng., Santiago, pp. 128-135.
 3. Rubio, E., Dunbar, S. and M. Scoble, 2004. Reliability Theory Applied to Block Cave Production Scheduling. Proc. 4th Int. Conf. MassMining, Chilean Inst. Min. Eng., Santiago, pp. 150-156.
 2. Ebrahimi, A., Hall, R. and M Scoble, 2003. Economies of Scale in Surface Mining Equipment: Dimensions and Analysis. Proc. 12th Int Symposium on Mine Planning & Equipment Selection, Kalgoorlie, Australian Inst. Min. Metall., pp. 323-331.
 1. Gibson, G., Veiga, M. and M. Scoble, 2003. Projecting Poverty: Local and Project Level Indicators on the Extractive Industries in World Bank Group Funded Projects. Proc. Int. Conf. Sustainable Development Indicators in Min. Industries, Milos, Greece, ISBN:960-87054-2-8, pp. 123-129.

NON-REFEREED PUBLICATIONS

Journals

4. Nelsen, J. and M. Scoble, 2005. UBC Women: Mining with Communities. Mineral Exploration, Association for Mineral Exploration of BC, Vol. 26, 1, pp. 9-12.
3. Nelsen, J. and M. Scoble, 2005. Social License to Operate: an Industry Survey. Mineral Exploration, Association for Mineral Exploration of BC, Vol. 26, 1, pp. 13-16.
2. Gibson, G., and M. Scoble, 2004. A Survey of Women's Career Experiences in Mining. Bulletin Can. Inst. Min. Metall., Montreal, 97, 1082, pp. 54-60.
1. Gibson, G., McDonald, A., Scoble, M. and J. Hinton, 2003. From Concept to Reality: Bridging the Sustainability Gaps in Mining. Innovation, Ass. Prof. Eng. & Geoscientists B.C., April 2003, pp. 20-23.

Other: Invited Conference Presentations

6. Scoble, M., 2008. Linking Mining Schools with Industry. 109th Annual General Meeting, Can. Inst. Min. Metall., Edmonton, May 2008.
5. Handelsman, S., Veiga, M., Scoble, M., and D. Lowry, 2007. Human rights issues confronting Canadian companies operating overseas. Proc. Annual Meeting GAC-MAC, Yellowknife. (Also accepted as a future book chapter in "Sustainable development principles in the minerals industry", Springer-Verlag, ed. J. Richards)
4. Odell, C.J., Scoble, M.J. and J. Recharte, 2007. Indicators of Socio-Environmental Sustainability in Communities Neighbouring Mines. Proc. Conference Peruvian Mining, Arequipa.
3. Scoble, M., 2007. Moving the Mine towards a Learning Organization. Annual Meeting, Am. Soc. Mining Engineers, Denver, Feb 2007. CD ROM.
2. Bamber, A., Klein, B and M. Scoble., 2006. Towards the Invisible Mine – Aspects of Underground Pre-concentration Research. Annual Mining Conference, Canadian Institute of Mining and Metallurgy, Vancouver.
1. Scoble, M., 2005. Impact of New Technology on Skills and Training. 107th Annual General Meeting, Can. Inst. Min. Metall., Toronto, May 2005.

OTHER WORKS

1. Scoble, M., 2007. Sustaining the Canadian Mining Industry. Research Report, Conference Board of Canada, Canada Project, p.54.