

## Curriculum Vitae

### A. Chronology of Education

*University of British Columbia, Vancouver Canada*

Ph.D. Mining Engineering, 2002  
*Major Fields:* Management systems, information technology, mine management  
*Minor Degree:* Management Information Systems  
*Dissertation Title:* "Tactical Underground Mine Management"  
*Advisor:* Dr. Malcolm Scoble

M. A. Sc. Mining Engineering, 1999  
*Major Fields:* business justification tools, mining technology management  
*Thesis title:* "Capital Investment Appraisal for Advanced Mining Technology:  
Case Studies in GPS and Information Based Surface Mining Technology"  
*Advisor:* Dr. Malcolm Scoble

*McGill University, Montreal Canada*

B. Eng. Mining Engineering, 1997  
*Academic Emphasis:* Mining Technology

### B. Chronology of Employment

*Academic*

2002 – Present University of Arizona, Department of Mining and Geological Engineering  
*Assistant Professor*

- Current teaching activities include undergraduate and graduate courses in Equipment Operations Technology, Management Operations Technology, Engineering Sustainable Development, and Rock Excavation.
- Faculty advisor for the UA Chapter of Engineers Without Borders, and various other service activities
- Areas of research: management information systems, mining technology and automation management, real options analysis, data warehousing, data mining, sustainable development indicators

1997-1999 University of British Columbia, Department of Mining and Mineral Process Engineering  
*Teaching assistant and Research Associate*

- Aided, organized/managed various departmental and inter-university projects
- Instructor: prepared notes, organized and gave lectures for first and final year undergraduate courses, assisted professors.
- Consulted for Placer Dome Canada on mining automation & robotics project
- Undertook on-site research for Teck Cominco's Highland Valley Copper mine
- Engaged in publishing journal articles, conference papers and developing research projects

*Professional Experience*

2004 – Present MISOM Consulting Services  
*Founder & Principal consultant*

- Provides data warehousing and management information system (MIS) design services for mining companies; Phelps Dodge Corporation, and Peabody Energy's Powder River Coal Company.

1999 – 2002

INCO Limited - West Mines Complex

*Project Engineer - Design and implementation of Tactical Management Systems*

- Part of management team and main facilitator for an industrially-focused research project.
- Implemented Ph.D. theories into a division of composed of three large underground Nickel mines
- Aid in the implementation of Information Systems and Management Procedures, engaged in various mine engineering projects and functions, Tested and implemented tactical management system.

1993 – 1999

Worked for the following mining and supplier companies, in varying capacities as an undergraduate in a cooperative program.

Highland Valley Copper Mine (Teck Cominco)	Technology Resource Engineer
INCO Limited, Mines Research	Researcher
Conwest Resources, Nanisivik mine	Underground laborer
Place Dome Canada, Mine D'Or Kiena	Engineering Assistant
ICI Canada, McMasterville explosives plant	Explosives product testing

### C. Honors & Awards

- Canadian Information Productivity Award, SAP Best Graduate Research Project 2001.
- Natural Sciences and Engineering Research Council (NSERC) of Canada, full Industrial Postgraduate Scholarship (IPS) grant (2 yrs.)
- University of British Columbia (UBC) graduate student award (1 yr)
- UBC Department of Mining and Mineral Process Engineering scholarship (2 yrs)
- CMIEF full scholarship (3 yrs.)
- McGill University Mining and Metallurgical Engineering full scholarship (3 yrs.)

### D. Service & Outreach

#### 1. Local / State Outreach

2004-present

Engineers Without Borders (EWB) at the University of Arizona

*Founder & Faculty advisor*

- Recruited & developed organization leading to the establishment of a chapter of EWB at UA, eventually also becoming a club within Associated Students of The University of Arizona (ASUA). Membership within its first year reached over 120 undergraduate and graduate students, and professionals.
- Advised the EWB UA chapter leading to the successful bid to design and implement a water distribution project in Ghana for a region with 10,000 residents.
- Two additional projects currently under bid development

2002 – present

PIMA Community College recruiting

*MGE representative for recruiting to PIMA*

- Organized and implemented recruiting presentations in 3-5 general engineering classes per semester

## **Presentations, Committees, & Supplemental Educational Activities**

Since 2000, I have been invited to give several presentations to local community and professional groups about mining engineering.

- Arizona Rock Product Association; taught classes to high school teachers about mining engineering, several instances.
- Arizona Industries of the Future, Inc; participated in tele-meetings for planning for Arizona Department of Commerce, Department of Energy program, support of potential DOE funding
- Taught a module of Geoscience's Lowell Short Course, "Porphyry Copper Mining Methods."

### **2. National / International**

2002-2005      Applications of Computers and Operations Research in the Minerals Industry  
*Chairman of APCOM 2005 and permanent member of the International APCOM council.*

- Recruited & developed organization leading an international symposium and peer-reviewed publication containing over 100 papers.

2002-present      Society of Innovative Mining Technology (SIMT), Canadian Institute of Mining, Metallurgy and Petroleum. (CIM)

*Director of 'Innovations' page of the CIM Magazine.*

- Find and manage writers for a one page column in the CIM magazine pertaining to innovation in the mining industry.
- Support the society in various capacities from advisory roles to symposium organization.

### **Service to Professional Societies and Organizations (2002-present)**

#### Society for Mining, Metallurgy, and Exploration (SME)

SME Mining & Exploration Division, Operations Research Unit Program (2005)

SME Mining & Exploration Division, Operations Research Publications (2004)

SME UA Student Chapter Advisor (2002-2005)

SME Internet Committee Vice-chair (2002-2005)

SME Research Council, Committee Member (2005)

SME Construction Aggregates Committee (2003)

Society for Mining, Metallurgy, and Exploration, Inc. (SME)

Society for Mining, Metallurgy, and Exploration, Inc. (SME), Tucson Section

Society for Mining, Metallurgy, and Exploration, Inc. (SME), U of A Student Chapter

Engineers Without Borders (EWB)

Engineers Without Borders University of Arizona chapter (EWB UA)

Canadian Institute of Mining, Metallurgy and Petroleum (CIM)

### **Establishing research relationships with potential International partners**

- Cooperative Research Center Mining (CRCMining), Brisbane Australia
- Developed a research program in Smart Mining Systems
- Presented research program to CRCMining industry panel
- While in Australia met with the heads of operators, research institutes, and technology vendors independently to gather further knowledge on technological

trends and help guide the vendors with IT advice. (MINCOM, CSIRO, MineStar, MineTrack, Ashanti, Pilbara, etc...). They paid for all airline travel costs

- During two weeks in the early summer of 2002, to meet with U.S. industry, I attended the Elko Expo, toured and met with the engineering staff at Place Dome's Cortez mine, Barrick's Goldstrike mine, Stillwater mine in Montana, and Arch Coal's Black Thunder mine.
- Participated in Minexpo, SME Arizona conference in 2004, largely for meetings & promotion of APCOM.
- Participated in conference in Phoenix: "Innovations in Aggregate technology", to develop links and identify research potential in aggregates.
- During trip to South Africa in 2003 a conference was attended but it was also to develop research links with South African mining technologists, hence, 1) toured and met with engineering staff at AngloGold Target mine in Bloomfontein (an underground gold mine using traditional reef and bulk methods), 2) manager of Advanced Systems Technology Jim Porter, 3) met with acting director of Miningtek and manager of Mining Technology of the CSIR (South Africa's governmental research group in mining technology), and 4) representatives of SAIMM and the University of Witzwaterand's Mining Engineering program.

### ***3. Service to Industry – University Research/Consulting & Private Consulting***

Service to industry is a key component of a researcher undertaking applied research in mining engineering. I have endeavored to meet and establish research relationships with the three largest mining companies operating in the US. This research relationship-building takes a considerable portion of my time as meetings, preparation of research pitches, and providing consulting services.

#### **Phelps Dodge**

An intensive process to gain funding from PD has been in process since 2002. There were multiple meetings with PD's Mine Technology Group (MTG) and the Information Systems department especially concentrated in 2003 and 2004. This was additionally prompted by PD's support for the 2004 DOE OIT proposal. Culminating in a meeting with the CIO (Gerry Glusic), Data Warehouse Manager (Don Warden), and MTG manager Steve Holmes whereupon it was decided that the best solution would be to pursue research funding following the establishment of an integrated data warehouse of mining data. PD required working with a fully insured and registered company, hence I established MISOM Consulting Services. From November 2004 to May 2005, I provided consulting services for Phelps Dodge with frequent proposals made for research to various top-level executives. This has also given me the opportunity to identify areas that would benefit from my form of research, which is to bringing action from data.

#### **Rio Tinto**

Several meetings have been arranged with Rio Tinto to establish a research relationship. The manager of IS for all of Rio Tinto asked me to help them design an integrated data solution but agreements with Phelps Dodge did not permit providing consulting services until one year after the contract with PD is finished. However, further solicitation for research support continues

#### **Peabody Energy**

Peabody energy is beginning a process of investment in information technology and has engaged my services to help guide the process. While developing their IT and business process redesign skills, I propose research initiatives, primarily with their flagship Powder River Coal Company in Wyoming.

#### **External examiner for foreign universities:**

- Bryan Maybe, PhD. Laurentian University, "Mitigating Mining Risks", in progress

- Wally Xu, a Ph.D. at the University of Queensland, JKRC, “A Methodology for Developing an Extensible Mineral Information Model.” (2005)
- Zackary Meyer, a Master’s of Applied Science student at Laurentian University; “Real Options Applications in the Valuation of Flexible Underground Mining System Design Alternatives.” (2004)

**International presentations since 2002**

- Presented “Methodologies and Modeling tools for data-driven production-system algorithm development” to the The Julius Kruttschnitt Mineral Research Centre.
- Presented “The Impact of Sustainability on Political Risk.” to the Sustainable Minerals Institute (SMI), had meetings with the various heads to discuss research opportunities: Centre for Social Responsibility in Mining,
- Minerals Industry Safety and Health Centre, and WH Bryan Mining Geology Research Centre.

**3. Departmental Service**

Department Committees

Year	Name of Committee	Chairman/member
2005	Graduate committee	Member
2005	PD Hydrometallurgy search committee	Member
2005	Vice-Miller search committee	Member
2003 – 2004	MGE Industry Leadership Board	Member
2003 – 2004	MGE Curriculum Reorganization	Member
2003 – 2004	ABET	Member
2002 – 2004	Departmental Reorganization	Member
2002 – present	Student recruiting	Member
2002 - present	Annual performance review (committee of the whole)	Member
2002 – 2005	MGE representative on the Undergraduate curriculum committee	Member

**Recruiting activities**

- Helped develop new recruiting materials and processes
- Recruiting presentation at Douglas High School, attended recruiting event at Pueblo Public High school (2002)
- Engineering 102 open house presentations (twice per year) (2002 – present)
- Participate in recruiting visits at the San Xavier mine.
- Meet-your-major events (twice per year) (2002-present)
- Arizona Rock Products Association (ARPA) presentations to teachers (2003-present)

**Session Chairman at Conferences:**

- 30<sup>th</sup> International APCOM symposium, Phoenix AZ (2002)
- 31<sup>st</sup> International APCOM symposium, Cape Town, South Africa (2003)
- Computer Applications in the Minerals Industry (CAMI), Alberta Canada (2003)
- 32<sup>nd</sup> International APCOM symposium, Tucson AZ (2005)
- Computer Applications in the Minerals Industry (CAMI), Alberta Canada (2005)

### **Presentations for College**

- Represented the College of Engineering at the National Transportation of Coal Association (NTCA), presented “Modern Mining Technology” (2004)
- Presented “An Introduction to the Mining System for the Systems and Industrial Engineer” in the Systems and Industrial Engineering department’s seminar series (2003) and in a course on Manufacturing Systems also for the SIE department.

### **Review of Scholarly Works**

- Journal of Modeling and Simulation (1) (2002)
- Canadian Institute of Mining, Metallurgy, and Petroleum. Advanced Systems and Technology group, now called Society of Innovative Mining Technology (6 papers since 2000)
- SME Mining & Exploration, Operations Research Unit Publications Chair (2004, managed the reviews of 20 papers and reviewed 4 papers since 2002)
- 31<sup>st</sup> Applications of Computers and Operations Research in the Mining Industry, acted as session chair and peer reviewer, reviewed 5 papers, 2003)
- 32<sup>nd</sup> Applications of Computers and Operations Research in the Mining Industry, Chairman (2004-2005, managed the reviews of 118 papers, and reviewed 9 myself)

## **E. Publications and Creative activity**

### **Refereed Journals**

Dessureault, Sean, Kazakidis, Vassilios and Mayer, Zachary. “Flexibility Valuation in Operating Mine Decisions using Real Options Pricing” International Journal of Risk Assessment and Management. In Press

Gavelan, Zetti, and Dessureault, Sean. “Probabilistic Approach to Project-Specific Political Risk Analysis for Mineral Projects.” Mining Engineering. In Press (SME Mining Engineering)

Dessureault, S. and Schissler, A. “Challenges to Overcome in Applying Information Technology in the Mining Industry.” Can. Inst. of Min. Met. and Pet. Bulletin. Vol. 98 No. 1087, February 2006.

Dessureault, S. “Justification techniques for information technology infrastructure in mining.” Mining Technology: Transactions of the Institute of Mining & Metallurgy, Section A, Dec2004, Vol. 113 Issue 4, p257-263, 7p

Kazakidis, V.N., and Dessureault, S., (2004), “Incorporating Ground Delays in Underground Mine Production System Simulation”, SME Transactions, Society for Mining, Metallurgy and Exploration, USA, Vol. 316, pp. 51-57.

Dessureault, S. Justification Techniques for Computer Integrated Mining. South African Institute of Mining and Metallurgy, Johannesburg, 2004, Vol. 104, No. 2, p104-123

Dessureault, Sean, Porter, Jim, and Woodhall, Michael. Data Integration for Information Technology Infrastructure in Mining. Can. Inst. of Min. Met. and Pet. Bulletin. Vol 97 No. 1076, January 2004, p.49-56.

Dessureault, S. Data Infrastructure for a Tactical Mine Management System. Mining Technology: Transactions of the Inst. Mining and Met., Vol.112 No. 2, August 2003, pp.A73 - A85

Dessureault, S., Scoble, M. Capital Investment Appraisal for the Integration of New Technology into Mining Systems., Transactions of the Inst. Mining and Met., London, Vol. 109, Jan – Apr 2000, p.A30-A40.

Dessureault, S., Scoble, M., A Study of the Synergy of New Technology, Business Tools, and Information to Optimize Mine Production. Int. Jnl. of Surface Min., Reclamation and Environment, 21p, Summer 2001

Scoble, M., Dessureault, S. and Rubio, Strategic Planning for Internet Applications in Mining. Can. Inst. of Min. Met. and Pet. Bulletin. Vol 93 No. 1042, July 2000, p.100-104

Dunbar, S., Dessureault, Sean, and Scoble, Malcolm. (1998) Analysis of Flexible Mining Systems. Int. Jnl. Mnrl. Res. Eng., Imp. College Press, London. p.165-179

### *Peer reviewed conferences*

Yildirim, Metin and Dessureault, Sean. “Truck Assignment Performance Evaluation by Using Data Mining Techniques.” Proc. of the 32<sup>nd</sup> Int. Symp. of Computer Applications in the Minerals Industries (APCOM 2005), Tucson, Arizona. March 30<sup>th</sup> – April 1<sup>st</sup>, 2005.

Dessureault, S. Justification Techniques for Computer Integrated Mining. Proc. of the 31st Int. Symp. of Computer Applications in the Minerals Industries (APCOM’03), Cape Town, South Africa. May 14-19 2003. pp. 67-72

Dessureault, S., Scoble, M. Activity Based Costing and Information Engineering: Formulation of an Annual Mine Budget. Proc. of the 30th Int. Symp. of Computer Applications in the Minerals Industries (APCOM’02), Phoenix Arizona. February 24-27, 2002. pp.601-613

Dessureault, S., Scoble, M., Rubio, E. Simulating Block Cave Secondary Breakage – An Application of Information and Operations Management Tools in Mass Mining System. Proc. of Massmin 2000. (AusIMM: Carlton Victoria Australia) Brisbane, Aust. Oct. 29 – Nov. 22 2000, p 893-896

### *Speaker Invitations*

World Mining Equipment: Drilling and Blasting, Jnl. World Mining Equipment, New York, invited speaker. April 17-19, 2005, San Antonio TX, topic: Data Integration and Utilization.

“Porphyry Copper Mining Methods”, University of Arizona, Geosciences Lowell Short Course, December 10th

"Modern Mining Technology", National Coal Transportation Association, Wednesday April 21st, 2004, El Conquistador

Dessureault, “Methodologies and Modeling tools for data-driven production-system algorithm development” CRCMining internal conference, Noosa Heads, June 16-17th. 2004

"Mining in the classroom", Arizona Rock Products Association, October 16th, 2004

World Mining Equipment Survival seminar series, Jnl. World Mining Equipment, New York, invited speaker. September 10-11, 2001, Toronto, Ont., topic: Activity Based Costing within Mine Management Systems

World Mining Equipment 2000 seminar series, Jnl. World Mining Equipment, New York, invited speaker. November 10-12, 1999, Toronto, Ont., topic: Activity Based Costing: A mine tailored Approach

Visiting Lecturer at: Cooperative Research Center for Mining Technology and Equipment (topic: Process Innovation in Mining Systems – at INCO's Crean Hill mine); W.H. Bryan Mining Geology Research Center (topic: Operations Research in Mining); Mining, Minerals and Materials Engineering Department (topic: Capital Investment Appraisal for Advanced Systems).

### *Conference Proceedings*

Dessureault, S. Developing Decision Support Systems at Large-scale Underground Mines. SME Annual Meeting, Denver, Colorado, Feb 23-25, 2004. 8p.

Gavelan, Z., Dessureault, S. Probabilistic Approach to Project-Specific Political Risk Analysis for Mineral Projects. SME Annual Meeting, Denver, Colorado, Feb 23-25, 2004.

Dessureault, S. and Zetti Gavelan. The Impact of Sustainability on Political Risk. SME Arizona conference. December 7-8, 2003. Presentation only

Dessureault, S. Mine Mill Integration through Data Warehousing. Proc. of the 4th Int. Conf. on Computer Applications in the Minerals Industries (CAMI 2003), September 8-10, 2003, Calgary Alberta. Edited by Singhal / Fytas / Chiwetelu, CD-ROM

Dessureault, S. Developing a Data Warehouse for Decision Support Systems for Large-Scale Underground Mines. Proc. of the High-Performance Mine Production Symposium, Aachen, Germany. April 11 and 12 2003. pp. 379-390.

Dessureault, S, Lipsett, M. and Scoble, M. Achieving the Benefits of Information Technology in Surface and Underground Mining Processes. 104th Ann. Gen. Meet., Can. Inst. Min. Metall., May, Vancouver, BC. 2002, CD-ROM. 8p.

Dessureault, S. and Scoble, M. Strategy to Achieve the Next Evolution of Process Control in Mining. Intelligent Production Management in Mining Systems. Proc. of the 3rd Int. Conf. on Intelligent Processing and Manufacturing of Materials, Vancouver, BC,

Dessureault, S., Scoble, M., and Mathews, Ken. Factors Controlling the Success of Mining Technology Development and Implementation. Proc. 102nd Ann. Gen. Meet., Can. Inst. Min. Metall., March 5-10, Toronto, Ont. 2000, CD-ROM.

Scoble, M., Dessureault, S. and Rubio, Strategic Planning for Internet Applications in Mining. Can. Inst. of Min. Met. and Pet. Bulletin. Vol 93 No. 1042, July 2000, p.100-104

Dessureault, S., Scoble, M., and Dunbar, S. Intelligent Production Management in Mining Systems. . Proc. of the 2nd Int. Conf. on Intelligent Processing and Manufacturing of Materials, Honolulu, Hawaii, p. 145-149.

Dessureault, S., Scoble, M., and Dunbar, S. Analytical management tools for continuous improvement in mining operations. Proc. of the 29th Int. Symp. of Computer Applications in the Minerals Industries (APCOM'99), Golden Colorado. October 20-22nd. P.719-726, CD-ROM

Dessureault, S., Scoble, M., Dunbar, S., and Richards M., Case Study of Capital Investment Appraisal Methods for Mining Automation. . Proc. 5th ISMMA and 1st Telemin Conference, Sudbury, Ont., June , 1999. 15 p, CD-ROM

Dessureault, S., Scoble, M. and S. Dunbar. Management Tools to Appraise Advanced Technologies in Mining. Proceedings 101st Ann. Gen. Meeting, Can. Inst. Min. Metall., May 2-5, Calgary, Alberta, 1999, CD-ROM.

Dunbar, S., Dessureault, S., and Scoble, M., Analysis of Flexible Mining Systems, Proceedings 100th Ann. Gen. Meeting, Can. Inst. of Min., May, Montreal 1998 CD-ROM

Dunbar, S., Dessureault, Sean, and Scoble, Malcolm. (1998) Analysis of Flexible Mining Systems. Int. Jnl. Mnrl. Res. Eng., Imp. College Press, London. p.165-179

Dessureault, S. Tactical Open Pit Decisions Justified with Real Option Models. SME Annual Meeting, Salt Lake City, Utah, Feb 27-Mar 2, 2005.

Yildirim, Metin and Dessureault, S. Data Mining In Pit Production Management System. SME Annual Meeting, Salt Lake City, Utah, Feb 27-Mar 2, 2005.

Dessureault, Sean, Kecojevic, Vladislav, Nieto, Antonio, and Ganguli, Rajive. Infrastructure for Integrated Data Environments and Analysis (IIDEA) for Mining and Processing Systems. Mine Planning and Equipment Selection (MPES 2005), Computer Applications in the Minerals Industries (CAMI 2005), October 31-November 3, 2005, Banff, Canada.

### ***Professional Short Courses***

“Modern Mining Information Systems: Utilization and Effectiveness.” Developed with partial funding from CRCMining. 2 days. Current schedule confirmed schedule is:

- Taught: November 14-15, 2005, University of Chile, Santiago.
- Planned: January 9-10, 2006, University of Arizona.
- Planned: September 24-25, 2006, CRCMining, Australia.