



CURRICULUM VITAE

Clinton Smyth has more than 30 years of experience in minerals exploration, resource evaluation and mining with one of the largest mining companies in the world. He began his career as a De Beers Consolidated Mines student in 1974, moving to the Anglo American Corporation of South Africa in 1978. He served Anglo American in diverse roles throughout Africa and Australasia until early 2000, when, as Vice President (Exploration), he resigned to establish Georeference Online Ltd (GOL) in Canada. GOL develops knowledge engineering applications for the earth sciences and provides consulting services to the minerals exploration and mining industries.

Clinton is an experienced geochemist, explorationist, software developer, and corporate manager.

Professional Qualifications

Education MSc. (Computing) Imperial College, London (1985)
MSc. (Geochemistry) University of Cape Town (1983)
BSc. (Hons) (Geochemistry) University of Cape Town (1977)

Registration: Pr. Sci. Nat (South Africa); P.Geo. (British Columbia)

Date of Birth: 19 October, 1953

Citizenship: Canadian; South African

Languages: Fluent in English and Afrikaans; Working knowledge of Spanish and French

Member: Society of Economic Geologists; Geological Society of South Africa
Geological Association of Canada; Society of Exploration Geochemists

Dolly Varden Resources Inc.

Vancouver (April 2010 - Present)

President

- Responsible, together with the company's board of directors, for the liquidation of the company's assets. Dolly Varden is listed on the TSX-V exchange.

Georeference Online Ltd

Vancouver (September 2000 - Present)

President, Georeference Online Ltd

- Consultant on international minerals exploration targeting, execution, logistics and efficiency.
- Vice President (Exploration) for Miocene Metals Ltd, managing exploration of their portfolio of seven properties in south-western British Columbia (June 2010 to February 2011).
- President of Target Geological Inc., a project-specific private company established to execute AngloGold Ashanti's drilling project on Dolly Varden Resources Inc.'s Big Bulk Gold Copper Porphyry Prospect (July 2009 to January, 2010).
- Vice President (Exploration) for Durango Capital Corp, managing the company's Hastings Gold Project in north-western British Columbia (April 2007 to April 2009)
- Vice President (Exploration) for Dome Ventures Corporation (April 2005 to March 2007), responsible for selection and development of the company's exploration targets in China, Papua New Guinea, Nigeria and Gabon.
- Commercialised the **CampControl** software system for Internet-based management of minerals exploration (www.campcontrol.com)
- Privately staked and arranged financing for the Redton (www.redton.com) and Hastings Gold (durango.golinfo.com) exploration properties in British Columbia
- Developed the **MineMatch**[®] software system for the standardised description and comparison,



for minerals exploration targeting purposes, of mineral deposits and mineral deposit models (www.minematch.com).

- Developed the **LegendBurster** software system for mapping complex objects using semantic network descriptions in an ArcGIS environment (www.georeferenceonline.com)
- Consultant on knowledge representation and reasoning in the earth sciences to the NSF-funded GEON program in the USA (www.geogrid.org).
- Consultant to the Geological Survey of Canada on knowledge representation and reasoning.

SIGNIFICANT GOL SOFTWARE PROJECTS:

- Created the Yukon Mineral Targets website for the Yukon Geological Survey (www.yukonmineraltargets.com).
- Managed the “MineMatch Geochemistry” project in the British Columbia government’s “Rocks to Riches” program. This is an Internet-delivered project to stimulate investment in minerals exploration in BC. It relies on the integration of state-of-the-art knowledge representation and reasoning software with the province’s earth science databases to deliver GIS-based mineral exploration targets on the Internet (see <http://www.rockstorichesbc.com/>).
- Managed, for the Geological survey of Canada, development of a prototype ontology- and knowledge-based system for the description and comparison of landslides.
- Managed, for GeoConnections, the project entitled “Enabling Semantic Interoperability between Mineral Deposit Descriptions from Different Provincial Databases”. The purpose of the project was to demonstrate how semantic interoperability between Canada’s provincial mineral occurrence databases may be achieved, and the advantages this interoperability offers.

Anglo American Corporation of South Africa	<p style="text-align: center;"><u>Johannesburg (Aug 1999 to Feb 2000)</u> Vice President (Exploration) responsible for all Advanced Projects in Africa</p>
<p style="text-align: center;">ZINC</p> <p style="text-align: center;">COPPER</p> <p style="text-align: center;">MINERAL SANDS</p> <p style="text-align: center;">NICKEL</p>	<p><i>During this period, responsible for all geological aspects of the following projects or mines:</i></p> <ul style="list-style-type: none">• Skorpion Oxide Zinc Feasibility Study, Namibia; Gamsberg Sulphide Zinc Feasibility Study, South Africa; Black Mountain Pb/Zn/Ag Mine Depth Extension Feasibility Study, South Africa.• Nchanga and Konkola Mines, Zambia Responsible for geological aspects of Anglo’s buy-back into the Zambian Copperbelt.• Namakwa Sands Mine, South Africa Geological input into the 4MTPA to 8MTPA scale-up of the ilmenite, rutile, zircon mine.• Phoenix Nickel Mine, Botswana Anglo’s geological input to the feasibility study on upgrading the open pit sulphide mine’s magnetic separation facilities to floatation & SX/EW technology;
<p style="text-align: center;">Minorco <i>Seconded from Anglo American</i></p>	<p style="text-align: center;"><u>Singapore (1996 - 1999)</u> Consulting Geologist¹ responsible for all Exploration in Australasia</p> <ul style="list-style-type: none">• Briefed to establish for Minorco, from scratch, minerals exploration operations for gold and base metals, as well as project evaluation capabilities, in the Australasian region. Reported to Minorco’s Managing Director (Australasia) in Singapore and Minorco’s Head of Exploration in London. Annual budget of around US\$8 million and a staff which peaked at around 100.

¹ This was the term traditionally used by South African mining houses for Vice President (Exploration)



CLINTON P. SMYTH, P.Nat. Sci.; P.Geo.

AUSTRALIA	<ul style="list-style-type: none">• After negotiation of one of the first now-popular major-junior strategic alliances with Goldstream Mining Limited, established an active exploration office in Perth with primary focus on base metals.
PHILIPPINES	<ul style="list-style-type: none">• Active exploration office established in Manila, and later Baguio, focusing on greenfields exploration, advanced project assessments, and relationship building with local industry players. The latter strategy led to the recent copper/gold discovery by Anglo, with Philex Gold, at Boyongan in Mindanao.
INDONESIA	<ul style="list-style-type: none">• Active exploration office established in Jakarta with primary focus on advanced project evaluation and monitoring of already-established joint ventures in Indonesia. Substantial nickel laterite due diligence work was undertaken.
PAPUA NEW GUINEA	<ul style="list-style-type: none">• Active exploration office established in Mount Hagen with focus on greenfields exploration and advanced project evaluation. Substantial groundwork, as well as nickel laterite and copper/gold due diligence work was undertaken.
FIJI	<ul style="list-style-type: none">• Exploration company established and active exploration undertaken by fully financed JV partner looking for copper/gold porphyry-style mineralisation.
MYANMAR	<ul style="list-style-type: none">• In-depth country review undertaken over two years, including reconnaissance groundwork and extensive government negotiation.
CHINA	<ul style="list-style-type: none">• Annual in-country review of investment potential undertaken, primarily based on discussions with government and large investors already active in China.
VIETNAM & LAOS	<ul style="list-style-type: none">• Regular country visits to monitor progress of partner-managed joint ventures.

Experience with Anglo American

Johannesburg (1986 to 1996) and Before

In 1996 appointed Consulting Geologist¹ managing Exploration in Eastern Africa

Under various titles, ultimately responsible for: (a) All Anglo New Mining Business Division's exploration for gold and base metals from Mozambique to Egypt; (b) Its Geochemistry Department which also undertook all the Division's resource evaluation work using DATAMINE; (c) Its Geographic Information Systems; (d) All liaison with Normandy Exploration, Anglo's joint venture partner in SE Asia and Australia.

Significant Project and Mine Work

- **Phoenix Nickel Mine Feasibility Study (Botswana)** Team member throughout study (published 1994) and mine commissioning, responsible for the application of novel evaluation techniques for highly discontinuous mineralisation, and for the development of grade control and reconciliation systems.
- **Sadiola Gold Mine Feasibility Study (Mali)** Feasibility study (published 1993) and early mine construction responsibility for resource evaluation, validation by the International Finance Corporation, and development of grade control and reconciliation systems.
- **Namakwa Sands Mine Feasibility Study (South Africa)** Throughout study (published 1991) and mine commissioning, responsible for resource evaluation, and subsequent development and implementation of grade control and reconciliation systems.
- **Uitkomst Nickel Mine Feasibility Study (South Africa)** Responsible for resource evaluation (published 1991) which included innovative dyke-removal and dilution estimation techniques in DATAMINE.



**Significant
Exploration Work**

- **Navachab Gold Mine Feasibility Study (Namibia)** Member of team throughout study (published 1987) and mine commissioning, responsible for resource evaluation, and development and implementation of grade control and reconciliation systems. Lived in Namibia 1985 to 1986.
- **Middelplaats Manganese Mine (South Africa)** Laboratory Manager - Set up and commissioned assay laboratory, XRF research, grade control, heavy media beneficiation testing. Responsible for the processing section of Feasibility Study on beneficiation by Heavy Media Separation of Middleplaats Mine manganese ore (published 1981).
- Starting in 1992, established and managed exploration activities for gold and base metals in **Tanzania**. With artisanal assistance, discovered the **Buzwagi/Chocolate Reef** mineralisation (over one million ounce Au resource) and effected the **successful tender for the Nyamulilima Hill licence at Geita**, now a gold resource of two million ounces.
- Worked for the Base Metals Division Cape Town office from 1982 on **Zinc exploration** in the NW Cape and on the **Riviera skarn tungsten** deposit in the SW Cape.
- Sent to Imperial College (London) in 1982 to study exploration techniques in **Soil Vapour Phase geochemistry**. Tested these exhaustively in different African terrains.

Other

- **Laboratory Analyst** – Anglo American Research Laboratories, Johannesburg; (Routine geochemical analyses: X-Ray, Atomic Absorption, Wet Chemistry) (1978)
- **Finsch Diamond Mine (South Africa)** Two month open pit mapping project (1975)
- **Letseng Diamond Mine (Lesotho)** Two month underground mapping project (1976)

Publications

- **‘Ontology Design for Scientific Theories That Make Probabilistic Predictions’** Poole, Smyth & Sharma; IEEE Intelligent Systems, vol. 24, no. 1, pp. 27-36, Jan./Feb. 2009
- **‘Semantic Science: Ontologies, Data and Probabilistic Theories’** Poole, Smyth & Sharma in “Uncertainty Reasoning for the Semantic Web I”; Springer, October, 2008.
- **‘Semantic e-Science and Geology’** Clinton Smyth, David Poole and Rita Sharma, 2007 Association for the Advancement of Artificial Intelligence Workshop on e-Science
- **‘Representing and Reasoning with Intervals’**, Erica Huang, Clinton Smyth and David Poole. 2005 Annual Conference of the International Association for Mathematical Geology
- **‘Type Uncertainty in Ontologically-Grounded Qualitative Probabilistic Matching’** Poole D. and Smyth C. Eighth European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty (ECSQARU-2005), Barcelona, July 2005.
- **‘Qualitative Probabilistic Matching with Hierarchical Descriptions’**, Smyth C. and Poole D. Ninth International Conference on Principles of Knowledge Representation and Reasoning (KR-2004), Whistler, June, 2004.
- **‘Expert System-Assisted Interpretation of Multi-Element Geochemical Borehole Profiles’** 1985 MSc. Thesis (Computing) Imperial College, London.
- **‘X-Ray Fluorescence determination of manganese levels in powder brickettes of manganese ore’** 1983 MSc. Thesis (Geochemistry) University of Cape Town