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VIEWS II

Exploration—It's All About Turning Rocks into Money

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INTRODUCTION

I've been in the exploration and mining business for 32 years, during which time my professional career has evolved from mapping and sampling rocks into "turning rocks into money." During this time I've evaluated and valued everything from grassroots properties to feasibility stage projects in over 60 countries as a consultant to junior or major mining companies and, more recently, as an advisor to funds and retail investors. This history forms the basis of the perspective presented here, that there is a disconnect between the geologists and financiers. This disconnect between rocks and money is due to a lack of understanding between the two and results in inefficiencies and poor capital allocation within the exploration business.

Exploration Geology—A Lifestyle Choice

Exploration geology is not a job; it's a way of life with fortunes tied to the cyclical nature of the global economy and metal prices. The people who are best at it, the ones who are ultimately successful, stay with it through good and bad times. I realize that there are those amongst our SEG membership who would have it otherwise, who would like to make the profession more secure for those young, energized learners just joining our ranks. Thompson and Kirwin (*SEG Newsletter,* April 2010) recommend the perfectly logical (and true) approach, that mining companies should mentor and employ explorationists during the bust times because every bust is followed by a boom—a boom in which the mining companies desperately need the people they just laid off. I wholeheartedly agree, but it ain't gonna happen. The company's cash position and balance sheet trumps all else.

When metal prices are low and a mine isn't making money, it will always be the guy or gal who is spending money looking for yet another deposit who will be let go. Therefore, my sincere advice to all of you is that during boom times (NOW—when your intellectual capital is most needed) you should double your rates if you are independent and demand stock options if you are working for a company. If neither of these is feasible, go where they are. There is no reason why the promoters and brokers should make big money off the explorationists' ideas without compensating them in full. The exploration geologist is the invaluable linchpin for the whole junior stock machine.

It's All About Money and Odds

In the end, true exploration is about creating value through discovery: the recognition and delineation of a potentially economic mineral deposit—one that actually makes money for the people putting up the high-risk dollars needed to explore. The money angle is a very important point that is all too often overlooked by geologists and the Society of Economic Geologists. More SEG papers should address the basic economics of mining and the cost of exploration as it pertains to the science behind mineral deposits. The time and cost to delineate the tonnes and grade of a deposit are critical aspects of economic geology.

That cost for a junior exploration company is borne by speculators who are taking a long-odds gamble that the team can find something of potential interest before the money runs out. Each dollar spent by a junior explorer has to be replaced, which means shareholder dilution at the company level through the issuance of more shares. For a speculator in the junior exploration sector, i.e., the person putting up the high-risk dollars to drill, that cost and dilution is crucial. Of what value is a discovery to the shareholders if the share price goes nowhere because a ten-fold increase in the market capitalization is accompanied by a ten-fold increase in shares issued? It's all about the share price! Ditto your stock options.

We, as a profession, are wasting substantial sums of money on bureaucratic activities (Sillitoe, *SEG Newsletter*, October 2010) that have little if anything to do with discovery, and drilling properties that don't warrant drilling. Think about it; how many dog properties have you walked over that someone is promoting —trying to raise money to drill test— and the money actually comes through? That's another way of saying money is too easy to come by ($5.2 billion was raised on the Toronto Venture exchange for mining equities last year alone), as opposed to the more commonly pitched "not enough is being spent on exploration." The reality is that the available money is not being spent *efficiently* on work that leads to a discovery: field work and intelligent drilling.

All too often, an exploration geologist seems to see his or her job as one of finding a drill target. It isn't. The job is, or at least should be, delineating a drill target that honestly offers a viable shot at a game-changing discovery—a find that takes a junior stock from $0.25 to $2.50 or $25, or truly adds to the bottom line of a mining company. The common shortsighted junior explorer's business plan of raising money and drilling every anomaly commonly ignores the characteristics and probable economics of the mineral system being tested. It means a lot of money gets wasted, and ultimately the company share

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structure gets blown out to a level where a discovery is almost meaningless to the share price.

Mother Nature and High Finance

A big part of the predicament is that Mother Nature has been very generous to exploration geologists and financiers by scattering geochemical and geophysical anomalies all over the world. She has not, however, been as generous in providing us with economic mineral deposits, or even anomalies that warrant serious work. Hence, we have too many geologists and financiers chasing too few truly prospective anomalies.

Therein lies the rub. Finance is a very profitable business that derives a 5 to 8 percent commission from the money raised, plus about 5 percent in broker warrants (B warrants) before a deposit is delineated, and often before a drill hole is even put into the ground. On a $10M financing deal that's up to $800,000 in commissions. The B warrants represent additional leverage on a nearly free ride if the company gets lucky. That's a strong monetary incentive, especially if you have a condo in Cabo, two kids in private school, and your eye on a Bentley.

Because minerals exploration is such an inexact science—described by a unique and obscure jargon referencing grams per tonne—that is devoid of any economic basis, selling an exploration play to someone with a limited understanding of mining and geology isn't that hard. That pitch is made all the easier because it is generally accepted that most exploration ventures are destined to fail, anyway; therefore, "Who's really to blame?" However, because the profit potential from that 1 in 1,000 discovery is unparalleled, I find that most people are willing to take the gamble based on very little hard data or research. The net result is that the simplest story to sell to most of the people with money ends up being the promotion of historically good drill holes or ounces or pounds in the ground—basically, recycled projects.

Flashy drill holes and resources are something nearly everyone can readily comprehend without having to concern themselves with the scientific or economic details. Promoters know this, and it seems to me that more money is raised on old drill holes and worthless resources than is actually raised for legitimate exploration plays. It's beyond me why time after time investors fund the twinning of a good drill hole, when in fact the original problem with the property wasn't the good hole but all the other miserable ones. Wouldn't it make more sense to test those lesser holes in the hopes that there was a mistake in the previous assays as opposed to confirming the previous good assays? Likewise, valuing a property based on ounces or pounds in the ground without some sort of economic reality is a sham. But these are the stories that too often seem to bring in the money.

The mining community's tacit support of this financing model is borne out by commonly repeated maxims that suggest that the more companies that drill a property the better the odds, and the only way to discover a deposit is to drill, drill, drill. This only works if you have the money to do so *and* recognize when you are in the right place. Although it is true that discoveries are commonly made on properties that have undergone many previous rounds of exploration, and that it can take dozens or even hundreds of holes to find a deposit, the reverse logic that every property needs to be tested and drilled ad nauseam is untrue. Add money and stir is not the answer. Intelligent drilling is.

What's the answer?

We are finding fewer and fewer deposits despite spending more on exploration. The exploration community has covered Earth fairly comprehensively; at this point most big discoveries will require even more money and commonly high-tech methods of exploration. That means more cost and a lower success rate. We also face increasing issues of metal production due to rising demand for the metals (reserves are being depleted faster than ever), higher capital cost, longer lead times to build a mine, and more social realities to work through. To me, this all points to long-term higher metal prices and premiums for significant discoveries, and if you are savvy, higher pay. Exploration will continue to be a great profession for those willing and able to handle a bit of uncertainty during the inevitable lower part of the cycle.

I concur with all the previous contributors to this op-ed series who say that we need mentors to pass on their knowledge and wisdom. Geology and exploration require observational skills, abstract thinking, and the ability to see what others may have missed. These skills take time to develop. Boots-on-the-ground field experience is priceless, and creating hand-drawn maps and sections should be a requirement—the thought that goes into actually drawing *that* contact cannot be replicated by a computer.

These skills need to be backed by an understanding of what succeeds in making an economic deposit and what fails. It is important to know what it is you are actually looking for, what it looks like, and what it doesn't. Next, what are the costs to get to a go, no-go decision, and how (and at what price) do you raise the money to get there? Exploration funding is success-based, so what constitutes success (and failure) at the exploration level needs to be flexible but based on someone's economic assumptions and understood by the investors. These topics, plus exploration case histories, more deposit descriptions, and maybe a bit more empiricism in SEG papers would be helpful in reaching this goal.

On the finance side, I would like to think that the people approving the budget or putting up the money understand the business and the science. Exploration is the research and development arm of mining. However, most accountants, lawyers, and engineers are not equipped with the experience to differentiate the relative potential of a number of exploration proposals presented by the research department. Most brokers and retail investors face similar hurdles; exploration is generally not their field of expertise.

Finally, it's worth remembering that the people who put up the money for exploration are doing so for a profit, hoping to do so via a discovery. When the business relationship between financier and geologist is structured such that their financial interests are closely aligned, the odds of success improve and capital can be more efficiently employed. A discovery relies on explorers successfully executing the job of exploration with the money available. It also relies on the financiers understanding an outline of the science behind exploration, and recognizing that discovery is a process that takes talented explorers and time. How to best execute this relationship should be the topic of a whole new dialogue.

That's the way I see it.