2-2015

What a Ride: Mining Industry to University

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SME Annual Meeting
Feb. 15 - 18, 2015, Denver, CO

Preprint 15-091

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ABSTRACT

This paper will share my 'shift in career direction' journey from corporate mine engineer, with 31 years of mining various commodities with a wide range of responsibilities in a variety of countries, to the world of academia. There are times in one's career that a change is required, albeit perhaps not as drastic of a change as moving to teaching. This paper will share how the transition arose, the decision to make the change, the challenges of the first year in academia, and the journey within academia going into the second year.

INTRODUCTION

As a graduate of the Montana College of Mineral Science and Technology (Montana Tech) with a B.S. Mining Engineering degree in May of 1982, my first job with Utah International in the Farmington area took me back to my home state of New Mexico. Some of you will remember that the early 1980's was not a period of prolific opportunities for mining engineers; given low commodity prices, especially for copper (for example, Anaconda Company had been taken over by Arco and was in the midst of closing down its Butte operations). Coal was good and the learning opportunities abounded with Utah (which became BHP and then BHP Billiton). Gold was taking off in the mid to late 1980's thanks to use of cyanide and heap leaching technology improvements, coupled with deregulation of the gold price, so I ventured off to work in the gold industry with a (then) junior Canadian company called Barrick at a new acquisition of theirs known as Goldstrike. That same gold surge was causing a shortage of iron ore mining engineers in Australia so after a few years in Nevada, I uprooted the family and left for a little town in the Pilbara of West Australia, known as Newman, to work in the iron ore industry with BHP Iron Ore. An initial short overseas posting turned into six plus years before transferring to BHP's Indonesian steam coal mines in Kalimantan on the island of Borneo. BHP was going through a rough period following some ill-fated projects (Magma copper purchase, Beanup and HBI) and was reviewing assets and staffing so internal opportunities became scarce. Employees were encouraged to 'leave the company and find work elsewhere.' So, off I go to Argentina to try copper mining in the Andes with Minera Alumbrera. This short stint in South America was followed by a move to another mining town, Morenci, Arizona, and a posting with Phelps Dodge (now Freeport McMoran). After 12+ years without living close to snow we moved to the Denver area in a new position with Newmont Mining Corporation. Along the way I became a Professional Engineer (Nevada) and completed a Masters in Project Engineering and Management. After 11 years with Newmont, I moved to Butte, Montana where I accepted a position as Assistant Professor of Mining Engineering.

My 31 year career has always been centered on surface mining activities in a variety of commodities (coal, gold, iron ore, and copper) while living in diverse localities (Australia, Indonesia, and Argentina as well as the USA). During my career in mining I have worked both on the technical side (mine engineering, planning, design, scheduling and costing) as well as on the operations side (foreman, superintendent, mine manager). Corporate experience furthered my technical knowledge while adding a solid understanding of business, projects and strategic planning. I have led small to large teams, provided leadership in safety, and recruited/developed teams (including graduate mine engineer development programs) with a proven ability to perform in a wide variety of cultural environments.

From my application letter to Montana Tech: *At this time in my career, I have a strong desire to give back to the mining industry to ensure the safe and prudent continued exploitation of our natural resources. I can be most efficient at the 'giving back" through working with students in the development as future mine engineers and stewards of our natural resources*.

So, how did I come to this conclusion?

FROM INDUSTRY TO ACADEMIA

The short version of why I made the change to academia is that it was on my Bucket List to teach. But how did I know it was "time," especially at a time when I had a senior role within Newmont's Corporate Mine Engineering group?

First, there was an opening at Montana Tech. This wasn't the "first" opening at Montana Tech as the Mining Engineering Department had been suffering from turnover recently due to retirements and people pursuing other opportunities. Having an opening at least meant that I could put my hat in the ring. Obviously when you are gainfully employed in a steady position with a decade at the same company, it is not wise to let your current employer know what you are chasing otherwise it might jeopardize current ongoing employment.

Second, I had delivered several guest lectures at Montana Tech and assisted in developing and delivering internal Newmont mine engineering training. The experience was that teaching is fun and is not overly difficult to develop material.

Third, self-reflection led me to apply. Newmont had invested in personal coaches for many senior level technical personnel and I was fortunate to have been selected to benefit from a coach. A part of the coaching experience included having a 360 review conducted; the 360 review incorporates feedback from your direct reports, peers, supervisor, and the one-up supervisor who all weigh in on your leadership and management style. Results of the 360 review were a mix of good and bad depending on your point of view. In addition to the personal coaching, I read a plethora of leadership and management books while sitting on airplanes traveling to Newmont's far-flung sites. One of the books I read (Drotter, 2011) illustrated where I was in the corporate hierarchy and where the path ahead lay. I still had that "What do I want to be when I grow up" question nagging me. My coach aided me in my career vision by challenging me to identify my personal motivation and what brings passion to my efforts. I know that mining brings me passion; however, I was at a quandary of where to direct that passion—spending additional time in a corporate environment, moving to a mine site or trying something totally different. I chose the latter as I realized, through the personal coaching and the reading, the intrinsic motivation of really enjoying my work had waned. I realized that I really need to know that I can directly help move the needle (sense of achievement) and continue personal growth (Pink, 2009).

Fourth, and probably most importantly, I had the support of Sonya, my wife of 25+ years. Sonya had spent elementary school years in Butte so was familiar with the city, and has many other ties to southwestern Montana. Sonya's support was key to applying for the role of Assistant Professor at Montana Tech.

Fifth, Montana Tech needed to fill the position for fall semester 2013 whereas the interview was in December 2012. Assuming I was

selected for the position, the additional time before starting allowed me to get some personal matters better organized before departing Newmont.

After the application and interview processes were completed, I was offered the position of Assistant Professor of Mining Engineering at Montana Tech.

THE FIRST YEAR

OK, I got the job, now what? Oh, and by the way I was told I was also going to be Department Head. I had compiled a 90 day plan for what I thought I could achieve (Watkins, 2003) which, in hindsight, was a bit ambitious given the change in work requirements from "doing" to "teaching."

I arrived to an office devoid of a "how-to" manual. My first discussion with the mining faculty was about the distribution of classes we would each be responsible for teaching. Sometime about here is when panic set in: it was the realization that I had to come up with more than just one guest lecture. I needed something in the order of 120 lectures given the three courses I agreed to take on. How does one plot out 3 fifty minute lectures per class per week over a fifteen week period when you don't know if you will be ahead or behind of plan for each lecture?

Help From Inside

Thanks to the existing faculty (especially Thomas Camm & Paul Conrad) for sharing their notes, syllabus and lecture slides for two of the courses I was taking on. Without these I would have not made it a week in the new role. Having a base to start from allowed me to add content, to change examples, and to re-use existing material to fit my style and needs.

Help From Afar

One course I was taking on was taught the previous year by an adjunct professor (Jeffrey Johnson) then on loan from NIOSH. Jeff sent over a comprehensive quantity of material for the class all housed on a thumb drive. I could now use R&D (rip-off and duplicate) to get this course set up for my style. In addition to the course notes sent over, Jeff gave me one of the best pieces of advice, and advice that reduced my anxiety level in class planning, and it was something to the effect of "Be ready for the next class and the one after that, don't try to map out the whole semester." That little, to some easy, advice gave me the focus and hope that I could tackle this teaching gig.

Survival

Thanks to the excellent support of the other faculty, and the plethora of material available on the worldwide web, fall semester was hectic, but we survived. A campus resources available to aid one in this journey, an SGID (Small Group Instructional Diagnosis) was used to provide feedback on my teaching. When an SGID is conducted, an outside faculty member comes to your class and asks the students what is working, what isn't working and what recommendations do you have for the professor. This feedback helped me to adjust my teaching quality as part of continuous improvement in delivery of content.

Spring semester became easier as the Department hired the remaining open faculty position thereby reducing course loads on all.

YEAR 2

The second year began without the jitters of the first year. Focus now was on reviewing, refining and upgrading the course notes from the year before. Now it was left to tackle more of the other "stuff" academia works on: recruiting students, writing research proposals, completing performance reviews, re-invigorating the Industry Advisory Board, planning for the next ABET review, etc., etc.

THE JOURNEY CONTINUES

As Thomas Camm once told me, teaching is like having a mistress that says when you depart, "Today was OK, but what are you going to bring me tomorrow?"

In closing, I am loving the change from industry to academia. I am having more fun than one person should be paid to do. Job satisfaction comes from several areas. First, I work with some tremendous faculty who bring over 100 years of work experience prior to full-time teaching. Our faculty has complementary skills in teaching and experiences with little overlap and five unique personalities. Second, satisfaction is derived from working with the students; seeing the growth in their skills, being able to present real-world problems for them to solve, and seeing the passion in them for the industry especially after their first internship. Third, there is genuine support and an overwhelming positive response from industry in the department faculty and for me as the Department Head. The sense of achievement has returned for me as I am able to award scholarships to help students pay for school and knowing that they might graduate debt free. Helping students find internships and full-time employment through connections and referrals is sometimes time consuming yet very rewarding at the end of the day. Support from colleagues in making the transition has been tremendous and followed up with guest lectures provided and supplying projects for senior design. Reconnecting with alumni, and connecting with new alum fosters additional support for the department and Montana Tech. It isn't all beer and skittles, stress is present but it is not the kind of stress that keeps me up at night as in industry. Stress comes in the form of ensuring quality time is given to the students in the class room and I am available for consultation on their agenda. Hours can be long when devoting the time to the class, the students and the campus. Drivers for performance are different, academia doesn't have to make tons or grade or a safety target but we do have to ensure we are teaching well, pursuing research and giving back to the community. And the annual performance review has no guarantee of a pay rise as that is in the hands of the state legislature now. Oh yea, and forget about production/performance bonuses.

Lastly, yes, there is a pay difference from industry to academia. Academia pays well compared to the "average" for Montana and is exponentially different than industry. To embark on such a radical income change one has to be able to downsize, not take on additional debt, or be in a position that a second income makes up the difference. Compared to Denver, I can walk to the office thus reducing commute time and costs, the cost of living in Butte is reasonable, and access to the outdoors is at least an hour closer. Butte doesn't have as many distractions to spend your money on, like Broncos season tickets—you can still catch all of the games in the warmth of your living room and beers don't cost seven dollars!

I have seen the graduates of 2013/2014 depart for new adventures with 100% placement for US citizens. I do not know if in such a short time I had any influence on those first graduates but I am sure I am impacting this years'.

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