Northern influence: how James Wyant helped grow the optics community in Montana

Joseph A. Shaw*[a], Lawrence A. Johnson[b]
[a]Optical Technology Center, 334 Norm Asbjornson Hall, Box 173515, Montana State University, Bozeman, MT, USA 59717-3515; [b]Montana Photonics Industry Alliance, Bozeman, MT USA

ABSTRACT

Although Dr. Wyant's career has been spent largely teaching optics, conducting research, and growing companies in Arizona, his influence also has strongly and positively affected and aided the establishment and growth of the optics community in far-away Montana. The authors of this paper are both recipients of Optical Sciences PhDs from the University of Arizona, where they first encountered Dr. Wyant and his inspirational teaching. Their career success has been aided directly by Dr. Wyant's assistance long after their graduation, and they both have been leaders in growing the Montana optics and photonics community. This paper shares some stories of how Dr. Wyant's influence has indirectly and directly strengthened and promoted the successful growth of optics in Montana industry and academia.

Keywords: James Wyant, Montana, Arizona, Optics and photonics

1. INTRODUCTION

All successful professors create a legacy of former students scattered throughout their professional community, but Dr. James ("Jim") Wyant had an unusually significant impact on us and therefore on the growing Montana optics and photonics community. The purpose of this paper is to publicly acknowledge Jim Wyant's role in our careers and as a "northern influence" that helped establish and strengthen the optics and photonics community in Montana.

We both have had the honor of filling key roles in the Montana optics and photonics community, Johnson in industry and Shaw in academia. We are both Ph.D. graduates of the University of Arizona's Optical Sciences Center (now the James Wyant College of Optical Sciences). Johnson graduated in 1981 with a dissertation entitled *A fixed-delay, frequency shifted Michelson interferometer for remote air temperature measurement*, while Shaw graduated in 1996 with a dissertation entitled *Laser-glint measurements of sea-surface roughness.* Both dissertations described optical methods for remote sensing of the environment, developed while the authors worked at the National Oceanic and Atmospheric Administration (NOAA) Environmental Research Labs in Boulder, Colorado. Although we worked in the same research organization, we did so at different times and first met when Shaw joined the faculty of Montana State University in 2001. By that time, Johnson had been running ILX Lightwave Corp. to manufacture diode laser instrumentation in Bozeman, Montana for 15 years (Figure 1). In 2004, Shaw became the Director of the Optical Technology Center, a multi-college organization at Montana State University (MSU) devoted to promoting optics education and research for helping to establish and grow an optics and photonics industry in and around the small mountain town of Bozeman, Montana.[1,2] Further, after Johnson sold his company in 2012, he became the founding president of the Montana Photonics Industry Alliance (MPIA).[3] As a consequence of these leadership roles in the Montana optics and photonics community, we have interacted frequently (Figure 2) and have had ample opportunity to reflect on the enormously positive impact Jim Wyant had on each of our careers and, through us, the Montana optics and photonics community.

The following sections present our individual accounts of the influence Jim Wyant had on our separate careers and a few brief comments tying these together for the purpose of acknowledging and thanking him for the wonderful influence he had on the Montana optics and photonics community.

*joseph.shaw@montana.edu; phone 1 406 994-7261; fax 1 406 994-5958; https://optics.montana.edu/

Tribute to James C. Wyant: The Extraordinaire in Optical Metrology and Optics Education, edited by Virendra N. Mahajan, Daewook Kim, Proc. of SPIE Vol. 11813, 118130N
 · doi: 10.1117/12.2570125

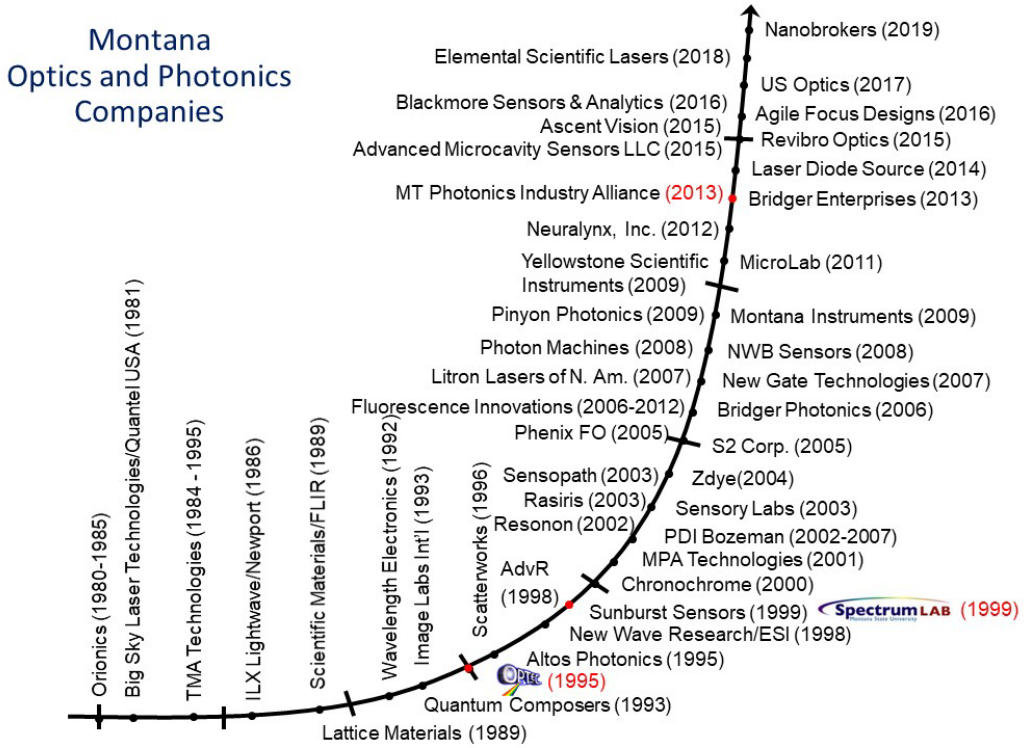

Figure 1. Timeline showing the establishment of Montana optics and photonics companies and academic organizations.

Figure 2. Photograph from 2015 of Larry Johnson (center) and Joseph Shaw (right) presenting Montana Optics Innovator Award to Ralph Hutcheson, a Montana State University graduate who grew the world's first laser crystal (at Union Carbide Corp. for Ted Maiman's 1960 laser) and later founded Scientific Materials Corp. and S2 Corp. in Bozeman, Montana.

2. JOHNSON'S ACCOUNT OF WYANT'S INFLUENCE

Like so many students at the Optical Sciences Center, Jim Wyant's class in Optical Interferometry was one of my favorites, not only because of the subject matter but perhaps more because of the knowledge, experience and teaching style of the instructor. Years later, looking back I recalled that Dr Wyant had written a personal note in my lab notebook that said something like, "If you ever start your own company, let me know because I might like to invest in it."

Not so many years after that I did start my own company, ILX Lightwave. ILX was one of the early optics companies in what has today become a growing cluster of optics and photonics companies in southwest Montana. And I was fortunate that Jim did become an early investor and one of the longest serving members of our Board of Directors (Figure 1). Over the years I gained an even deeper admiration and respect for Jim Wyant because of his business acumen, his ability to help me see through complex business issues, and his patience as an investor.

Perhaps my most memorable moment in Jim's support of ILX occurred during the darkest hours of the collapse of the telecommunications market in the early 2000's. At that time telecom accounted for 90% of ILX's business and the market's collapse led to a 90% downturn in our sales. Many companies were going out of business and ILX was suffering huge financial losses. We were fighting for our life and the future was uncertain. Out of that chaos, Jim Wyant stepped forward and offered to loan the company $5 million to give use financial cushion to aid the turn around. ILX survived and eventually returned to growth profitability.

Like many Optical Sciences graduates, in the quiet moments when I reflect back over my wonderful career in optics, I often think of the handful of people who were my mentors. Jim Wyant figures prominently in that group.

Oh, and another thing. After Jim had been on the ILX board for many years I reminded him of the note that he had written in my lab book. He quietly said that he didn't remember ever writing such a note. I dug out the notebook to show him his comment, and guess what. His handwritten comments were encouraging but there was no mention of investing!

Figure 3. Photograph from 2000 of the ILX Lightwave Board of Directors in Bozeman, Montana. Jim Wyant is on the left side and Larry Johnson is at the center.

3. SHAW'S ACCOUNT OF WYANT'S INFLUENCE

I first heard of Jim Wyant from Madison (M. J.) Post, a NOAA lidar researcher and colleague who had earned a Ph.D. at the Optical Sciences Center (OSC) in 1985 with a NOAA fellowship while working at the NOAA Wave Propagation Lab (WPL) in the same division as Johnson. When I was hired at WPL in 1989, Post enthusiastically encouraged my long-held interest in studying at OSC and told me especially to not miss learning from Jim Wyant and playing basketball with Jack Gaskill (the latter referring to an inside joke about middle-aged Gaskill dunking on the athletic Post). Figure 4 is a photograph of me with M. J. Post during a NOAA field experiment at Pago Pago, American Samoa in early 1996, just a few months before I completed my OSC dissertation.

Figure 4. Photograph from 1996 of M.J. Post (left) and Joseph Shaw (right) on a scientific expedition in Pago Pago, American Samoa at about the time of Shaw's Ph.D. graduation from the University of Arizona.

I was a graduate student at OSC from 1992 to 1996, the last two years of which were spent completing my Ph.D. dissertation back at WPL. As a graduate student, I found Wyant's teaching to be both informative and inspirational, but we got to know each other mostly through professional interactions that included Optical Society of America leadership meetings and OSC events after he became Director of OSC in 1999 (and Dean of the College of Optical Sciences in 2005). In my early career, I learned many lessons from Jim Wyant about professional service and publishing. He may now have some vague memories of talking and emailing with me, but he probably was mostly unaware of me watching and learning. One of the things I have always treasured highly about my affiliation with OSC is the opportunity to be trained by and to learn from and alongside such outstanding people and leaders in the optics and photonics community (including my fellow OSC students and alumni).

One day in September 2007, I received an email from Jim Wyant that taught me in a new way about Wyant's selfless commitment to service. We had corresponded a few times before that about Optical Sciences and OSA business, including providing support letters for deserving award and Fellow nominees (I had the honor of being elected an OSA Fellow in 2004). In this particular email, he said, "I was going to ask you to send a reference letter for xx to become an SPIE Fellow, but I noticed that you are not a Fellow of SPIE. This should be fixed." Then he proceeded to ask for my CV and for reference recommendations. Despite the enormously busy load he carried as Dean of the newly created College of Optical Sciences, entrepreneur, Editor-in-Chief of *Applied Optics*, and other roles he had, he took the time to nominate me as an SPIE Fellow, which honor I received in early 2008. This is only one of countless Jim Wyant acts of service, but it touched me deeply.

Imagine the large smile that crossed my face when leaders of the Montana State University SPIE Student Chapter asked me if I had ever heard of "Jim Wyant" and if I thought he might be a good visiting lecturer! I of course overwhelmingly encouraged this, and we all enjoyed an inspiring visit by Jim Wyant to Montana State University in the fall of 2019 (Figure 5). The students were particularly inspired to hear how he had started and grown several different optics companies during his career. This made a lasting impact that will help continue our heritage of successful optics and photonics companies founded by and run by Montana State University graduates.

Figure 5. Photograph from 2019 of Jim Wyant (center) with student leaders from the Montana State University SPIE Student Chapter and their faculty advisor, Joe Shaw (left).

4. CONCLUSION

We have reviewed the interesting and unpredictable ways that our personal and professional lives have benefitted from our association with Jim Wyant – first as graduate students and later as colleagues and business partner. His teaching, actions, and selflessness have elevated our professional success and, through us, the success of a rapidly growing cluster of optics and photonics companies in Montana. Jim's northern influence was a result of his investment in and professional guidance for ILX Lightwave, one of Montana's earliest photonics companies, which was critical to the establishment and subsequent growth of this industry cluster, and his generous service and inspired teaching, which significantly elevated the stature of the academic optics and photonics community in Montana.

REFERENCES

[1] Shaw, J. A., "Synergistic development of optics education and industry in a small university town," Proc. SPIE 9793, 97932J, https://doi.org/10.1117/12.2223218 (2015).
[2] "Optical Technology Center" < https://optics.montana.edu/> (6 July 2021).
[3] "Montana Photonics Industry Alliance" < https://www.montanaphotonics.org/> (6 July 2021).