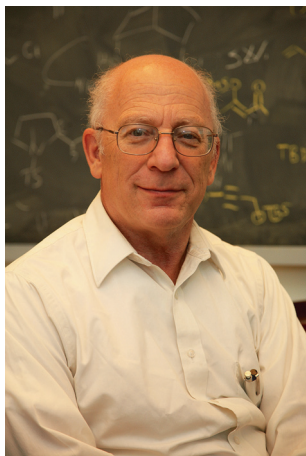


## Preface – “The Power of Transition Metals: An Unending Well-Spring of New Reactivity” in honor of Prof. Barry Trost and 20 Years of the Thieme reference work *Science of Synthesis*



I am very pleased and honored to introduce the SYNLETT Special issue “*The Power of Transition Metals: An Unending Well-Spring of New Reactivity*” in honor of Prof. Barry Trost and 20 Years of the Thieme reference work *Science of Synthesis*. As a former postdoctoral research associate in Professor Trost’s group at the University of Wisconsin, Madison, I can state unequivocally that my years spent there were among the most consequential of my career, and thus the debt I owe him is immeasurable. Barry Trost was a founding father of the *Science of Synthesis* series published by Thieme and has been a Member of the Editorial Board for over 20 years now. *Science of Synthesis* is a reference work that has been designed to address the chemistry information needs of the organic synthetic chemist and, more specifically, to help all those involved in designing organic synthetic routes, whether for research purposes or teaching and/or learning, by providing trusted and reliable information on the best synthetic methods available. So far, over 2,000 expert authors have written insightful full-text reviews for this resource, which is used by chemists worldwide ([sos.thieme.com](http://sos.thieme.com)).

Few chemists in the past 50+ years have had as much influence on the art and science of organic synthesis as Professor Trost, the Job and Gertrud Tamaki Professor Emeritus in the School of Humanities and Sciences at Stanford University. Born in Philadelphia, Barry chose to attend the University of Pennsylvania as an undergraduate when that institution offered him a scholarship, wresting him away from another local university in which he had intended to matriculate. According to Barry, his experience at Penn changed his life, opening his eyes to the vast possibilities and excitement of

chemistry research. While at Penn, Barry carried out undergraduate research with Professor Edward Thornton, and then entered the PhD program at MIT under the direction of Professor Herbert O. House. According to my colleague at Penn, Professor Madeleine Joullié (Barry’s organic laboratory instructor), the MIT experience had a deleterious effect on Barry, because while at Penn he was a nice, polite young man, but emerged from the MIT experience with a decidedly different personality. Needless to say, those who know Madeleine understand that this assessment is made with tremendous admiration and affection.

The rest of the story, as they say, is history. Barry earned his PhD degree at MIT in 3 years and moved directly to the University of Wisconsin, Madison, as an Assistant Professor of Chemistry at the ripe old age of 24 (barely older than the students he was teaching!). He was promoted to Full Professor just 4 years later, and was inducted into the National Academy of Sciences at the age of 39. He moved to Stanford University in 1987, and just recently stepped down from this post at Stanford after a remarkable 55 years in academia. In between there were an amazing number of prestigious international awards, visiting faculty positions, distinguished lectureships, editorial appointments, and short courses, but most importantly there was an torrent of stellar science and the superb nurturing and mentoring of his coworkers.

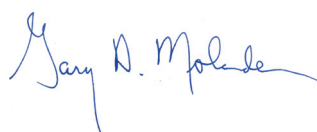
In nearly 1100 original articles, research from the Trost laboratories established ground-breaking new paradigms for many aspects of modern synthetic organic chemistry. A detailed listing of his contributions would require an encyclopedic itemization, but knowledgeable readers can readily recognize his fingerprints in the following areas: his pioneering articulation of the importance of selectivity (chemo-, regio-, and stereoselectivity) in organic synthesis; the establishment of one of the foundational pillars of Green Chemistry in his insightful and seminal vision of Atom Economy; his leadership in merging organometallic chemistry with organic synthesis in the development of myriad new synthetic methods and application of these methods to the synthesis of more than 200 natural products, many of which are the most efficient ever devised; and in the use of Nature’s enzymes as models for the development of ligands to control chiral space for enantioselective transformations. The list goes on and on.

Most importantly, however, Barry was the consummate educator and mentor. It is again impossible to capture in a single paragraph the essence of his importance in the academ-

ic training and education of more than 600 PhD students, postdoctoral research associates, and visiting scholars from all over the world (some of whom have contributed to this special issue of *SYNLETT*). It is in itself a remarkable achievement, exponentially amplifying the impact that Barry has had in the development of science in both industry and the academy. A listing of his coworkers represents a Who's Who of modern organic chemistry. Despite the large numbers of researchers passing through his laboratory, we all received remarkably individualized attention through weekly "confessions", where Barry would walk through the labs with the hallmark "How's it going?", meant as a prompt to discuss recent research accomplishments. Those absent for Barry's stroll through the labs received a "please see me" note, the universal call for an in-office confession. Every engagement with Barry was an opportunity for enlightenment. Group meetings were marathon sessions of problem-solving, where the collective wisdom of 30+ individuals was no match for the Master. It was often the case that Barry would quote some fact from an article, citing not only the author, the journal and the year, but the page number as well. I am not sure that he realized it, but afterwards some of the grad students would race to the library to check his memory. More often than not, they were left in amaze-

ment at his accuracy. Barry's extraordinary vision, his reverence for the history of chemistry, and his focus on tackling important problems all made an indelible mark on me and others. The lessons I have taken from my experiences in his laboratory have served me extraordinarily well, and I can only express my deepest gratitude for all that he has done in support of my own endeavors in science. It is thus with tremendous admiration for all that he is done for our science that this special issue of *SYNLETT* is dedicated.

*On Behalf of the Science of Synthesis Editorial Board*



**Gary Molander**, Member of the Science of Synthesis Editorial Board and Hirschmann-Makineni Professor of Chemistry, University of Pennsylvania