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My collaboration with Landon Rabern was highly productive and I will always feel blessed for everything that he taught me, both about math and about how to do research. My confidence and skills grew tremendously from working with him, and I will always be grateful for having known and worked with him. Below are a few of my memories of Landon. (I do include references to his bibliography, but the reader won't miss much by skipping these.)

Landon's Favorite Problem, and a Need to Tinker

A key early result in graph theory is Brooks' Theorem. The details are unimportant, but the general idea is that there's something we'd like to do, and in fact we can always do it *unless* our graph has one of two well-understood obstructions. Landon's favorite research problem was undoubtedly the Borodin-Kostochka Conjecture. You can think of it as a conjectured "older brother" of Brooks' Theorem. Basically, it says that in most cases we can improve a little further on the result guaranteed by Brooks' Theorem, unless our graph has one of *three* well-understood obstructions. Landon was always thinking about how to prove BK (as we called it), so naturally he often returned to proofs of Brooks' Theorem. But Landon wasn't content just to study how others had proved Brooks' Theorem. He was frequently experimenting, trying to find "an even simpler proof" (which he did, on more than one occasion [21, 25]).

Knowledge and Understanding

Landon always struck me with both his *knowledge* of previous work by others and his *understanding*, which included his abilities to (a) make connections where I saw none and (b) extract from old papers ideas that could still bear more fruit. In 2013 I served as an external reviewer for Landon's PhD dissertation, which strengthened and extended numerous results (most of which were older than he was). In my report I wrote: "What is most impressive about this work is the breadth of techniques that Rabern has mastered. It seems that he is adept with all the major tools in this area of research" and "Rabern has a remarkable knowledge of the relevant literature (including that of hard-to-find papers published in Russian in the 70s and early 80s) and uses it to place his own contributions in their proper historical context."

More than once in our collaborations I would work out some technical lemma, but not see how to best use it. Then Landon would explain how we could combine it with a key idea from elsewhere to really make the progress we'd been looking for. About a year after Landon graduated, we finished a short note that exemplified this idea of making connections. Initially, we wrote it just to better understand the implications of things we already knew. However, in

the end we decided to submit it for publication, and the referee liked it. But just to be clear with the reader, early in the introduction we added "Basically, we are combining some known results to yield some interesting consequences that we previously did not know." Despite knowing and understanding so much (or perhaps because of it), Landon never tried to make what he did look harder than it really was. He wanted others to share in his knowledge and understanding.

Resourcefulness

I mentioned above how well-versed Landon was in the previous work of others, even that written in a foreign language before he was born. When I asked him about one of these hard-to-find papers, he explained that he did not speak Russian, but had translated it with a dictionary, at least well enough to understand the ideas. And knowledge of this particular result wasn't just a nice history lesson. It actually provided the central idea driving Landon's first breakthrough paper, where he proved a conjecture of Kierstead and Kostochka [32]. He later returned to the same well, and got another strong result, this time with me as a coauthor [19].

As great of a mathematician as Landon was, he was maybe even a better computer programmer. And he was always looking to apply his skills in one area to problems in the other (such as the abstract mathematical theory he developed for his work with Facebook on merging in user-submitted edits to a map). Sometimes these applications were obviously a task for a computer. For example, applying the Alon–Tarsi Theorem amounted to counting two sets and showing that they had different sizes, and we did this in more than one paper. But some applications were less so. In one case he programmed the computer to essentially write a proof as a "choose-your-own adventure" [3, 20]. And much like those books, we showed that regardless of what happened in the graph, the story always ended the same way: our proof succeeded!

Joy

As I recently reread old emails to and from Landon, I was reminded of how much fun we were having. Exploring, discovering, and creating. Never knowing whether the proofs we were writing would ultimately succeed, but throwing ourselves wholly into the effort nonetheless.

We'd admire each other's ideas, and at times just bask in the beauty of shared mathematical delights. I vividly remember the time he told me about an elegant double induction argument (called Kierstead paths, although the specific details are not the point). I don't recall our exact words, but our shared sentiment (once I'd really understand the idea) was "That's so cool!" We had both been mathematicians for years, but were blessed to find each other. It was better to play together than alone.

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