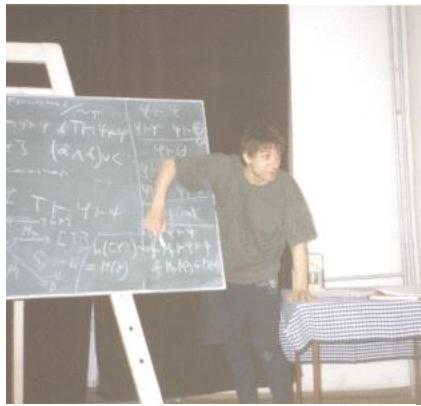


Marek Zawadowski (1960-2024) - reminiscences by a student

Written by Chris Kapulkin

I first met Marek on October 3, 2005 at 12:15 PM. This was my first day at MIM and my first class, “Introduction to Computer Science,” or, in Polish, “Wstęp do Informatyki.” It’s been almost twenty years, but I still vividly remember this moment. Marek was different. He was different than all the teachers I had in high school and, in fact, different than all my other instructors at the University of Warsaw. It took me many years to put my finger on it, but, at last, twenty years after meeting him, I think I can finally explain it. Marek, in addition to all his mathematical genius and clever insights, realized that no one likes a person smarter than them. That fundamental realization, I believe, informed Marek’s style of lecturing, speaking, and supervising.

As our instructor, he would go out of his way to make subtle self-deprecating comments or



1 Marek at Logic Workshop.

pretend to become lost during moments that he knew were conceptually confusing or technically difficult, all so that we, the audience, could help him figure things out. He kept us engaged like nobody else. It was impossible to go to Marek’s lectures and “do something else.” Yes, I know, there were no smart phones back then, so perhaps I am not really saying much, but I remember being preoccupied with topics far removed from the course material in virtually all of my other courses. Marek’s lectures were a unique exception in that regard.

As a supervisor, Marek lived by the aforementioned principle in that, whenever I said anything stupid (and I did say tons and tons of dumb stuff), Marek would not judge me. Instead, he would always respond with a story of him saying something even dumber. In retrospect, I recognize that most of these stories must have been 100% made up, but back then, this was exactly the kind of reassurance and encouragement I needed to keep going.

I should perhaps backtrack a little bit and tell you how I even became Marek’s student. In my “Introduction to Mathematics” class (or “Wstęp do Matematyki” in Polish), which all first year students take in their first term, our teaching assistant mentioned category theory as an area that studies the mathematics of mathematics. As a wide-eyed student with an infatuation for abstraction and generalization, I immediately wanted to know more, and so I Googled if anyone at my university does category theory. It turned out that indeed my computer science instructor is one of the world’s pre-eminent experts in the field! I approached him after one of the lectures to ask about resources for some extra-curricular reading. While I got a more-

than-exhaustive list of resources, I also got a two-hour impromptu lecture (first in a series of hundreds) on the topic that offered more insight than any book.

What should really surprise you about it is that I was a first-year student at the time. I had no idea what a group (or any algebraic structure for that matter, other than perhaps a vector space) was at the time. And so, I learned a lot of it from Marek. For example, “a category with one object in which every morphism is an isomorphism” was the first definition of a group that I ever saw. Our weekly meetings, consisting of him teaching me things, continued throughout my time at MIM and in many ways beyond. Reflecting on it, I am flabbergasted as to why he did any of it in the first place! His kindness and generosity were simply unmatched.

Throughout my career, I knew that I could turn to Marek with any question and immediately get an answer. Even in 2020, well after securing a full-time position, when I was confused about a simple topos-theoretic fact, all I had to do was send Marek an email, and not 2 hours later, we were on Zoom, talking about the covers and precovers in presheaf toposes. I don’t think I would have a single paper to my name if it weren’t for Marek. His support and influence are clear in everything I do.

I want to stress that stories like mine are hardly isolated. Let me tell you a different one, of Jacek Karwowski, another student of Marek’s. Just like me, Jacek heard of category theory by accident, in his “Geometry and Linear Algebra” (or, “Geometria z Algebrą Liniową” in Polish) class. Unlike me, however, he found the subject esoteric, which is why he decided to write a bachelor’s thesis on it (if you don’t follow this logic, don’t worry, neither do I). This is exactly what he told Marek. At this point, I think any faculty member would tell Jacek to look for a different supervisor, but not Marek. Instead, he spent hours teaching Jacek higher category theory, and got him to develop software for computing products of opetopic sets, which Marek later used to disprove a conjecture in the field. Today, Jacek is a Ph.D. student at the University of Oxford, and he credits his admission to Marek’s continued support.

One of my favorite “Marek”-isms is from when I took his “Category Theory” class. At some point, he said “One kreują pewne kogranice, które ja zaraz Państwu powiem, co one są.” If you speak Polish, you’ll immediately recognize that this sentence makes absolutely no sense. But if you translate it almost word-for-word to English, you’ll get a grammatically



2 Marek with an unidentified student during the Workshop on Logic and its Applications in 2010. The workshop, organized by Marek’s students, was held in honor of his 50th birthday.

correct sentence, essentially saying “They create certain colimits that I will describe for you in a minute.” I suppose this reflects poorly on all of us attending his class, but we all burst out laughing. This quintessential Marek line, a little goofy but enormously engaging, has stuck with me, at this point, for decades. It is my opinion that Marek naturally thought in English, so I hope that by writing this document in English, I can honor him in a small way.

Marek’s influence on my way of doing mathematics is visible everywhere. Marek introduced me to the idea of a reading seminar where one really goes through all the details of every single construction. From 2009 on, he ran a reading seminar on model categories, spending, for example, a total of twelve 90-minute lectures on the model structure on simplicial sets. This is far from the standard one-topic-one-lecture model that is perhaps more enjoyable for the faculty members, but not as beneficial for the students. The fact that several of my peers and I have since made contributions to the subject of model category theory is the best testimony to the effectiveness of Marek’s approach. Recognizing that, I have started similar reading seminars at my own university – not fast, but careful.

When I visited Poland occasionally (sadly, I haven’t had a chance since 2018), Marek would always find time for me. We would talk for eight or more hours about a whole host of issues,



3 Marek hosting a reception at his house for a group of category theorists during Samuel Eilenberg Centenary Conference.

starting with math, digressing for an hour or two to Canadian politics, then to world cuisines, before coming back (or not) to mathematics. While we always agreed on principles, we often disagreed on their practical implementation and consequences. But these disagreements were always cordial and respectful. I learned from Marek how to speak with those who didn’t agree with me, and how to

look for the best in others. Not only did he make me a better mathematician (or a mathematician in the first place), but he also made me a better person.

As I was leaving MIM to start a new chapter of my life in North America, my parents remarked that I was hopeless as an 18-year-old, but that they now see a chance of me making something of myself. They credited Marek with this transformation. While I’m still not

convinced that there is any chance of that (me making something of myself), I know that they were right in that Marek would be the one to thank for it. So, once again, thank you, Marek for everything you've done. It was an honor to know you.