

## CHAPTER 6

# A New Beginning

### 6.0. Chapter Overview

At this point in time, American academe is at a crossroads. Both the university and society as a whole are making new demands on the professoriate. One of these is that we be directly accountable for our teaching. The purpose of this book is to point out that such demands are not antithetical to our scholarly pursuits. In fact your teaching activities can complement your research activities rather nicely.

I have discussed both philosophical issues and pragmatic issues in this text. Certainly good teaching is the sum of many particular skills, but it is also the product of attitude and purpose. I hope that reading this book has sharpened your focus on teaching.

### 6.1. The Role of the University Professor

A distinguished mathematician—well known to us all—joined the University of Chicago Mathematics Department, as an assistant professor, in the early 1960s. As he was settling into his office, the Chair came by and chatted him up for a few minutes. When the chair departed, he wagged his finger at the new faculty member and said, “Remember: Our job is proving theorems.”

In retrospect, one wonders why the chair felt moved to make such a statement. Chicago is and was one of the pre-eminent mathematics departments in the country. In the early 1960s, the teaching reform movement was still a twinkle in somebody’s eye. Teaching evaluations had not yet been invented. Everyone agreed with Paul Halmos that proving theorems was not just the main thing—it was the only thing.<sup>1</sup>

If we were to make a sequel to this movie, filmed in 2015, then the scene (at least at many universities, and especially public institutions) would be a bit different. The chair would still drop by to chat up the new faculty member. He would remind the newcomer that he was hired for his ability with mathematics, and for his achievements in research. (Proving theorems, and learning new mathematics, is the highest and finest thing that we do. This fact has not changed, and I hope it never will.) But as the chair departs, he will now waggle his finger and say, “But don’t forget: It’s teaching that pays the bills around here. Undergraduates come here expecting to be taught. And parents pay tuition because they want their children to be educated. I expect you to do a creditable job with your teaching. And I don’t want to hear any complaints from students or parents. If I do, you will be making my job more difficult, and I in turn will make your *life* more difficult. A word to the wise should be sufficient.”

Again, I am not trying to sound sappy. And I am also not endeavoring to be draconian. If you are new to the mathematics profession, then you may as well

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<sup>1</sup>Personal communication.

know what sort of world we now inhabit. You have a choice: You can prove the Riemann hypothesis or you can learn how to teach.

If you have been in the profession for a while, and have never given any thought to teaching, then perhaps it is time you had better do so. You no doubt have your own ideas about the subject, but perhaps viewing the ideas presented here will give you food for thought.

My own experience is that my teaching meshes rather nicely with my research. I've had good ideas (for a research problem) while preparing a calculus class, and I've gotten inspiration for my calculus class from serious mathematics that I was working on. I suppose that this is the way it is supposed to be, and I believe that a part of the reason that these different facets of my professional life interact so well is that I am open to such interaction. I encourage you to foster this symbiosis in your own life.

## 6.2. Closing Thoughts

Sometimes the easiest way out, when we are faced with some difficult or distasteful task to perform, is to resort to cowardice. We are all guilty of this sort of avoidance. At one time or another we have all lied or engaged in subterfuge to avoid unpleasanties.

Our students, of course, suffer from their own shortcomings. One of my colleagues had a student knock on his door and ask for some help with calculus. The professor said, "I haven't seen you in class for three weeks. Why do you come to me now?" The student replied that he didn't need to go to class—he had the book. "Do you read the book?" intoned the impatient professor. The student replied, "Well, I could."

What are you going to do? I would tell the student that when he wanted to have a serious conversation he should phone me up for an appointment. Until then, he should not darken my doorstep.

I do not wish to dwell here on human frailties. But I think that the method of teaching that many of us use—and I have been guilty of this to a degree with certain classes that I really did not want to be teaching—is a form of cowardice. We just skulk into the room, write the words on the board, and convey with body language and voice and attitude that we are not interested in questions or in much of anything else connected with this class. Then we turn tail and skulk out of the room. I was once told (tongue-in-cheek, I think) that the secret to success in undergraduate teaching is, "Never let a student get between you and the door." Not an admirable attitude, but one that many of us have held from time to time.

*How to Teach Mathematics* has been an effort to fight this form of cowardice, both in myself and in others. Teaching can be rewarding, useful, and fun. To make it so does not require an enormous investment of time or effort. But it does require that you have a proper attitude and that you be conscious of the pitfalls. It does require being sufficiently well prepared in class so that you can concentrate on the *act* of teaching, rather than on the epsilons. And it requires a commitment.

We must believe that being a good teacher is something worth achieving. We must provide some peer support to each other to bring about this necessary positive attitude toward teaching. The last thing I want is for mathematicians to spend all day in the coffee room debating the latest pedagogical techniques being promulgated by some well-meaning educational theorist. I want to see mathematicians learning

and creating mathematics and sharing it with others. But those others should include undergraduates. That is what teaching is about.