

Expert Interview Report

For my Expert Interview Report I interviewed Miklós Bóna, an Associate Professor of Mathematics at the University of Florida. Bóna is an accomplished mathematician who has written forty-seven different publications and three texts. Bóna specializes in Combinatorics and his three texts are titled: A Walk Through Combinatorics, Combinatorics of Permutation and Introduction to Enumerative Combinatorics.

When asked what kinds of texts he typically reads and writes for his job, Bóna explained that his specific interest in Combinatorics is a very specialized subfield of Mathematics. Bóna explained that both reading and writing these types of Combinatorics text can be very extensive, for this reason Bóna has a process he goes through each time he either reads or writes a text. When trying to read a text, the first thing Bóna does is reference other publications to see what other authors might have said about the given topic. This way he can think about the topic from more than one perspective. Possibly one author stressed one topic more than another, or explained a process more clearly. Bóna explained that with the use of computers this task has become much easier to complete. Finding papers on specific topics is fairly simple and there are peer review websites where people post their work for review before it is published, this allows Bóna to get a sneak peak at the latest research. The texts and papers are cited so that by simply reading the abstract one knows if that specific paper pertains to them. Once Bóna has found a paper he has decided to read, he first looks for the most important theorem in the paper because he is very busy and his time is short. Bóna would read the theorem and its proof. If he understands it, then he is done with that paper. He doesn't need to read the rest of the paper and its preceding lemmas. If on the other hand, Bóna didn't fully understand the theorem or the

proof, he would then read the information given earlier in the paper that provides some foundation for the theorem.

When writing a text, Bóna envisions a pyramid, with a point at the top and the shape gets wider as you head to the bottom. With this image in mind, Bóna begins writing his text, starting with the most important part of the paper. From there, Bóna continues to add to the text by writing the supporting information pertaining to the previous claims. It is very important to cite clearly what the text or paper is about so that people don't waste their time reading something they were not searching for. Any person who reads other texts would know how important this truly is. The last part of the paper writing process for Bóna is writing the introduction. Bóna stressed that the introduction is an imperative aspect of the paper; it must grab the attention of the reader and make them want to continue to read. By writing the introduction last, though it seems backwards, Bóna knows what his paper encompasses and can make a good decision about how to attract readers to his paper or text. Other things Bóna keeps in mind while writing a paper or text is that it should be as concise as possible. People are busy and don't have time to read unnecessary stuff. Only put in the paper what is pertinent to the understanding of the main theorem.

When asked how texts in Combinatorics, or even Mathematics, are different from the more everyday texts that one encounters in their leisure reading and writing, Bóna explained that reading Mathematics is much more difficult. Many times it is like trying to put together a puzzle. You have the pieces but you don't know how they connect. A proof will go from one step to another without explaining how they were able to do so. This is different from books read for leisure, because leisure books are rather easy to follow and don't require much thinking on the reader's part. In Mathematics, everything must be rigorously justified and proven to hold

true in order to be accepted, while leisure books may have fantasy aspects which are simply accepted by the reader. Another difference Bóna mentioned was that there can be many different leisure books about the same topics by many different authors, however in Mathematics once something is published, another paper on proving the same thing will not be published. It has been proven, so we move on and publish a paper on something different. In Mathematics, only new research is published.

Specific challenges Bóna believes students face in reading and writing about Mathematics is the process of understanding the material. If there is a line in a proof that a student doesn't understand they should not go on until they have gained that understanding. If a student were to try to proceed while not knowing the previous information they will not be able to follow the proof. Bóna explained that this is very hard for students not to skip a line in a proof, because in their daily lives when listening to someone speak or a tour guide giving a speech, if the student misses one sentence they will be fine. They can still piece together everything else that was said and still understand what to do. As many students learn through repeated experience, this is not the case in Mathematics. In writing about Mathematics, many times students can't differentiate between what is important and necessary to the problem and what is not. They are told all the time in English class to elaborate and make their writing flowery, however this is not necessary in Mathematics, it only makes the information more difficult to understand. Bóna stated that learning to read and write in Mathematics takes much practice, but can be learned.