THE SEAWAY CURRENT

Newsletter of the Seaway Section of the Mathematical Association of America

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THE SEAWAY CURRENT

The Seaway Current is published at least twice per year by the Seaway Section of the Mathematical Association of America (MAA) for the benefit of its members. Its pages are open to all members of the MAA and, by invitation to others, for the exchange of information and opinion. Contributed announcements, articles, and editorials are welcome and should be sent to the editor.

Material may be submitted to the editor by e-mail. Opinions expressed in this newsletter are those of the editor or of individual contributors and do not necessarily represent the views of the MAA or of the Seaway Section.

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VOTE ON THE REVISIONS

AT THE BUSINESS

MEETING IN APRIL!

SEAWAY SECTION SPRING MEETING

SUNY Fredonia
April 19 - 20, 2024
Check out the (developing) program!

Thank You to the Math Department
and local organizer Bob Rogers
for having us!

SPRING 2024: BYLAWS REVISION

Leah Bridgers, Chair of the Section

When we last updated our bylaws, we made changes to Article III, Paragraph 4 that firmed up exactly which years (mod 4) we would be electing the various positions on the Executive Committee. Little did we know that a pandemic was coming our way. As you are likely aware, since we had no in person meetings from Spring 2020 to Spring 2022, the membership of the Seaway section voted to suspend Article III, Paragraph 4 of the bylaws and extend the terms of member of the Executive Committee with the understanding that we would work to make changes to this part of the bylaws so that we would no longer by out of compliance with them.

Article III, Paragraph 4 of the Bylaws adopted in 2018 reads:

> 4. Elections of the section shall be held at the annual spring meeting of the section. The Secretary shall be elected for a three-year term in year numbers divisible by 3. The Treasurer shall be elected for a three-year term in year numbers equivalent to 1 modulo 3. The At-Large Member shall be elected for a two-year term in even-numbered years. The Program Chair and Two-Year College Representative shall be elected to two-year terms, with elections for these offices being held in even-numbered and odd-numbered years, respectively. The Chair-Elect shall be elected at the same time as the Program Chair; upon completion of a one-year term in this office, the Chair-Elect shall become the Chair of the section, shall serve as Chair for a term of two years, and then shall become Past Chair for one year.

(Bylaws Revision note from the Section Chair continues on the next page.)

(Bylaws Revision note from the Section Chair continued . . .)

At the Spring 2023 meeting in Waterloo, the Executive Committee proposed the following changes to Article III, Paragraph 4. Those at the business meeting provisionally endorsed moving forward with the changes.

> 4. Elections of the sections shall be held at the annual spring meeting of the section. All terms of office shall begin and end at the closing of a spring meeting. The lengths of terms are as follows:
>
> Secretary, Treasurer — Three Year Terms;
>
> At-Large Member, Program-Chair, Chair of the Section, Two-year College Representative — Two-year terms;
>
> Chair-Elect, Past Chair — One-year terms.
>
> The Chair-Elect shall be elected at the same time as the Program Chair; upon completion of a one-year term in this office, the Chair-Elect shall become the Chair of the section. After serving a two-year term the Chair shall become the Past Chair.
>
> Membership may vote to adjust terms under exigent circumstances.

Formalizing these changes to the Bylaws requires notification of membership in advance of a formal vote at a business meeting. At the business meeting on April 20 at the Spring 2024 meeting in Fredonia, we will formally vote to adopt this change. We believe that this change will allow future Executive Committees the flexibility to respond to unexpected events in the future such as those we have just experienced.

I hope to see you all at the Spring 2024 meeting in Fredonia and hope you will support these changes.

Respectfully submitted,

Leah Bridgers (SUNY Oneonta)

Chair of the Seaway Section

Article III, Paragraph 4 of the Bylaws (2018)	**Proposed Revision of Article III, Paragraph 4**
4. Elections of the section shall be held at the annual spring meeting of the section. The Secretary shall be elected for a three-year term in year numbers divisible by 3. The Treasurer shall be elected for a three-year term in year numbers equivalent to 1 modulo 3. The At-Large Member shall be elected for a two-year term in even-numbered years. The Program Chair and Two-Year College Representative shall be elected to two-year terms, with elections for these offices being held in even-numbered and odd-numbered years, respectively. The Chair-Elect shall be elected at the same time as the Program Chair; upon completion of a one-year term in this office, the Chair-Elect shall become the Chair of the section, shall serve as Chair for a term of two years, and then shall become Past Chair for one year.	4. Elections of the sections shall be held at the annual spring meeting of the section. All terms of office shall begin and end at the closing of a spring meeting. The lengths of terms are as follows: Secretary, Treasurer — Three Year Terms; At-Large Member, Program-Chair, Chair of the Section, Two-year College Representative — Two-year terms; Chair-Elect, Past Chair — One-year terms. The Chair-Elect shall be elected at the same time as the Program Chair; upon completion of a one-year term in this office, the Chair-Elect shall become the Chair of the section. After serving a two-year term the Chair shall become the Past Chair. Membership may vote to adjust terms under exigent circumstances.

WORKING WITH THEO

Olympia Nicodemi, SUNY Geneseo (Emeritus)

In January 2020, I decided to retire with the idea of perhaps teaching abroad. Then March blew in. All plans were canceled. But I haven't stopped thinking about teaching. And I still teach a bit. Since retiring, my most intense teaching experience has been Working with Theo. This is just about me and Theo — a reflection.

For three semesters starting in the Spring of 2022, I tutored my nephew Theo in pre-calc, calc 1, and calc 2 in which he got two As and a B. Why is this remarkable? He is an autistic young man, a quiet, gentle, smart young man, who did not speak until he was five years old. School was always a hurdle. Now, at age 20, . . . *(Continued on the next page.)*

("Working with Theo" continued.) . . . he is in college. What an amazing journey. Tutoring Theo was both an enlightening and puzzling experience. It was both affirming of my past practice and questioning of that same practice.

Theo entered college in the fall 2021 with a goal of majoring in something that had to do with computers. Because of the pandemic, his college had remained completely virtual. His first semester was a disaster. He failed math (pre-calc) and barely passed his other subjects. For many first-year students that year, focus and time management were big obstacles. They were far greater for the autistic student who also faced decoding basic issues like: What is our goal of this class? What are my instructor's priorities? How a teacher conveys these basics in an in-person class is often less than explicit. When a class is remote, they remain undecipherable to some autistic students.

Video games ate up Theo's seat time. Grades tanked. Parents panicked. Enter Professor Aunt Pia — that's me. We worked together for the next three semesters even though in-person classes were back in his second semester. We met once or twice per week on zoom for about 1.5 hours each session, me in Geneseo, he in Queens.

I discovered that Theo is not a gifted math student but a good math student. And as a math student, he was familiar to me. He likes rules and procedures and executes them well. But word problems and theory? Not so much. So very typical.

But as a person, Theo is different from most students. He is very patient and seems to be non-judgmental. It carries over to his mathematics. He was willing to go through problems with me one by one, not casting aside any as too tedious, repetitive, or boring. He carries out, usually accurately, any computational procedure step by step. He doesn't skip a step, ever. It works. He managed to finish class exams in the allotted time. (He would not accept accommodations.) He corrected my arithmetic freely (always appreciated!) neither smugly nor with diffidence. No judgment. But Theo never asked, "Why is Bill dropping that rock again? Why does the ladder always slip?"

Theo never missed his in-person classes. He recognized what I talked about from what had been covered in class and he even recognized some of my examples. But the material was not internalized. That would happen — and it really did happen — in our zooms. In a typical session, I would start with mini lecture mostly focusing on the skill to be conquered or the concept to be mastered. I would present an example, propose a basic problem for him to tackle, and follow up with one or two problems that had glitches that almost every student trips on. He didn't always trip and sometimes he tripped in different places. But if I skipped any of those steps, even the mini lecture, he was sure to stumble.

(Continued on the next page.)

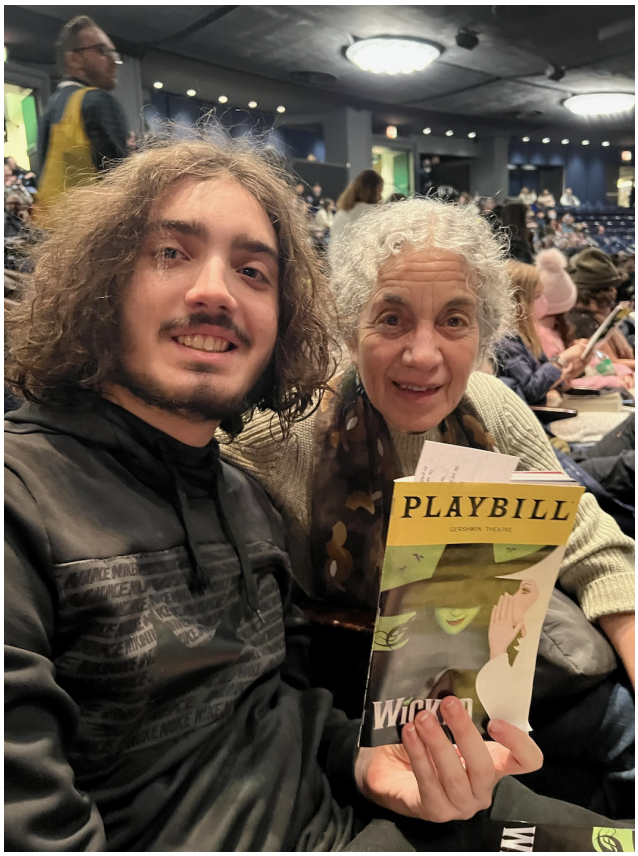
Solar Eclipse 2024: Are you in the path of totality?

April 8

This was hardly groundbreaking pedagogy. What I did for Theo did not differ from what I did for hundreds of students — part lecture, part call-and-response, part immediate hands-on problems, all of which was determined by the cohort's needs of the moment.

Theo's success would seem to be an affirmation of my usual teaching methods with the cohort whittled down to one. It prompts obvious questions, general ones like: What are the indispensables of good pedagogy at any scale? And questions particular to Theo: Why did our zoom sessions succeed where class did not? What do the needs of an autistic student teach us about the needs of all students?

Theo never said explicitly, "I don't understand." He also never said, "I don't want to do that because I do understand." He didn't ask many questions, but he answered all my questions including my rhetorical ones, with short literal complete sentences. Often, too literal: What is m? I want $-\frac{1}{2}$ but he says "It's the slope." My questions worked best when they were direct — no metaphors, nothing circuitous: What is $\frac{dy}{dx}$? It is the derivative. What does it mean? It means slope. Of what? It is the slope of the tangent line. To what? The curve. Then there was an almost crushing moment for me: After all those correct answers about the derivative, I discovered that Theo could not draw the tangent line to at a point on a curve I had sketched on the white board. His responses were on autopilot, a default not particular to Theo.



"Aunt Pia" and Theo, photographed by Theo's mother

Sometimes, for topics he was not comfortable with, he would answer as if he knew the answer but he would be totally off point. For Theo, any answer was better than "I don't understand." Perhaps earlier interventions had urged the autistic child always to answer, always to engage. His responding, no matter what, was a counterpoint to the "I don't know," really the "I won't risk an answer" of so many students.

What Theo did grasp easily often surprised me, e.g., the chain rule or interval of convergence. Within a computation, Theo was patient and precise. No short cuts ever. "Applied" problems presented the usual obstacles, but more pronounced for Theo. He faced distilling the abstract mathematics to be done from a story that often contained extraneous information. Deciphering implicit or subtle intent of the question was a barrier, as it is in many of the social interactions of an autistic student. All parts were taken literally. "Draw a diagram" often resulted in lovely art (a ladder and a wall drawn in perspective) without the abstraction necessary to solve the problem. Theo didn't get "into the head" of the problem poser. We expect a student to do that. Should we?

International Day of Mathematics: March 14!

How can you celebrate this fun mathy holiday?

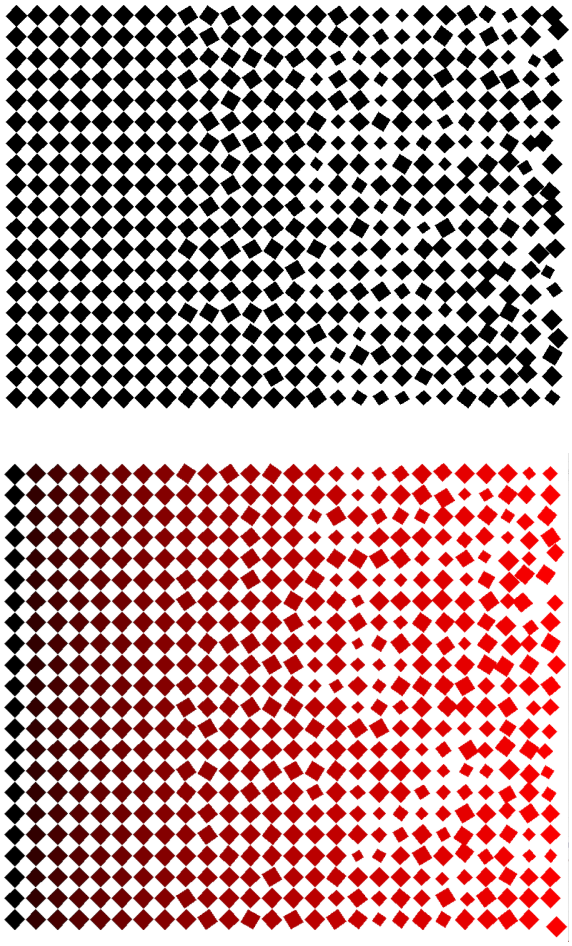
There's a project, led by the International Mathematical Union, dedicated to helping you answer that very question. Check out https://www.idm314.org/organize, and organize an event on your campus or in your community.

Let's spread the love of math!

Theo's facial expressions didn't let me know whether he understood what I said or not. My experience with other autistic math students was similar. In office hours, I would be to assume I am not understood and to explain again. After a few tries, I would probe and ask the student to explain the concept or do the calculation for me. Sometimes, they fumbled but more often they breezed through it as if it were understood the first time around. I had missed the cues. In the classroom, I depend on faces to gauge understanding. Without seeing a grimace, I might assume I am understood. There too, I may have, and indeed have, missed the cues. As with so many atypical traits, it's a matter of degree. If we think of a classroom of students as one entity with a common mind, . . .

(Continued on next page.)

A Study of Color and Entropy



Images made using Java, written by the editor.

(Continued from the previous page.) . . . it displays the same traits and needs as Theo: questions are hard to elicit, the cues that indicate understanding (or not) are hard to decipher, blank spots are surprising, clarity is critical. Bridging the gap between the instructor's intent and the student's reception is central to teaching. The gap is wider for an autistic student like Theo. The gap is two sided: just as a student needs to decode an instructor's intent, the instructor needs to decode how a student is learning.

What worked for Theo, and why? I can't be sure; he would not say. In classes, my approach on any given day varied as per student need; lecture, group work, deskwork, whatever. The most important commonality is careful scaffolding — building a knowledge base carefully and responsively. I did that carefully for Theo. I do not know how this differed from Theo's classroom experience. His assignments, all on a course management system, suggested that the scaffolding was not always strong. What I do know is that our focus was intense. He never hesitated to work full force on whatever I presented to him, and I in turn could track mistakes in real time and guide him beyond them. He focused. I focused. I could quickly change up an explanation to fit his particular way of understanding. Every student has a particular way of understanding. It's hard to serve them all.

How could Theo's wonderful focus be sustained by a whole class? I wish I knew so we could package it for other students, especially for the kid in the back row. Finding Theo's patience in a class of students is aspirational if not impossible. His nonjudgmental approach to life is refreshing. But as an academic quality, I would want to reshape non-judgement into a critical, rigorous, open-minded judgement of his academic world. He could start with his saying, "That problem is silly!" or "Not again!" I would cheer him on. That's not my usual classroom M.O.

In the semesters that I tutored Theo, I was also part of an academic coaching team assembled by our academic dean. The goal was to provide a support network for those students in deep academic difficulty. We did not tutor; we were uber coaches, rather like academic life-coaches. The reasons that students fail to succeed academically are many, from homelife crises to video game addiction. But many students in academic difficulty simply do not know how to be college students. These are the students with whom I have been most successful. Time management is the first order of business as well as syllabus awareness. (There's a quiz next Tuesday. Yup, it's right there in the syllabus.) We tackle study skills and point to academic support services. All as one would expect.

Where my coached students differed from Theo was surprising. I found that my most important contribution to my coached students' academic success was enabling them to become deeply interested in their studies. "Tell me about your classes this week . . . wow, that's really cool. Did you know that . . . ?" Usually, this was my sincere and immediate response to the topic du jour, say Ornithology. Gradually, students became eager to tell me about what they were studying and why. That immersion helped sustain them through challenging and sometimes disappointing test results. It gelled their commitment to academic success.

I did not manage to do that for Theo. His computer science major is on unstable ground right now. His most successful courses are his math courses. But he did not become deeply interested in math qua math. How will he go forward without a deep interest? More importantly, why would he? I did not manage to ignite that in math. Could I have? How? Or maybe that deep interest is there somewhere, unconveyed, unutilized. I hope so.

Postscript: His favorite course is Acting 101. Surprise!