**Annual Report: January - December 2023**

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**Summary of 2023**

**Courses taught, including independent studies**. Spring 2023 (on developmental leave, but taught the Olin Conductorless Orchestra due to Candidate Weekend performances, among other scheduled performances); Fall 2023 (the Wired Ensemble: Instruments, Voices, Players; the Olin Conductorless Orchestra; and an Independent study in “Sound Engineering, Songwriting, Music Production”).

**Substantial improvements**. The Olin Conductorless Orchestra during Spring 2023 had the most challenging array of instruments ever in its 22-year history. It required my creating orchestral arrangements of 5 selections from the Mussorgsky/Ravel *Pictures at an* Exhibition; these had to balance one violin (in a work requiring 38 violins) against 9 other wind/brass/piano/percussion instruments, and generate the fullest group sound possible. The Olin Conductorless Orchestra during Fall 2023 again selected a huge piece (Dvorak’s Ninth Symphony, last movement) to perform yet the orchestra had the second most challenging array of instruments ever—the “second most” because we now had 2 violins! The Dvorak typically requires more than 30 violins, with Dvorak often sending them into the stratosphere on their E string. It’s a big piece, but the engagement level for it was so high that I didn’t even suggest another work. Again, I had to pull every imaginable idea out of my musical hat to make it work. They’re substantial improvements/necessities because without them, 1) we wouldn’t have had an orchestra in Spring ’23 able to fulfill its scheduled performances, and 2) engagement would have plummeted in the Fall ’23 orchestra, affecting the viability of a Spring ’24 orchestra. Instead, every member of the Fall ’23 orchestra is returning for Spring ’24, plus 2 more from the Spring ’23 OCO.

In the Wired Ensemble, I bent over backwards trying to schedule bi-weekly live performances of student compositions. It’s valuable to budding composers to work with players on real acoustic instruments, as well as to hear their pieces performed live. That way, they hear more clearly what works and what doesn’t. I checked each student’s schedule with the Registrar and luckily found none were in class either before or after Wired Ensemble. This enabled moving the class between 15-30 minutes earlier or later, depending on the live performers’ schedules (many of whom weren’t in the class). I moved the schedule at least 4 times over an 8-week period. Despite the best of intentions, the re-scheduling was not well-received. In writing this, I now realize I should have explained why the purpose behind moving the class was valuable to them. I assumed they would know that. Big mistake!

**Further engagement with developing students**. I gave a short presentation with video clips for the arriving First-Years on musical opportunities for them at Olin; Supported 2 summer research students with funds from my NSF PFI-TT grant; Stepped in on short notice as a pianist to cover five pieces for the Spring ’23 OCO performance at Expo without which we would not have had a performance; Engaged a percussion teacher to give lessons to a Fall ’23 OCO student so the orchestra could perform pieces requiring percussion (which they had selected); Coached OCO and Wired students on piano; reviewed and edited Chris Lee’s Spring ’23 ESA Day Handouts/Assignments (2 per week), at his request; gave all my Signals teaching materials (via my 2022 Signals Canvas site with Day Handouts/Assignments plus weekly Problem Sets) to Prof. Chavi Goenka who told me she used all of them during Spring ’23 ESA: Signals; Prepared and Rehearsed two 3-hour Final Event blocks, a dress rehearsal, and performance for Wired Ensemble’s Fall ’23 Expo performance, plus a 3-hour Final Event block rehearsal, a dress rehearsal and performance for OCO at Fall ’23 Expo—all within 4 days (due to Olin’s Academic Calendar). During Fall’23, I scheduled check-ins with my advisees and a Pizza Study Break during the Final Events period.

**Committees**. Spring ’23 (though continuing OCO and the Music Program, I was released from committees due to Developmental Leave); Fall ’23 (Passionate Pursuits Committee, Student Academic Grants (SAG) Committee). Both committees include Dean Alisha Sarang-Sieminski. Alisha did a thorough review of the Passionate Pursuit applications, then passed them to me for corroboration. I made a few notes regarding various Passionate Pursuits. Alisha also reviewed the SAG applications and sent them to me on Sep 27. But the next day she kindly released me from evaluating them because a staff member told her I was swamped due to OCO rehearsals and a concert on Saturday, Sep 29, for Admission Fall Open House. Susan Mihailidis also serves on the SAG committee and sent me a Eureka SAG application review request on Dec 18, after all the Expo concerts were done. I agreed with her assessment. This year’s committee assignments were a welcome respite after serving for the past 2.5 years on the Reappointment and Promotion Committee, including summer ’22.

**Impact outside of Olin**

• Jan 12-13: NSF-funded Workshop, “Supporting Undergraduate Institutions in Technology and Entrepreneurship Development.” Invited panelist and presenter. Hosted by Union College.

• April 24-25: NSF-funded Conference, “From Lab to Impact: Broadening Participation Summit at MIT.” Invited panelist for faculty perspective on NSF I-Corps, PFI-TT, SBIR. Hosted by MIT.

• May 5: Successful Demo of the CantoVario MIDI Variation Engine for Prof. Chad Blinman who teaches MIDI Production at Berklee College of Music. He is integrating the MIDI Variation Engine into his class schedule for Spring ’24. The new MIDI Variation Engine produces multitrack song variations.

• Jun-Aug: NSF REU Supplement award for 2 students from MIT and Princeton University to implement my new Spring 2023 algorithms that vary vocal and instrumental lines of audio songs (mp3 or wav).

• Jun 5-8: 12th Annual Deshpande Symposium: Innovation and Entrepreneurship in Higher Education. “Making Research More Impactful: Supporting Faculty at Undergraduate Institutions in Technology and Entrepreneurship Development.” Panelist. 5-8 June 2023, Arizona State University, Scottsdale, AZ.

• Jul 11-15: Olin Summer Studio. Design coach for two teams seeking to strengthen innovation, engineering and entrepreneurship in Chinese higher education: 1) Shenzhen InnoX Academy and 2) Chongqing & Southwest Universities with Mingyue Lake Intelligent Technology Development Co.

• Aug 31: Successful Demo of the CantoVario Audio Variation Engine for mentors at the MIT Venture Mentoring Service. Next step: write the patent enabling disclosure for customer validation.

• Oct 27: Utility patent filed with USPTO (“Algorithm-generated variations of original songs for tangible and digital products”).

• Nov 15: Nominated by President Barabino for a Carnegie Fellowship. Because research shows Americans are more polarized emotionally than ideologically, my proposal addresses political polarization by connecting storytelling with music through a listening experience (a Variation Concert) where seat location determines what is heard. It commemorates the 25th anniversary of the 9/11 attacks by taking audiences back to the unity and empathy, across political divides, that defined the immediate response to 9/11—motivating us to stretch our ears and listen, sometimes to the other side.

**Major Activities and Accomplishments**

Activity/Accomplishment 1: **January – December 2023 CantoVario**

**The CantoVario Projects – Research & Development funded by the Technology, Innovation and Partnerships (TIP) Directorate of NSF**

CantoVario’s NSF PFI-TT grant (Partnerships for Innovation—Technology Transfer) has three prototype deliverables: a MIDI Variation Engine, an Audio Variation Engine, and a Science Museum Chaos+Music Exhibit. I worked Jan – April devising a new MIDI Variation algorithm which has now been implemented.

According to my advisers at the MIT Venture Mentoring Service, the MIDI Variation Engine is now a minimal viable product.

The Audio Variation Engine has a new interface, and during Summer ’23 I devised a new audio variation algorithm to produce variations of individual songs (mp3 or wav), in addition to more varied mash-ups.

NSF awarded this project two REU Supplements for Summer 2023 research. 16 students from MIT, Princeton, and Wellesley applied. I interviewed each and selected 2 (MIT and Princeton).

New Utility patent application: Dabby, D.S. (2023). US Utility Patent Application No: 14/496,008. Filed 27 October 2023. Algorithm-generated variations of original songs for tangible and digital products.

I’m a member of the Organizing Committee for an NSF-funded project “Supporting Undergraduate Institutions in Technology and Entrepreneurship Development” (SUITED). Panelist and Presenter for the SUITED Workshop, virtual, Jan 12-13. Panelist for the SUITED project at the 12th Annual Deshpande Symposium: Innovation and Entrepreneurship in Higher Education, ASU, Jun 5-8: “Making Research More Impactful.” Of the 158 active PFI-TT grants, Olin has been distinguished as a recipient of one of only two PFI-TT grants awarded to undergraduate institutions. (The other recipient is Union College.)

NSF-funded Conference, “From Lab to Impact: Broadening Participation Summit at MIT.” Invited panelist for a faculty perspective on NSF TIP programs. Hosted by MIT. 24-25 April.

**Significance:** The CantoVario Projects can change how people interact with music on the internet.

**Overlapping areas:** External Impact + Developing Students through research opportunities + Recognition for Olin (Building/sustaining the College)

**Pointers to relevant evidence:**

NSF PFI-TT Annual Report May 2023

Web Application [www.cantovario.com](http://www.cantovario.com). CantoVario uses algorithms based on 5 patents that create musical variations of original works. A one-minute video produced for CantoVario’s NSF Innovation Corps (I-Corps) National Teams award introduces the technology: [What is CantoVario?](https://drive.google.com/file/d/1gz9c4y015EFGh-7qqp0tqVlH6DxnZprb/view?usp=drive_link)

A new web app produces multitrack song variations in the MIDI format as shown in this private video [CantoVario MIDI](https://youtu.be/jw2hFz7E_mk) . It can go public as soon as I submit my seventh patent application (forthcoming Jan 2024). A Chaos+Music Science Museum Exhibit prototype video can be accessed [here](https://www.youtube.com/watch?v=7p4oKeCWfZA).

Activity/Accomplishment 2: **Spring 2023 and Fall 2023 Orchestral Arrangements**

**Ten arrangements of large orchestral works for the Olin Conductorless Orchestra**

During 2023, I created 10 original arrangements (aka re-orchestrations of symphonic works) for OCO’s eclectic instrumentation which includes unbalanced wind, brass, and string sections.

Spring 2023. Six original orchestral arrangements of works for 10 players (2 **flutes, clarinet, alto saxophone, tenor sax, trumpet/French horn, 2 tenor trombones, piano, 1 violin**)

• Modest Mussorgsky/Ravel: Promenade, Il vecchio castello, Tuileries, Cum mortuis in lingua mortua, La cabane sur des pattes de poule from *Pictures at an Exhibition.* Mussorgsky composed his *Pictures* for piano in 1874; in 1922 Maurice Ravel orchestrated it for 2 flutes, piccolo, 3 oboes, 2 clarinets, alto saxophone, bass clarinet, 2 bassoons, contrabassoon, 4 horns, 2 trumpets, 3 trombones, tuba, strings (38 violins, 14 violas, 12 cellos, 8 basses), timpani, and percussion.

• Joe Hisaishi and PH Chen: A Town with an Ocean View (from *Kiki’s Delivery Service*) calls for 2 flutes, 2 oboes, 2 clarinets, 2 bassoons, horn, 2 trumpets, 2 trombones, tuba, strings, and percussion.

Fall 2023. Four original orchestral arrangements of works for 10 players (**oboe, clarinet/alto saxophone, trumpet, French horn, tenor trombone, bass trombone/tuba, percussion, piano, 2 violins**)

• Georges Bizet: Aragonaise, Séguedille, Les Toréadors from *Carmen Suite No. 1*. The orchestration for Bizet’s *Carmen* includes 2 flutes, piccolo, 2 oboes, 2 clarinets, 2 bassoons, 4 horns, 2 trumpets, 3 trombones, timpani, percussion, harp, and strings (34 violins, 14 violas, 12 celli, 6 double basses).

• Antonin Dvorak: *Symphony no. 9 in e minor*, op. 95 (Allegro con fuoco). Dvorak scored his New World Symphony for 2 flutes, 2 oboes, 2 clarinets, 2 bassoons, 4 horns, 2 trumpets, 2 tenor trombones, bass trombone, timpani, cymbals, and strings (38 violins, 14 violas, 12 cellos, 8 basses).

**Significance**: As noted by past students, OCO would not exist without these arrangements specifically geared to the orchestra’s eclectic instrumentation.

**Overlapping areas:** Developing students (enabling them to have an orchestra comprising non-standard instrumentation), Building/sustaining the College (performances for Admission events and public events), and External Impact (music creation on my part that allows Olin to have a public-facing orchestra for the past 22 years)

**Pointers to relevant evidence**: [Olin Conductorless Orchestra website](https://pages.olin.edu/eco-summer2019/) Arrangement info on p. 6 (\*\*).

Activity/Accomplishment 3: **Spring 2023 and Fall 2023 Music Program**

Backstory: Founder and developer of the [Music Program at Olin College of Engineering](https://music.olin.edu/) (2002 – present). Rehearsed and produced 375 concerts, performing as a pianist in 77, most recently May 2023 [OCO Expo Concert](https://youtu.be/7aBcnsstQkM). Created 139 arrangements of symphonic works for the [Olin Conductorless Orchestra](http://bit.ly/OCO_Dvorak9th) (10-22 players).

**In 2023: 11 concerts/events showcasing our students for Olin and external communities**

Rehearsals and dress rehearsals for Spring 2023 performances:

• 4 OCO concerts: Candidates Weekend 1 (Feb 17), CW 2 (Feb 24), CW 3 (Mar 3), Spring Expo (May 9)

• 3 Wired Ensemble concerts: Candidates Weekend 1 (Feb 17), CW 2 (Feb 24), CW 3 (Mar 3)

Rehearsals and dress rehearsals for Fall 2023 performances:

• 3 OCO concerts: Admissions Fall Open House (Sep 30), Family Weekend (Oct 27), Fall Expo (Dec 18)

• The Wired Ensemble Event concert (Dec. 18)

In addition to the above, I served as a disciplinary advisor for a Jazz Independent study and made resources available for two jazz concerts (an Olin trio). Music Program responsibilities on p. 6 (\*).

**Significance**: These concerts reach core Olin constituencies: families (Family Weekend), external professional visitors (e.g., Expo), students + families attending Candidates Weekends.

**Overlapping areas:** Developing students (building performance skills, creativity, and life balance), Building/sustaining the College (multiple performances for external communities, e.g., audiences who attend Candidates Weekends, Fall and Spring Expo)

**Pointers to evidence**: OCO[​mp4 icon OCOVideoFinal.mp4](https://olincollege-my.sharepoint.com/:v:/g/personal/ddabby_olin_edu/Ef323i-Z3cFIv9WV8euZa94BIVix7se86sbbXx6Lz9qNzA?e=lnb3JD) ; Wired Ensemble[​mp4 icon WiredVideoFinal.mp4](https://olincollege-my.sharepoint.com/:v:/g/personal/ddabby_olin_edu/Ecov5Iwhg9hNl75gTNKRVnwBRZFWcNJvO89lIwBuU1f8ng?e=izwRJK); Communications from parents, students, professional musicians, and Candidates Weekend audiences

Activity/Accomplishment 4: **Jul 11-15, 2023 Olin Summer Studio (OSS)**

**Design coach for 2 teams: Shenzhen InnoX Academy** (Team: Yu Ying, Duan Yu, Zhou Yu, lead Yang Rui) and **Chongqing et al.** (Team: Wang Xi, Xu Jianwen, lead Qin Yueshi, Yang Qing, Li Yunwu)

Shenzhen InnoX Academy sponsors summer and winter camps to identify prospective students for launching start-ups. But continuity and progress rarely ensue.

Their goals for OSS: 1) develop ways to get acquainted with their students plus efficient selection of student fellows, and 2) structure for final team formation. Result: they devised a plan for bringing candidates to camp and evaluating them over a 5-day period, outlining activities for each day.

Chongqing goals for OSS: devise a plan to 1) select students for an immersive environment designed to prepare them to be innovators, 2) find the balance between student development and success as defined by many stakeholders, e.g., the authorities, the government, and 3) bring to fruition a new first year engineering curriculum at Southwest University that satisfies all stakeholders. Result: they developed student personas with the desired traits, while trying to reasonably balance those traits with stakeholders, and devised ways to navigate roadblocks posed by powerful functionaries.

**Significance** shares Olin expertise and strengthens the College’s reputation; provides international dialog for faculty

**Overlapping areas:** Developing students in other countries, External Impact through disseminating Olin experiences and materials, Building and Sustaining the College by enhancing/spreading its reputation and resources, while enabling its faculty to help others beyond our campus.

**Pointers to relevant evidence**: [Shenzhen](https://docs.google.com/document/d/1QkZtFuhsQQj6mS3D-3VCZPJQEB8x__-B49kRyBOgZfg/edit), [Chongqing](https://docs.google.com/document/d/18NCbnZeiYDDXah8owTRR55Sxqpdtf3cPzXwfJvZ02Js/edit), [OSS](https://drive.google.com/drive/folders/1tbnty7yEuSacplUcPrNHmai1kjjpF4-Y)

(\*\*) **Music Program responsibilities:**

* Work with Olin Offices (Star, Development and Constituent Relations, Admission) and provide performances for Olin events (Family Weekend, Admission Fall Open House, Olin Expositions, Candidate Weekends, etc.)
* Meetings with students involved with Independent Studies
* Preparing music program information sessions for first year students
* Individual counseling for first year musicians, regarding auditions, music lessons, etc.
* Jam room coordination with students
* Providing orchestration, composition, theory, and performance skills to support students
* Helping students find ‘good fit’ private teachers for their particular instruments
* Producing musical opportunities for students to create and perform
* Bringing in external coaches to provide additional feedback to students
* Maintaining all Olin-owned instruments, e.g., practice and concert pianos, timpani and percussion
* Protecting Olin-owned instruments against theft. Sadly, triangles ($500), 4 tom-toms ($1000), 2 timbales ($500), and bongos ($150) disappeared during the 18 months we were virtual
* Evaluating/coordinating all tunings and repairs of the MAC 305 Steinway B, Yamaha MAC 318 upright, MH Mezzanine Steinway B, East Hall Steinway A, and East Hall Chickering grand piano
* Coordinating action photos of Olin musicians in performance and rehearsal with OSCOM
* Working to ensure the music program continues to grow, thrive, improve

(\*) **Explanatory notes for OCO re-orchestrations (symphonic arrangements).** In creating these re-orchestrations, I strive to make OCO sound as full and varied as possible, with a wide dynamic range, different colorations, strategic doublings, and effective solos/duets. Yet constraints exist, e.g., comfort ranges of OCO musicians. Simply substituting one instrument for another isn’t an option due to:

* Instrumental, sectional (strings, winds, brass, percussion), and orchestral voice leading
* Contrapuntal and harmonic intent of the composer
* Non-traditional instrumentation, i.e., instruments typically not found in an orchestra (piano, saxes)
* Non-standard ratios of strings to winds and brass
* Reduction from 90+ player orchestrations to 10-22 player arrangements (e.g., the 22 wind/brass instruments required for the Berlioz “Marche Hongroise” vs. the 8 that were available in OCO), or an increase in forces, as from a wind ensemble to a mixed string/wind/brass/percussion group
* Balance issues (non-standard) numbers of wind, brass, and strings comprising their respective sections
* Creating the impression of large forces through dynamics, color contrasts, decreasing/increasing texture, among other strategies. OCO typically likes ‘big’ works.
* Each semester, I ask students for their comfortable high and low *forte* notes and high/low *piano* notes. These often dictate what I can and cannot do, resulting in re-orchestrations particular to OCO.
* I try to give each student a good part that speaks to their strengths, plus at least one challenging part so they can ‘rise to the occasion’, hopefully paving the way for additional challenging parts. When material is repeated, I’ll often vary the orchestration with each repetition (e.g., Mozart’s “Wind Serenade in Bb major, K. 361”) or when duets/trios allow, I switch players in and out, thereby distributing parts (e.g., Mozart’s overture to *Così fan tutte*).
* And lastly, something I always try to do: everyone plays at the end of a piece—at least one note!

**Looking Ahead: How I can, and would like to, support “Olin as a living lab focusing on planetary and human health”**

My NSF “Partnerships for Innovation—Technology Transfer” grant project (CantoVario) speaks to the mental (and therefore the physical) well-being of musicians. For aspiring creatives in music, the CantoVario Projects address pain points of stress, anxiety, and self-doubt by 1) reducing the barrier to enter an artistic state, 2) jumpstarting ideas to lessen stuck time, and 3) accelerating the time from initial idea to final result. This value proposition arose from 170 in-person interviews I did as part of my NSF I-Corps National Teams grant project. NSF has supported this project with over 300K in funding.

My participation as a member of the Organizing Committee for the NSF-funded project, “Supporting Undergraduate Institutions in Technology and Entrepreneurship Development”, has helped Olin faculty participate in opportunities for their research through programs sponsored by the NSF TIP (Technology, Innovation and Partnerships) Directorate. Many aspects of their research are germane to human and planetary health.

Olin’s Living Lab will benefit from student engineers who understand time management through experiential practice. It is well-known anecdotally that engineering schools harbor large numbers of musicians. According to Olin’s Director of Admission, Susan Brisson, Olin needs musicians because “if there’s no music, students won’t come.” Olin offers academic music courses that speak to the Olin Engineer. They are singular, e.g., it’s unlikely to find a course where engineers (or frankly any music students) learn orchestral instrumentation, including voice, and then compose for those instruments and voices. These concepts are usually spread out over 2-3 courses in music composition, orchestration, theory, and analysis. Yet the Wired Ensemble integrates these topics into one course for our engineers who typically have little wiggle room in their course schedules. The Olin Conductorless Orchestra is also one-of-a-kind: OCO is the only conductorless orchestra composed of engineers in the world, and it resides at Olin College. These courses speak to students who are adventurous, eager to push their limits, and value producing excellent results. In short, they serve the type of student Olin seeks for each entering class, the same type of students (musician-engineers) who have practiced time management in order to maintain excellent academic and musical skills. These students—already primed through their musical pursuits for effective leadership, teamwork, and communication[[1]](#endnote-1)—are exactly the kind of students Olin will value as contributors and participants in a Living Lab environment.

At this point in the history of our planet, its health and the health of its living systems require a peaceful world. Olin’s Summer Studio brings participants from all over the world to our campus where we work together on projects of great importance to our visitors. As an example, though the governments of China and the U.S. are often at odds, that tension was nowhere to be seen during the 2023 Summer Studio. The Chinese teams that engaged with us July 11-15 struggle against roadblocks often placed by ‘small-minded’ functionaries. Nevertheless, they persist in their efforts to bring more light and opportunity for their students, and ultimately for their people. Interacting with them was a memorable experience. I still think of the people who attended and how beautifully we worked together to accomplish their goals for the week. Summer Studio functions as a Living Lab for educational creatives from all over the world to test new programs and courses in engineering, innovation, and entrepreneurship.

Lastly, my Carnegie Fellowship proposal addresses American polarization by offering a variation concert where seat location determines what is heard. It can serve a Living Lab for peaceful co-existence in this country.

**Anticipated changes to Spring courses**

I wasn’t clear on how to integrate the living lab and global/planetary health ideas into my Spring ‘24 courses until I attended both the morning and afternoon sessions of the Jan 12 Faculty Retreat. It was excellent! Sarah Spence Adams noted that linear algebra is taught everywhere, and she expected to be able to integrate it with Olin’s new direction. In a similar vein, I then realized that virtually all Electrical Engineering programs require a course in Signals and Systems since its concepts pervade our built world. So as I look ahead to the Spring ’24 Signals course, I’ll also be researching possible ways to integrate it with Olin’s Living Lab for global and planetary health.

The Olin Conductorless Orchestra is itself a Living Lab for developing leadership, teamwork, and communication skills—skills that every business entity values in its workforce. This means that Olin College has a small team within its community that can be tapped by businesses to test collaborative endeavors. Moreover, the orchestra can speak to how they’ve developed these desired traits to business entities seeking a more productive and cooperative culture. In fact, there’s a history of orchestras and performing arts groups serving as collaborative models for effective re-structuring of workplace environments.1

**Course Evaluations**

Course evaluations now follow for Fall ’23 Wired Ensemble, Fall ’23 OCO, and Spring ’23 OCO. As mentioned earlier, I continued the latter despite being nominally on developmental leave during Spring ‘23, since OCO absorbed at least half my time during the leave. There are backstories to each of these courses, but in general, the course evaluation results surprised me.

**Wired Ensemble** After the first four weeks of Wired Ensemble, I gave the class a feedback form that listed all our learning activities and asked them to indicate which ones were helpful and which were not. The results indicated they wanted more theory. So during the last nine weeks I covered more theory. At the end of the course, I gave the students another feedback form to fill out to help me gauge how helpful, or not, their learning activities were during these last nine weeks. I do this so I can apply these findings to the next iteration of the course.

Of the 32 learning experiences/activities occurring during the latter 9 weeks, twelve of the 14 students enrolled in the class cited anywhere from none to 5 activities as being unhelpful, out of the 32. The remaining two students cited 11 activities of the 32 as not helpful. So there was a large gap between 12 students finding between 32 – 27 learning activities helpful (i.e., anywhere between 0 and 5 activities unhelpful) and two students for whom only 22 learning activities were helpful (i.e., 11 were unhelpful). All 14 students submitted the anonymous feedback forms. The results are shown in the following table:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| No. of helpful learning activities (out of 32) | 32  (all helpful) | 31  (1 not  Helpful) | 30  (2 not  Helpful) | 29  (3 not  Helpful) | 28  (4 not  Helpful) | 27  (5 not  Helpful) | 21  (11 not  Helpful) |
| No. of students citing helpful activities | 1 | 1 | 1 | 4 | 2 | 3 | 2 |

On these feedback forms, every student rated their individual sessions with me as helpful. During these individual sessions, I play their compositions at the piano, offering comments, and devising solutions to any part of their compositions we think could be better. For each problem section, I improvise one or more possible alternatives. Though they all found these sessions valuable, some students bristled when I gave any commentary that wasn’t unequivocally laudatory. This became a challenge because as we approached the public performance of their pieces, some of them had problems that if left unsolved would detract from the entire concert. My focus is on helping each student’s piece sound the best it can be for the concert.

In the Wired Ensemble, a lot of parallel processing occurs. I prepare a Day Assignment for each class, explain it briefly, then urge them to ask questions when I periodically check in between giving individual sessions in an adjoining room. This parallel processing format has defined Wired Ensemble since inception. Only later, when I began teaching ESA did I realize that QEA and ESA have adopted similar Day Assignment approaches.

I consistently urged them to ask questions on anything that wasn’t clear. Because there were often no questions, or at most just 1-2 questions, I assumed they understood the material. Still, I offered office hours after every class and by appointment, as well as offering 3 hours of individual sessions during Finals Week when they were working on their final compositions. What I have learned is that I have to be more proactive in the future on making sure **all** students understand the concepts. One way to do this might be to ask questions of each student, rather than asking them for questions. In any case, it has to be done in the spirit of learning and clarification.

**Olin Conductorless Orchestra** Orchestra can be complicated, and I’m glad to talk about that. Students like to think of it as their orchestra; after all, it’s a conductorless orchestra! In general, though, some students feel I don’t say enough while others feel I say too much. I definitely step in when I have something to offer that’ll help them, when there’s a problem that needs to be remedied, and when I can adjust a part (often on the fly) that’ll help the students playing it. I expect excellence or at least shoot for it. When I hear unfocused playing that’s ignored by the orchestra, I call it out and suggest ways to make it better, including how to practice it.

I’m not sure how to interpret the OCO course eval results. Roughly half the players, usually the more seasoned ones, don’t register for OCO due to the 20 credit limit. So the sample size for the Spring and Fall course evals is small. To really ascertain how things are going for the students, another approach might be useful, perhaps a mix of anonymous feedback combined with individual meetings with each student to hear their personal experience with OCO. One metric, though, is the rate of return. All students that performed in OCO last semester are returning for Spring ’24 semester!

Still, I can never predict how OCO will fare in a given semester. There are always surprises. Spring ’23 was a notable case in point.

Please feel free to stop reading here. I wrote the following account to give you a window into the OCO world, in the event you’re curious.

… As mentioned earlier, I was nominally “on sabbatical” but since there are always a lot of concerts for external audiences during spring semester, e.g., 6 concerts for Candidate Weekends, I continued to offer the orchestra course and take care of the music program. We finally had a complete string section comprising 2 violins, viola, cello, and double bass. But the cellist was leaving for spring semester to do a study away program in Vienna, and the other string players didn’t want to play without a cello. Their departure left us with 10 players: 2 flutes, clarinet, alto sax, tenor sax, trumpet, 2 trombones, piano, and violin.

OCO students select the repertoire they want to play; I then re-orchestrate the pieces for whatever instruments we have for that semester.

The students selected pieces from Mussorgsky’s *Pictures at an Exhibition* in the Ravel arrangement for large orchestra (think 38 violins, 14 violas, 12 cellos, and 8 double basses—and that’s just the string section). The other instruments are: 2 flutes, piccolo, 3 oboes, 2 clarinets, alto saxophone, bass clarinet, 2 bassoons, contrabassoon, 4 horns, 2 trumpets, 3 trombones, tuba, timpani, and percussion.

Since Olin is a small school, we’ve never had standard instrumentation in the orchestra. I’ve made 135 re-orchestrations (orchestral arrangements) for all combinations of instruments, trying to achieve the best group sound possible with unbalanced wind, string, and brass sections. But I’ve never tried to balance one violin with 8 wind-brass and a piano for a work that requires a big orchestral sound, as I would have to do for the Mussorgsky/Ravel. I wasn’t even sure it could be done.

Though the prospect of balancing that one violin was daunting, in some strange way I felt challenged and wanted to see if it could be done. So I got to work on each of the 5 pieces selected by the students. I managed to balance the single violin with the other instruments, sometimes by writing parts that would allow the violin to soar above the other players, e.g., by using harmonics, or integrating its timbre into the mix, e.g., with tremolos.

While re-orchestrating their last selection (Baba Yaga’s Hut), I found myself wishing we had a bass drum player and a timpanist, especially for its big beginning and subsequent recap. I was able to use every instrument in OCO to create a big group sound for the opening of Baba Yaga, except for the 2 flutes. In their low range (where I needed them), they wouldn’t be heard. So why not have one flutist play timpani and the other play bass drum for the big beginning? I decided to turn them into percussionists just for the opening, then give them a few measures to rush back to their seats, pick up their flutes, just in time for a descending flute passage with grace notes.

To achieve more color in Baba Yaga, I gave the pianist not only a piano part but also a part on the glockenspiel, which she would learn to play. I also gave a trombonist a short part on the xylophone. I then hired Sam Solomon, a gifted percussionist and teacher at Boston Conservatory, to give all of them a lesson on how to play their respective new instruments. The students took to their parts. After making this last re-orchestration, I felt we were in good shape for the final performances of the semester – Olin’s Exposition Day to be held May 9. I could clearly see a path forward to the end of the semester which would require work but all would be doable. So what could possibly go wrong?

On April 20, at the end of our rehearsal, the navigators (leaders) of the orchestra were reminding students of the times for the Expo concerts. Suddenly the pianist said, “wait, wait, what date are these concerts?”

“May 9,” replied the navigators. “I’ll be in China.” And with that, a difficult semester (a semester that was to be my sabbatical) became difficult in the extreme. Just one hour earlier during that same rehearsal, I had to strongly reprimand a vexing player (something I’d never done in the 21 years of working with this orchestra) for randomly hitting the timpani as hard as possible, thus hurting the ears of surrounding musicians, and now I had to figure out an orchestration without using the piano, fully aware I had used that instrument as ‘glue’ in critical places for all of the Mussorgsky pieces selected by OCO.

So I talked with the pianist, a Babson student who had played with the orchestra for 1.5 years. Please, couldn’t you talk with China Air and explain the situation. She said it wouldn’t work because it took her a week of trying before she was able to book that flight. On top of it all, her grandmother was gravely ill, and she had to see her as soon as possible which meant getting home quickly.

I really didn’t think we could do any of the Mussorgsky without the piano. Maybe the navigators would be able to find someone, but I wasn’t sure that would be successful given the piano technique required to play all pieces, especially that required for the last piece (Baba Yaga’s Hut) and given the time of year: end of semester finals. Also, the pianist would have to learn how to play the glockenspiel and move quickly between the two instruments, even playing one with the right hand (the piano), while playing the other with the left hand (glockenspiel).

The next week, at our OCO meeting, one of the navigators asked if I could do the piano parts. There was no other choice. So I learned all the piano and glockenspiel parts, and learned how to play the glockenspiel in the process. The clip given above in Activity/Accomplishment 3 shows the Baba Yaga choreography with the flutists moving to timpani and bass drum and the trombonist moving from xylophone back to trombone (long link <https://youtu.be/7aBcnsstQkM> ). It’ll also show the 2 seconds I had to switch from piano to glockenspiel and then another 2 seconds to switch back to piano and place my hands 3 octaves apart to play a quick passage (quarter = 152). And it’ll show the group sound I created with an eclectic combination of 10 instruments.

With hindsight, all’s well that ends well, but frankly, the easiest solution would’ve been to simply cancel the Expo concert. But that option didn’t occur to us; the OCO students wanted to perform.

… In closing, I look forward to talking with you later this semester. Hope your surgery goes smoothly, even better than expected! Thank you for reading.

1. Dabby, D.S. (2019). The Engineers’ Orchestra: a conductorless orchestra for developing 21st century professional skills. Peer-reviewed and accepted for publication in the Proceedings of the 2019 ASEE (American Association for Engineering Education) Zone 1 International Conference, Niagara Falls, New York. Selected as ASEE Zone 1 Best Paper for 2020.

   Dabby, D.S. (2017). The Engineers’ Orchestra—a conductorless orchestra for our time. Book chapter in D. Baraiktarova & M. Eodice (Eds.), Creative ways of knowing in engineering (pp. 23-58). Cham, Switzerland: Springer Nature. Peer-reviewed book chapter. (771 Accesses from Springer Nature) [↑](#endnote-ref-1)