

# A Carillon Lab for the 21st Century

## Bicentennial Activity Grant

### Summary and Report

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#### Project Leaders

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#### Bicentennial Carillon Activities - Summary

Throughout the Bicentennial year, the campus heard and shared in our efforts to forge new paths in carillon performance, bell studies, and public musical engagement. Traditionally, carillons have been relatively isolated and elitist institutional symbols, associated with centuries past. Our projects involved the public, students, and scholars in reimagining how the sounds of our campus bells connect the present-day soundscape not just to two centuries of campus history, but also to inclusive, inventive, interdisciplinary new directions.

To provide audiences with a centralized information resource, we created a new Bicentennial carillon website, <https://gobluebells.wordpress.com>. We have decided to continue to use and update this website indefinitely, as it proved effective at reaching the public.

#### *Hack The Bells: Lifting barriers to student engagement*

Our first announcement came in fall 2016, when we released the call for student entries to the interdisciplinary **Hack the Bells student contest**. This contest met our goal of inviting in-depth engagement and imagination with the UM carillons by non-music students. Innovative entries came from student teams in the Schools of Architecture, Information, and Music, proposing the use of creative temporary structures, bells for participants, networking, and Kinect motion-sensing devices to play with campus memory, the progression of time, spatial echoes and musical responses, and the urban soundscape. The winning entry by Spencer Haney and Karl Ronneburg, "[Reclaim](#)," sought to foreground the noisy urban soundscape of Central Campus as inherently musical. We supported their premiere with prize money, guidance, audio equipment, and space to present at the campanology symposium. The fantastic event took place on September 30 with the carillon, amplified electronics, outdoor brass ensemble, and cars in motion. We were, however, disappointed not to receive more entries. While the quality of entries was high, many of the students who expressed an intention to enter did not follow through. We think it likely that they had difficulty meeting our December 2016 deadline, and will avoid proximity to exam week in the future.

We will support the winners in potentially organizing performances of "Reclaim" at other carillons around the U.S. Based on student enthusiasm, we plan to reprise the Hack the Bells contest when we are able to fund it again. Now that a winner has been presented

on campus and we have gained greater understanding of student timelines, we think future contest participation would be higher, and the quality of entries would increase further.

*Campanology Symposium: Transforming the field*

Our second Bicentennial event, the three-day **Resonance and Remembrance: An Interdisciplinary Bell Studies Symposium** (March 31-April 2), made the broadest and most lasting impact of all of our projects. (It was also the most work!) Scholars and artists dealing with bells rarely meet or become aware of each other's work. We were inundated with more proposals than we could accept, and had to turn away many qualified proposals. The thrilling critical mass created at this symposium, which served over 80 attendees, deepened all participants' engagement with bells and their resolution to continue working on campanological topics. Although we had not planned it, clear new promise in the scholarly arena emerged for work in postcolonial and gender studies approaches to bell studies, in the artistic arena for digital manipulation of bell sounds and alongside a productive return to analog storytelling, and in the performance arena for audience-interactive analog and networked possibilities. Steven Feld's keynote speech at the School of Information was packed to capacity (70 attendees) and attracted scholars from many units as well as community members. The symposium also fostered a strong sense of community. We received compliments from participants who had never experienced this degree of productive interdisciplinarity and wanted to organize events modeled on ours. With the forthcoming publication of a conference overview and selected papers in the *Journal of Campanology*, partially funded by the Bicentennial grant, the scholarly and artistic impact of the conference will grow and become permanently accessible.

Presenters have gone on to develop and share their findings, first presented at U-M, at additional events, taking the U-M impact abroad. The tools first presented in Romain Michon and Sara Martin's lecture "Faust Foundry: A Software Kit to Make Bell Physical Models for Musical Applications" were refined and published in the proceedings of the International Computer Music Conference in Shanghai. Elliot Kermit Canfield-Dafilou and Kurt Werner presented modal resynthesis of the U-M Lurie Carillon bells developed from Bicentennial recordings by SMTD student Isaac Levine, and have made these synthesis tools available at a permanent url:

<https://ccrma.stanford.edu/~kermit/website/bells.html>. There, composers can download the data for modal synthesis and explore spectral transformations of the Lurie bells through their virtual counterparts. This will be immeasurably valuable for Granzow's upcoming performance systems class where students compose electroacoustic works for carillon as the midterm assignment.

Given the productivity of her poster session at the symposium, U-M Comparative Literature doctoral student Mariane Stanev is moving forward with devoting part of her dissertation to the study of bells in Brazil.

*Mobile Carillon: Attracting enthusiastic new audiences*

We had proposed the rental of a **mobile carillon** for a series of community enrichment concerts and workshops at the Bicentennial Summer Festival. The Ann Arbor Summer Festival eventually determined that they were unable to make adequate space for an additional carillon, so we partnered with SMTD to present the mobile carillon on North and Central Campus as part of the annual UM Organ Conference on Nov. 2-3. This proved to be a tremendously exciting opportunity to share the carillon with the wider public. The sight of bells on a truck, eager students practicing on them and taking masterclasses on them, and faculty performing virtuosic concerts on them and demystifying the public as to how the carillon is played, ended up stopping traffic on both campuses, attracting enthusiastic social media attention, and drawing fascinated crowds. Parked outside Rackham, we presented the world's first piece for carillon and handbell choir by SMTD alumnus Joseph D. Daniel, and a wonderful community volunteer group made the performance possible. We also placed the mobile carillon in dialogue with the newly illuminated Charles Baird Carillon, premiering electroacoustic works by Granzow and international composers. The gratitude of our carillon students, enthusiasm of our audiences, and astonished rubbernecking made it clear that this event bears repeating when we are able to fund the rental of this instrument again. It cost only \$1,100 for two days and yet the benefits continue to reverberate. There was a decided uptick in visitors to the carillons in the following weeks as new fans returned to learn more, and we continue to meet people who first became fascinated with bells when they chanced upon the truck.

*The Tsar Bell Project and Granzow's sound installation: New artistic-political questions on a massive sonic scale*

The **Tsar Bell Recast**, Granzow's research project with Ng, Chris Chafe (director, Center for Computer Research in Music and Acoustics, Stanford University), Greg Niemeyer (UC Berkeley Center for New Media), and Perrin Meyer (Meyer Sound), produced both new knowledge and new artistic works. We improved on the 2016 pilot of the project at UC Berkeley, a digital simulation of the sound of the 200-ton Tsar Bell in Moscow using Finite Element Analysis, by creating a new hybrid #UMich200 Tsar Bell incorporating the profile of the bourdon (heaviest) bell of the Charles Baird Carillon. Granzow and Chafe invented a trigger that sonically melded the #UMich200 Tsar Bell with the real bourdon whenever the pedal was depressed at the carillon keyboard. Meyer Sound indefinitely loaned two powerful arena loudspeakers to us to "play" the #UMich200 Bell.

At the bell's debut at the Bicentennial Fall Festival, we worked with students to reprise Chafe's and Granzow's pieces, and Ng premiered two brilliant new works by faculty composers Christopher Burns (U-M PAT) and Kathryn Alexander (Yale University) that explored the political implications of amplifying a Russian tsarist symbol in America in an era of news manipulation. The premieres occurred in conjunction with the presentation of Granzow's belfry sound installation where the Baird bell partials were integrated into the spectra of a much larger virtual bell. This required careful sensing of the clapper movements to concurrently trigger electronic partials with the acoustic ones. This installation allowed us to perceptually bond the attack of the Baird bell to the partials of the

virtual one. The success of this hybrid resonator revealed several exciting possibilities of live processing of bell and environmental sounds around the instrument for electronic diffusion. Granzow is planning a second installation blending capture recording of environmental noise into bell spectra for Lurie in 2019.

Despite heavy rain, we were gratified that the audience members who braved the weather expressed delight at the tremendous tower sounds. We had an audience that came specifically for the premieres and installation and stayed for several hours to experience all of them and make souvenir recordings. It was the best we could hope for in such weather and demonstrated public enthusiasm for our work, which was also popularized in the Wikipedia entry on the Tsar Bell. Granzow has since purchased additional supplies with the remaining grant allocation in order to present his sound installation in better weather, leveraging this Bicentennial project into further opportunities for visitor sensory engagement.

*New Open Access Resources: Open-source gameful learning and innovative carillon playing*

Partnering with Theodore Hall in the UM3D Lab, we brought two students on board our research project to develop the **Virtuallon**, an open-source gameful resource for carillon engagement. Isaac Levine worked with Ng's carillon students to create a Creative Commons-licensed [sample set of the Lurie Tower bells](#). Our Facebook announcement of the new resource reached 2,228 people and was shared 15 times. By June 2017, it had been so widely shared that we chanced upon it being used in a research prototype being presented at the annual Congress of the Guild of Carillonneurs in North America in Mariemont, Ohio.

We then hired undergraduate Lily Lama to develop a virtual reality carillon game, using the samples, that would make the carillon experience accessible to people with no musical or keyboard experience, as well as people with limited mobility. Working with Hall, Lama developed a demo level for Oculus Rift using the Unity game engine. We hosted an exciting playtest and demo at the Duderstadt Center on Nov. 3. Players gave a positive overall assessment, and we shared user feedback with Lama so he could revise the game to be more user-friendly. Given the limited capacity of the UM3D Lab's Oculus Rift facility, we did not use the \$200 publicity portion of our grant to attract a larger audience.

The challenge moving forward is that the Oculus Rift platform is not entirely amenable to the open source philosophy, something we did not foresee when we selected the Oculus as the platform with the broadest impact. We are still working with Lama to make the development files freely available. We want to offer the pilot level as an open-source download so other developers can build additional levels under CC license. We will make a public announcement when we succeed at making this game freely downloadable.

We anticipate extensive use of the Virtuallon game at future carillon concerts, where we can now provide ADA-accessible virtual access to the belfry even at Burton Memorial Tower, where the elevator does not reach the bells. Fortunately, SMTD Assistant Professor Anil Çamcı (Performing Arts Technology) won a grant to acquire VR equipment including Oculus Rift sets. In partnership with his lab, we will be able to engage audiences

with the Virtuallon for years, and to offer free feedback to any external developers wishing to build on it.

Partnering with Michigan Publishing, we laid the foundations for **University of Michigan Open Access Carillon Scores (UMOACS)**, our second open access online resource, this one aimed at the specialized user base of carillon composers and performers. We received tremendous support from composers for our desire to lend institutional support to the promotion of contemporary carillon composition, which existing carillon publishing houses are too conservative to print. However, Michigan Publishing is phasing out its old text-centered platform in preparation for the 2018 launch of Fulcrum, a media-rich platform that would be perfect for UMOACS. Given that adapting the outgoing platform to the media-rich requirements of a music database would be labor-intensive and expensive, we decided it would be cost-effective to make the UMOACS launch coincide with Michigan Publishing's launch of Fulcrum. This decision also allows us to obtain permissions from composers or their estates that will allow us to establish continuity with UM's previous imprint, Carillon Music from the University of Michigan, a well-known predecessor project. Although we missed our launch goal due to larger institutional timelines, the platform, once finalized in late 2018, will push the conservative field's boundaries and spur new creativity. The launch will feature works commissioned and premiered for the Bicentennial, making UMOACS the primary resource for carillonists around the world seeking to perform that innovative repertoire.

#### *Unfunded events*

Beyond the scope of this grant project, Ng offered voluntary carillon events at the request of the Bicentennial Committee and Bicentennial event organizers.

- **President's Bicentennial Colloquium on the Future University Community** (Jan. 30): Recital of new arrangements of Puerto Rican music and music by German women, made by Ng for this occasion, to honor Supreme Court Justices Sonia Sotomayor and Susanne Baer
  - Continuing impact: Ng has continued to perform these arrangements to raise disaster awareness for Puerto Rico and awareness of the extreme underrepresentation of women composers in Germany and will publish some of the sheet music in 2018.
- **SMTD Bicentennial Colloquium on Social Justice and the Performing Arts** (Jan. 30): Second recital in honor of Justices Sotomayor and Baer
- **Bicentennial Spring Festival** (Apr. 7)
  - North American premiere of the Jukebells.com request system, during which the audience voted online in real time for what music they wanted Ng to play.
  - A-maizing Building Tours: Offered free reserved tours of the Charles Baird Carillon to the general public and did an interview with *MLive*
- **After-dinner concert and tours for donors of the Carillon Illumination System** (Mar. 1)

- **Inauguration Concert of the Carillon Illumination System** (Apr. 8): [livestreamed](#) on the official UM Facebook page and viewed over 60,000 times
- **Bicentennial Fall Festival A-maizing Building Tours** (Oct. 27-28): Ng recruited her students to offer three tours of Lurie Tower to the public.

*Sympathetic resonance: Lasting contributions to the campus and field*

The projects most easily identifiable as lasting, durable contributions to the University and field are the *Journal of Campanology* symposium proceedings, the UMOACS platform which will publish new music every year including some of the Bicentennial-commissioned works, the popular Lurie Carillon samples, Ng's publications of sheet music, and the Virtuallon game. Lasting precedents that we expect to revisit, or that are already being used by colleagues elsewhere in the world, are the models for interdisciplinary bell studies exchange established by the Symposium, the Hack the Bells contest (already being copied elsewhere), and use of the mobile carillon to engage the Ann Arbor public.

*Ongoing faculty outcomes*

Thanks to work pursued through the Bicentennial Activity Grant, project leaders Tiffany Ng and John Granzow have received an increase in international invitations. As a team, we presented the paper "Hack The Bells: Using the Carillon to Drive Teaching Innovation" at the XIX World Carillon Federation Congress in Barcelona, where the teaching aspects of our Bicentennial work were received with excitement and carillonists made inquiries about how to pursue similar local initiatives. Not long after, Ng was invited to the jury of the first Hack the Bells contest in Europe (Maastricht, the Netherlands), and Granzow was invited to write a paper, "Bells and the synthetic imagination," on his teaching with bells in PAT for the *Journal of Campanology*. We have also submitted a proposal based on Tsar Bell Project research to the U-M MIDAS Data Science for Music Challenge Initiative.

Ng is performing Bicentennial-commissioned pieces at the Carillon New Music Festival at the University of Chicago in May, and Yale composer Kathryn Alexander has decided to compose further for Ng following a successful Tsar Bell debut. Based on Ng's work during the Bicentennial for gender equity and decolonizing carillon syllabi, she will be the invited keynote speaker and a performer at the Australian government's 2018 Canberra Carillon Festival. She was also invited by Niall Atkinson, Associate Professor of Art History at the University of Chicago, to co-organize a symposium at Chicago for early modernists inspired by "Resonance & Remembrance."

*Thank you!*

Our deepest thanks to the Bicentennial Activity Committee for organizing an incredibly meaningful and productive year. We had the pleasure of enjoying many other Bicentennial events and their incredible impact on moving our campus forward. What a time for us junior faculty to have arrived on this campus! Organizing transformative events such as the symposium and mobile carillon concert showed us how impactful and

worthwhile these events could be for the local and international community, and what each of them will require in the future to do again. Thank you for a rewarding year beyond compare.

### **Media coverage**

- “See inside University of Michigan’s iconic Burton Memorial Tower” (MLive, Apr. 8) [http://www.mlive.com/news/ann-arbor/index.ssf/2017/04/building\\_tours\\_take\\_community.html](http://www.mlive.com/news/ann-arbor/index.ssf/2017/04/building_tours_take_community.html)
- “Faculty Notes” in *Michigan Muse* (fall 2017, p. 35): Mention of Ng’s performances of Bicentennial carillon projects in Europe: <http://smt.d.umich.edu/about/muse.htm>

### **Social media engagements**

- 51 #umich200 tweets from our @gobluebells account. We do not have the capacity to manually tally up the number of engagements and views, but we do know that each of those tweets ranged from 500 to 5,000 impressions.
- About 62,000 views of our Facebook Live streamed concerts

### **Publications and Products**

- Standalone website: <https://gobluebells.wordpress.com/>
- The inaugural issue of the *Journal of Campanology* (forthcoming Oct. 2018) features Ng’s report on the symposium findings and articles from presenters including John Granzow on “Bells and the synthetic imagination” and Madeleine Smith on “Sacred time and secular power: The bell in French medieval Arthurian romance” (forthcoming fall 2018).
- Publication of Ng’s carillon arrangements of *Three Preludes by Clara Schumann*, dedicated to German Federal Constitutional Court Justice Susanne Baer (GCNA, forthcoming June 2018)
- Creative Commons-licensed instructions on organizing your own Hack the Bells contest (forthcoming Feb. 2018)
- **Streaming video**
  - Facebook livestream of experimental Bicentennial Bell Studies Symposium concert, “New Models of Audience Agency” (Apr. 1): <https://www.facebook.com/UMCarillon/videos/1341150802630497/>
  - Inauguration of Bicentennial Carillon Illumination System featuring synchronized light show. Livestreamed on the official U-M Facebook page and viewed over 60,000 times (Apr. 8): <https://www.facebook.com/UniversityOfMichigan/videos/10154528475275753/>
  - Facebook livestream of Mobile Carillon by an enthusiastic audience member (Oct. 3): <https://www.facebook.com/alfredo.silvestre/videos/10209559707850274/>
- **Streaming audio**



- John Granzow’s “Euler’s Bell”:  
<https://soundcloud.com/umcarillons/sets/electroacoustic-carillon>
- Christopher Burns’ “counterfactuals”:  
<https://www.facebook.com/UMCarillon/videos/1631570176921890/>
- Kathryn Alexander’s “Phantasmes”:  
<https://www.facebook.com/UMCarillon/videos/1576552909090284/>
- Laura Steenberge’s “The Seer”:  
<https://soundcloud.com/umcarillons/sets/electroacoustic-carillon>
- Katarzyna Kwiecien-Dlugosz’s “Nihil constat”:  
<https://soundcloud.com/carillonista/nihil-constat>
- **Streaming video of student projects**
  - Spencer Haney and Karl Ronneburg’s video of their Hack the Bells premiere, “Reclaim”: <https://youtu.be/Xedxe6FhEwU>
  - Rebecca Fisher’s Hack the Bells entry, “Swing Set”:  
[https://youtu.be/Rlh3wopK\\_Gc](https://youtu.be/Rlh3wopK_Gc)
- **Lurie Carillon samples** (Creative Commons license free download):  
<https://gobluebells.wordpress.com/2016/09/21/lurie-carillon-samples/>
- Open source **Tsar Bell** specifications and source code:  
<https://github.com/equilet/tsar-bell>
- *Products resulting from the symposium, created by external participants:*
  - Open-source download of Elliot Kermit Canfield-Dafilou and Kurt Werner’s resources for “Modal Analysis and Synthesis of the University of Michigan Lurie Carillon”: <https://ccrma.stanford.edu/~kermit/website/bells.html>
    - The team’s later article “Modal Audio Effects: A Carillon Case Study” in *Proceedings of the 20th International Conference on Digital Audio Effects (DAFx-17)*, Edinburgh, UK, September 5–9, 2017:  
<https://ant-s4.unibw-hamburg.de/dafx/paper-archive/details.php?id=EJadkldvfRo-kwZEW33HXQ>
    - Composer Davor Vincze’s premiere at the Narodna Galerija Ljubljana (Slovenia) of “6th Laibach Concerto” by the Slovene Philharmonic Chamber String Orchestra and amplified electronics using these physical models (May 30)
  - Romain Michon’s “Faust Physical Modeling Toolkit,” a freely downloadable collection of bell physical models using mesh2faust, plus the symposium presentation slides “Faust Foundry: A Software Kit to Make Bell Physical Models for Musical Applications”:  
<https://ccrma.stanford.edu/~rmichon/pmFaust/#bells>
    - Published with Sara Martin in *Proceedings of the International Computer Music Conference 2017* as “mesh2faust: a Modal Physical Model Generator for the Faust Programming Language - Application to Bell Modeling”
- Indefinite corporate-sponsored loan of two arena-sized CQ-2 loudspeakers for augmentation of the Charles Baird Carillon



## **Event Programs (see Exhibit A, 30 pages)**

### **Feedback Received (see Exhibit B, 54 pages)**

- Thank-you emails from Carillon Illumination donors Paul Dimond, John Carver, Henry Baier, and Ron Weiser (Mar. 2), and a handmade thank you card sent in April from Dave and Linda Newton
- Thank-you email from symposium presenter Rohit John Varghese (University of Texas) (Apr.)
- Sample tweet about mobile carillon (Oct. 3)
- Letter of thanks from faculty composer Christopher Burns for our premiere of his piece *counterfactuals* written for the Tsar Bell Project (Oct. 30). We should have been thanking him!
- Handmade thank-you card from Ng's students for a semester enriched by student participation in Bicentennial projects

### **Archiving in triplicate**

We have contacted Elizabeth Carron at the Bentley Historical Library, as she has archived carillon materials in the past. She will instruct us on who to work with. We will determine a way to archive both print and electronic products of the project, including video and audio recordings of concerts.

We are also sending hard copies of all posters, programs, and publicity materials to the Archives of the Guild of Carillonneurs in North America and the Anton Brees Carillon Library in Lake Wales, Florida. Records of "A Carillon Lab for the 21st Century" will exist in triplicate.

### **Final Budget Report**

See spreadsheet:

[https://docs.google.com/spreadsheets/d/1\\_k-Odo3-r6ZiWOKX6Y7iqEH8ApqLmlje7WOA53vb6Ro/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1_k-Odo3-r6ZiWOKX6Y7iqEH8ApqLmlje7WOA53vb6Ro/edit?usp=sharing)

The spreadsheet is not quite complete; we are awaiting a budget statement from SMTD for the first half of 2017 in order to fill out the missing information. Our coordinator of financial services is currently out sick.

### **References**

R. Michon and S. Martin, "Mesh2faust: a Modal Physical Model Generator for the Faust Programming Language – Application to Bell Modeling," in Proceedings of the International Computer Music Conference (ICMC-17), Shanghai, China, 2017.