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SIGCSE News in Brief

Welcome to the October 2020 issue of the *Bulletin*.

As many of us have succumbed to the remote teaching environment of the fall semester, we are probably also looking forward to returning to our comfortable, normal, in-person instruction in the future. But what does *normal* mean? There is no doubt that COVID-19 has changed all levels of education, but how? What changes will stick and which ones will become part of the history of COVID-19?

As I put my kids to sleep each night, I watch the local news and keep seeing the number of COVID-19 cases increasing, the number of deaths from COVID-19 increasing, and the restrictions in California not being lifted. I also have fielded the question from my 11-year old asking when we will return to *normal* life.

It is hard for me to explain that *normal* is relative to *abnormal*. As the world is changing, the

definitions of *normal* and *abnormal* are also changing. Will the world ever return to the same state it was in prior to March 2020? Probably not. Will we need to look at people as diseased and fear that they may infect us with COVID-19? I hope not. In fact, in the United States as of September 2020, the Centers for Disease Control and Prevention has reported that there are just over 7 million COVID-19 cases with a US population of 328 million. That means that if you see 100 random people in a day, only four of them have tested positive for COVID-19. To further that point, those four people are not necessarily contagious but have merely tested positive at some point since March 2020. So I encourage you to reach out to that friend, co-worker, student, or family member, and tell them how much you miss them. Remember that everyone is going through something, and you have the ability to at least connect with them. As educators, we have a responsibility to connect with our students and guide them, not only through their studies, but through their lives.

In this issue of the *Bulletin*, the first article addresses one of our main conferences – ITiCSE. The organizers have provided us with a summary of the previous conference and what

we can expect in the future. The second article talks about the postponement of CompEd 2021, followed by an article about the CSEdGrad activities.

As we have continued to see issues related to equity and diversity, I'm happy to include an article about funding opportunities to increase the representation of women in undergraduate computing and an article from BPCnet.org about broadening participation in computing fields.

The ICER 2020 chairs have provided us with a wonderful retrospective followed by our regular column where we solicit answers to the question, "How Do You Think We Can Address Inequity Issues That Exist in the Field?" I am proud to have answers from Shana White and one of my USC colleagues, Robert Parke (who was just one of the ACM Member Spotlights in September 2020).

We wrap up this issue of the *Bulletin* with an interview with Valerie Barr of Mount Holyoke College. We hope you enjoy this issue of the *Bulletin*.

Upcoming Dates and Deadlines

Conference	Location	Dates	Full Paper Submission Deadline
Koli Calling	virtual	November 19-22, 2020	already passed
SIGCSE TS 2021	virtual (Toronto, Ontario, Canada)	March 17-21, 2021	already passed
ITiCSE 2021	Paderborn, Germany	June 25-30, 2021	not posted yet
ICER 2021	Charleston, South Carolina, USA	August 2021	not posted yet
CompEd 2022	Hyderabad, India	to be determined	not posted yet

Other conferences operate in cooperation with SIGCSE and are posted on the SIGCSE web site at <https://sigcse.org/sigcse/events/incoop.html>.

The Past and Future of ITiCSE

By Amber Settle, Michail Giannakos, and Mark Zarb



The Annual Conference on Innovation and Technology in Computer Science Education (ITiCSE) is the second oldest SIGCSE conference, celebrating its 25th anniversary in 2020. The conference has had impact beyond its immediate audience, as its organizers have pioneered conference activities that have been adopted by other SIGCSE conferences including working groups and conference-sponsored excursions.

After a single conference in South America in 2016, the SIGCSE Board committed to locating ITiCSE in the wider European continent. Taking the commitment to the European computing education community one step further, the SIGCSE Board entered into an agreement with ACM Europe Council (ACM-E) and Informatics Europe (IE) in 2018. The three organizations have representation on the ITiCSE steering committee, which oversees the conference volunteers and activities. The goal of the three organizations is to enhance ITiCSE's role as a premier international conference in computing education located in Europe, while also maintaining its standing as a crucial venue for computing education scholarship from around the globe.

Despite the short time that SIGCSE, ACM-E, and IE have worked together, the conference has already seen several positive impacts, including a strong rise in both submissions and participation. The 2019 conference in Aberdeen, Scotland had the largest attendance of any in-person ITiCSE, with a total of 274 people, while the 2020 conference that was planned in

Trondheim had the largest number of submissions of any ITiCSE. Since 2018 ACM-E has offered a cash prize for the winners of the best paper award, which raises the profile and prestige of the award.

For the first time in 2019, there was a Doctoral Consortium (DC) offered at ITiCSE, supported by the Scottish Informatics & Computer Science Alliance. Ten students attended the 2019 ITiCSE DC, and the organizers led them through two days of activities including research presentations, interactions with working groups, a panel discussion on imposter syndrome, and a poster session. Participants in the 2019 ITiCSE DC were uniformly happy with the experience. The success of the 2019 ITiCSE DC inspired the SIGCSE Board to approve a second DC at the 2020 conference, which was supported entirely by ACM-E. Eleven students participated in the 2020 ITiCSE DC, which consisted of a one-day closed event prior to the conference. The activities of the 2020 ITiCSE DC were similar to the ones that took place the previous year, and participants were again enthusiastic in their appreciation of the event.

Due to the coronavirus pandemic, ITiCSE 2020 was moved to a virtual format. The members of the organizing committee worked long and hard to reimagine the conference. This was a large undertaking, as the conference attracted a record 261 paper submissions (the deadline was prior to the widespread outbreak of the coronavirus pandemic), of which 72 were accepted. The conference also had 9 working groups, 15 tips, techniques, and courseware sessions, 18 posters, and two panels. With a mix of live and pre-recorded presentations and discussion sessions organized on a Moodle site and supported by Zoom webinars, a record 391 participants registered for ITiCSE 2020. There were 175 participants present for the opening session and 204 during the closing session. The conference offered participants the ability to attend one of two tracks for most of the conference, and opportunities for socializing were available via

smaller Zoom sessions. The results from the conference evaluations were positive, with most respondents reporting being either satisfied or very satisfied with the conference activities.

As the pandemic continues, the SIGCSE Board is evaluating when conferences can be held in person again, and the ITiCSE steering committee is in close contact with the 2021 conference organizers. It is much too early to know what might happen with ITiCSE 2021, but even if the conference is held in person it may be the case that virtual options will be available for interested participants. Drawing as many people as possible from around the globe is a goal for the SIG, and it has become clear from this year that virtual conference attendance is something that makes SIGCSE conferences accessible to a wider audience. It's especially important for ITiCSE 2021, as the conference will host the celebration of the 25th anniversary. Finding a way to celebrate its past while also ensuring that in the future it is accessible to everyone who wishes to attend is an ongoing effort. The ITiCSE steering committee welcomes your input and ideas and can be reached at iticse-sc@sigcse.org.

CompEd: Dec 202x ($x \geq 2$... not 2021, but the earliest year we can gather safely F2F)

By Brett Becker, Chair of CompEd Steering Committee

On behalf of the CompEd Steering Committee I would like to update the community on CompEd 2021.

CompEd was established with the aim of bringing the SIGCSE conference experience to locales outside of North America and Europe. Extensive discussions have brought us to the conclusion that a virtual CompEd would largely not be able to deliver that aim.

In consultation with the SIGCSE board we have decided to postpone the next CompEd, which

was scheduled to take place in Hyderabad, India in December 2021, until December 2022 (tentatively). There will be no CompEd in 2021 and no call for papers. In 2021 we will reassess the situation and decide if we will be able to safely hold a physical CompEd in Hyderabad in December 2022. If, at that time we cannot, we will likely postpone CompEd until 2023.

We appreciate that when a physical conference will be possible, there may be many reasons that some prospective attendees may not be able to travel. Our discussions will continue to take this into account, but details will only emerge once concrete plans can be put in place.

We will be in touch in 2021 when we can properly assess the possibility of CompEd 2022.

CSEdGrad: Serving and Supporting Graduate Students

By Julie Smith, CSEdGrad Program Organizer

CSEdGrad, an NSF-funded collaboration between Purdue University, Michigan State University, and SageFox Consulting Group, is focused on exploring and developing the pathways for computer science education graduate students.

A survey of graduate students conducted in spring 2020 revealed that students were most interested in networking, career preparation, and developing research skills; more than 8 in 10 expressed interest in a leadership role in the graduate student community.

In response to these preferences, CSEdGrad is hosting two activities during the Fall 2020 semester to serve and support graduate students. The first is a series of online study groups based on *The Cambridge Handbook of Computing Education Research*. These peer-led groups have been designed to make it easy for participants to devote as much or as little time as

they'd like to preparing for the study group. Groups will begin in mid-August; each group will last two weeks. The topics for the study groups are the history of CSEd, learning theories, equity and diversity, assessment, teaching methods, and learning to program.

CSEdGrad will also sponsor a virtual conference on November 9-11, in the afternoons (US Eastern time). Sessions are designed to be as interactive as possible and will include:

- optional virtual lunches
- breakout sessions with *Handbook* authors
- panel sessions and debates
- podcast sessions
- sessions on mental health, publishing, and research methods
- a poster session
- keynote speakers: Sue Sentence, David James, and Lauren Margulieux
- . . . and lots of opportunities for networking and participation

There is no cost to participate in either the study groups or the conference, but graduate students will need to register in advance at csedgrad.org/events.

Funding Opportunity to Increase the Representation of Women in Undergraduate Computing

By Carla E. Brodley, Dean of Khoury College of Computer Sciences

Housed at Northeastern's Khoury College of Computer Sciences, the [Center for Inclusive Computing](#) ("the Center") serves as a catalyst for universities to take the lead in educating more women in computing, both to meet a significant economic need and to address social inequity and exclusion. According to the U.S. Department of Education's National Center for Education Statistics, women received 56% of bachelor's degrees, but only 19.5% of degrees in computing, down from 37% in 1984. The Center's goal is to *transform* the national

landscape of women in technology through grant funding at the undergraduate level, expert technical assistance by computing faculty, and meaningful data collection for diagnostic and evaluation purposes.

We offer two types of grants to colleges and universities committed to improving the representation of women graduating with computing degrees.

- [Best Practice Grants](#) support the implementation of evidence-based approaches that quickly and significantly increase the representation of women in computing. To qualify, schools must graduate 200 or more computing graduates annually. Grants range from \$500,000 to \$2,000,000 with the goal of implementing tailored interventions to address each institution's unique challenges to broadening participation. Funded schools are expected to substantially increase the number of women graduating in five years.
- [Data Grants](#) offer schools the resources to diagnose precisely where their undergraduate pipeline may be leaking and what interventions might be employed. To qualify, schools must graduate 100 or more computing graduates annually. Schools are funded \$60,000 over two years to regularly submit enrollment, retention, and graduation data in the Center's Data Program.

The data from the Best Practice and Data Grant schools will allow the Center to answer questions such as: Which interventions are the most impactful? What are the most common places where the CS pipeline is leaking? and What is the additional benefit of substantial funding to create systemic change?

Funded schools have access to Technical Advisors, nationally recognized computing faculty who have overseen or participated in designing and implementing best practices to broaden undergraduate student representation.

They remain on hand to collaborate and provide guidance throughout the grant. By leaning on the expertise of not only our team of expert computing faculty, but also the leadership of our [Advisory Council](#), we serve as a national resource for schools committed to creating sustainable change in undergraduate computing programs across the country.

We are now accepting applications for both grants. The goal is to award at least 25 Best Practice Grants and 40 Data Grants. Funding will occur twice per year until those goals are reached.

Applications are due **October 23, 2020**.

Please visit our [website](#) for more information or email khoury-cic@northeastern.edu.



BPCnet.org: A Resource Portal to Support your Broadening Participation in Computing Work

By Burçin Tamer, Heather Wright, Colleen Lewis

Broadening participation in computing (BPC) efforts are important and seek to address the underrepresentation of people who identify as women, African Americans, Hispanics, Native Americans and indigenous peoples, and persons with disabilities. The [BPCnet Resource Portal \(BPCnet.org\)](#) serves as a clearinghouse for the community to learn about and engage with ongoing projects and opportunities focusing on BPC.

As part of its commitment to broadening participation, the National Science Foundation's (NSF) Directorate for Computer and Information Science and Engineering (CISE) [calls on Principal Investigators \(PIs\)](#) to submit meaningful BPC plans (i.e., Project BPC Plan).

Departments can support PIs and coordinate their BPC activities by creating a Departmental BPC Plan. BPCnet.org assists departments and NSF PIs in planning and enacting impactful BPC plans. The resource portal includes BPC Plan templates, example plans, statistics, and upcoming events to aid the writing process.

One of the valuable resources available on BPCnet.org is the [Statistics and Data Hub](#), which provides computing-specific statistics from US institutions. You can download disaggregated data by gender and race/ethnicity at various levels to use in BPC plans, reports, and visualizations. Currently, data on postsecondary computing degrees awarded from the Integrated Postsecondary Education Data System (IPEDS) is available. You can also find K-12 enrollment data from the Common Core of Data (CCD). Figure 1 shows an example of a visualization made possible using this resource. The [Google Sheet that contains this data and the visualizations](#) is available to view and can be used to create your own.

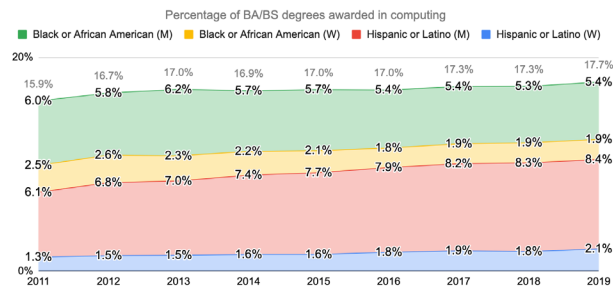


Figure 1. Percentage of US BA/BS degrees awarded in computing to Black/African American and Hispanic/Latinx women and men (2011 to 2019). Note: These data do not include for-profit institutions.

Another resource BPCnet.org offers is a [BPC Plan consultancy service](#). While working on your BPC Plan, you have the opportunity to get free one-on-one consulting help from BPC experts. This service is provided by CRA and BPCnet.org with funding from the National Science Foundation. Through the consultancy service, you can sign-up for a 30 or 60 min virtual consulting meeting to ask questions about

your BPC plan, receive feedback, and get your Departmental BPC Plan verified as a plan that follows current recommendations. Departmental BPC Plans verified by BPCnet.org have the opportunity to be featured on the website.

BPCnet.org welcomes feedback from the community; [click here to sign up](#) to provide feedback on the website. [Click here to join the mailing list](#) and receive a monthly BPCnet.org newsletter. Questions about BPCnet.org can be sent to bpinfo@cra.org.



ICER 2020 Retrospective

By Adon Moskal, Anthony Robins, Amy Ko, Renee McCauley, ICER 2020 Chairs

The 16th International Computing Education Research (ICER) conference was held from 10-14 August 2020 in cyberspace. Sadly, the global pandemic meant we were unable to physically host the conference in Dunedin, New Zealand as planned; but, looking at the situation as a “glass half full” kind of thing, we embraced the opportunity to experiment with a new online format, and try out several new ideas for engaging the ICER community. And we are pleased to report that the event surpassed our modest expectations: we entertained 319 attendees, the highest attendance for an ICER ever!

This year the main ICER conference ran for 4 days instead of the typical 3, but the days were much shorter, lasting for only 3-4 hours. By adopting this format, we were able to host the same amount of ICER content, but avoid the fatigue that invariably sets in when sitting in front of a computer screen for extended periods. One logistical challenge for the virtual

conference was trying to accommodate an international audience tuning in from radically different timezones; as organisers, we had hoped that we could come up with a model that would provide a comfortable experience for all... in the end, however, we were unfortunately unable to cater to everyone equally, and our friends from Europe and Africa in particular were forced to join us at very uncivilised hours (but in high spirits nonetheless!)

In taking ICER 2020 online, the aim was to preserve as much as possible of the “feel” of the traditional ICER format as possible; namely encouraging a lot of discussion, questions and community-building around the various presentations. We had 119 full research paper submissions, of which 27 were accepted, for an acceptance rate of 23%. Sessions were structured in one of two ways, for large audiences or small groups. The large sessions consisted of single track paper presentations on Zoom, with audience Q&A. The small group model was used for paper parallel sessions, held on Discord; each paper in the session was assigned to a virtual “room” made up of virtual “tables,” where participants watched the presentation together, and then discussed and asked questions of the author(s).

Three papers received awards. The Best Reviewed Papers Award went jointly to two papers (which both received the maximum possible overall score from reviewers and strong positive recommendations from their meta-reviewers): “Exploring Student Behavior using the TIPP & SEE Learning Strategy” by Diana Franklin, Jean Salac, Zachary Crenshaw, Saranya Turimella, Zipporah Klain, Marco Anaya, and Cathy Thomas; and “What Do We Think We Think We Are Doing?: Metacognition and Self-Regulation in Programming” by James Prather, Brett Becker, Michelle Craig, Paul Denny, Dastyni Loksa, and Lauren Margulieux. The John Henry Award for the paper that, in the judgement of the conference participants, “attempts a task that may seem impossible and

pushes ‘the upper limits of our pedagogy’” was presented to Felienne Hermans for “Hedy: A Gradual Language for Programming Education.”

Along with research papers, the conference also featured a number of other ICER staples: Lightning Talks where speakers pitch research ideas in just a minute or two; poster sessions where participants can present preliminary work and get feedback; and the SIGCSE-sponsored Doctoral Consortium for Ph.D. students. Like the research papers, these events were similarly hosted online.

ICER 2020 would not have been possible without the tireless support of all the organisers and helpers. Faced with the daunting task of reimagining the conference in a virtual format, everyone involved rose to the challenge with enthusiasm and good cheer. We would also like to acknowledge the generous financial support of Google, the University of Otago and Otago Polytechnic, as well as the continuous support and encouragement of the SIGCSE Board, particularly its chair Adrienne Decker, and our liaison Leo Porter. Finally, our immense appreciation to the hundreds of attendees that embraced the new model, and brought the same level of convivial participation for which ICER is known. You came, you saw, you concurred (or perhaps respectfully disagreed), and the field of computer science moved forward once more.

And now we look forward to ICER 2021, in whatever format it may come... whether we meet physically in Charleston, South Carolina, or once again digitally in our living rooms... whether we exchange handshakes or emojis... we hope you’ll join us for the next exciting chapter in the history of the ICER conference.

As a CS Educator, How Do You Think We Can Address Inequity Issues That Exist in the Field?

By Jeffrey Miller and Karen C. Davis, SIGCSE

***Bulletin* Co-editors, Shana V. White, Robert Parke**

We asked several CS education researchers to offer brief remarks (about 200 words) to spark discussion and provide ideas for actions we can all take to address inequity issues. Two responses are included below.

Shana V. White, Ed.S.

As a computer science educator, equity is an extremely hard thing to address within an educational system that was built to function inequitably for marginalized groups. First, understand equity is about power. Equity work in schools involves the intentional and significant shift of power, influence, decision making ability, and resources to those groups and individuals that are marginalized. True equity work is in complete opposition of the status quo, which is still currently maintained and enforced in many K-12 schools and classrooms. Equity work in computer science includes creation of safe and brave classroom spaces being facilitated by teachers that have high expectations for all its students and who are earnestly engaged in culturally relevant pedagogy. Equity work in computer science includes lessons that are inclusive of all identities and are intentional about providing students choice while amplifying their voices. Finally, equity work in computer science involves effort for creating additional access as well as new opportunities for students regularly denied or overlooked. These are several ways that computer science educators can subvert the system and address inequity issues in the field.

Robert Parke, University of Southern California

First: embrace the idea that equity and inclusion are critically important for our students and our society to thrive. This benefits all students, not just students from historically marginalized groups. Second: have the humility to learn from experts in combating inequity, especially scholars and voices from historically marginalized groups. Third: be willing to get uncomfortable, engage in challenging conversations, and expand our perspective of what is “essential course content.”

As one practical example, we can create curriculum that is relevant to the experiences of our students and doesn't shy away from difficult topics. For instance, we could have ethics discussions about how racial bias in criminal sentencing algorithms contributes to disproportionate rates of incarceration in the Black community, or how users with disabilities are often an afterthought in product design processes, leading to products that are unusable to wide segments of the population.

In our classrooms, we can also celebrate the voices of talented, engaging speakers who reflect the demographic background of all our students. This conveys to students that they belong in the computer science and technology industries and can thrive there. This must be done in parallel with proactive efforts to hire and retain faculty from these groups.

Member Spotlight

In this feature of the *Bulletin*, we highlight members of the SIGCSE community. In this issue, *Bulletin* co-editor Jeffrey Miller interviewed Dr. Valerie Barr.

Dr. Valerie Barr is the Jean E. Sammet Professor of Computer Science and Chair of Computer Science at Mount Holyoke College. She has a Bachelor of Art degree from Mount Holyoke

College, a Master of Science from New York University, and a Ph.D. from Rutgers University. While actively pursuing the application of software testing to artificial intelligence systems, Dr. Barr promotes the interdisciplinary application of computing through a combination of changes to computer science curricula and courses, as well as research and course collaborations with faculty from the full range of disciplines within the liberal arts. She is very active in the computer science education community and has led significant diversity efforts for the Association for Computing Machinery.



Valerie Barr

photo credit: Lisa Quinones

How did you first get involved with the CS education community?

I started attending the CCSC conferences in the 1990s because they were local and I had some teaching-oriented ideas, mostly related to my research in software testing. My more serious involvement started when I began doing CS education work in the mid-2000s after receiving an NSF CPATH award. In the distant past of the early 2000s, CS enrollments were very low, and everyone was grappling with what to do about that. My CPATH award put me right in the midst of conversations about contextualized computing and pedagogy for teaching students who were "new" to CS or were trying to apply CS to other fields. At that time I also started doing research into questions about the demographics of CS degree acquisition, and got pulled into K-12 CS work through CSTA -- so

basically, a bunch of different activities and connections kept pulling me more and more into the CS education community.

Can you describe some of the ways you have been involved in developing and enhancing computer science education?

I have spent the last 15 years working on curriculum changes rooted in two ideas: 1) many students still arrive at college without having seen what CS is about, so we have to have pathways into the field that work across the student body and entice students to try out CS; 2) every field is a tech field, most CS majors will ultimately have careers in non-CS fields, and most non-CS majors will do work that involves computing in some fashion. These ideas have led me to work on themed approaches to the introductory CS course, collaborations with numerous colleagues in other disciplines about ways in which they can effectively incorporate computing into their courses, development of intermediate courses that are light on CS prerequisites so a broader group of students can take them, and creation of a data science program.

Where do you think computer science education is headed in the next 5-10 years? What do you think are the biggest challenges facing the community?

You asked about research challenges, and you asked about DEI challenges. Right now, I don't think we can separate these. Rather, our biggest research challenges *are* our DEI challenges. I think we have two big challenges. First, how do we prepare our students to be better social scientists and humanists? What I mean by that is -- we train problem solvers, but how do we equip them to determine what problems are important to solve and to think about the implications of the solutions they develop. There are way too many examples of technology "solutions" or products that are developed completely in the abstract without

any consideration of a target end-user population or a target need. Technology has incredible potential to address real day-to-day problems in people's lives, but we need to equip computer scientists of the future to actually talk with people about their day-to-day problems and work collaboratively to conceive of solutions. This ties to the second challenge -- thanks to the work of Nicki Washington and others, we know how to effectively develop cultural competence among students, but the community has to be willing to participate in scaling that work and making it an accepted and required part of all CS curricula. We can no longer sit back and pretend that all that matters in CS is programming, algorithms, computer organization, etc. Frankly, we have to make it impossible to study computing without thinking about the fact that there are people who are users and people who are impacted by the technological solutions developed.

What are the biggest challenges for diversity, equity, and inclusion in CS education today? And what can CS educators do to help encourage diversity?

At the college level we need to admit a few things. First, not every student enters college with the same K-12 experience, so multiple pathways are necessary in order to get students to the on-ramp for CS. Math has been doing this for ages, and we can probably learn something from them. Second, we should embrace the fact that there are a lot of students studying non-CS fields that now involve computing, and we should develop our ability to help instruct those students in ways that position them to do computing in discipline-appropriate ways, even if they don't have multiple semesters of programming, data structures, etc. I know that this has long been a hot button issue in CS because we didn't want to see ourselves teaching spreadsheets, and I am not suggesting we go down that road. But we can play a role in helping to ensure that students are equipped to do some basic R or Python programming, with a

strong foundation of computing concepts, even though (perhaps especially because) they are majoring in another field.

What do you enjoy doing when you are not working?

Wow, that's a hard question to answer in this crazy time! Biking is definitely my escape. I can't look at a screen when I'm riding, I don't listen to anything, I can let my mind wander, and the challenges are just between me, the road, and the wind. I consume way too much news (though usually while I'm working), I have a penchant for dark Scandinavian mysteries, fiction, and crossword puzzles (I must sound very boring!). Spending an afternoon in the kitchen cooking and baking for company is definitely a great break -- even during COVID it's been possible to have friends over for outdoor dining, which allows me to indulge in kitchen therapy.