



## Contents

SIGCSE Board ..... 1

SIGCSE News in Brief ..... 1

Upcoming Dates and Deadlines ..... 2

SIGCSE Board DEIA Update ..... 2

SIGCSE Technical Symposium  
2023: Information for Attendees ..... 2

ITiCSE 2023 Call for Papers ..... 4

Recipes for Resistance Podcast  
Announcement ..... 4

Koli Calling Conference Report ..... 5

ACM CompEd Resumes After Two-  
year Delay! ..... 6

The Trans & Non-Binary Computing  
Education Research Project ..... 6

Member Spotlight ..... 8

### Notice to Contributing Authors to SIG Newsletters

By submitting your article for distribution in this Special Interest Group publication, you hereby grant to ACM the following non-exclusive, perpetual, worldwide rights:

- to publish in print on condition of acceptance by the editor
- to digitize and post your article in the electronic version of this publication
- to include the article in the ACM Digital Library and in any Digital Library related services
- to allow users to make a personal copy of the article for noncommercial, educational, or research purposes

However, as a contributing author, you retain copyright to your article and ACM will refer requests for commercial use directly to you.

### Newsletter Credits

- Editors: Julie M. Smith and Charles Wallace
- Contributors: Maureen Doyle, Ben Stephenson, Brian Dorn, Leen-Kiat Soh, Lina Battestilli, Kristin Stephens-Martinez, Delaram Yazdansepas, Briana Bettin, Andrew Petersen, Ilkka Jormanainen, Brett A. Becker, Venkatesh Choppella, Stacey Sexton, Amanda Menier, and Anne-Kathrin Peters
- Photo credit: Antti Knutas, Jonatan Lindén



## SIGCSE Board

- Chair** – Alison Clear,  
Eastern Institute of Technology, New Zealand
- Vice-Chair** – Brett A. Becker,  
University College Dublin, Ireland
- Secretary** – Dan Garcia,  
University of California Berkeley, USA
- Treasurer** – Jill Denner,  
Education + Training + Research, USA
- At Large** – Rodrigo Silva Duran,  
Federal Institute of Mato Grosso do Sul,  
Brazil
- At Large** – Yolanda A. Rankin, Florida State  
University, USA
- At Large** – Judithe Sheard,  
Monash University, Australia
- Immediate Past Chair** – Adrienne Decker,  
University at Buffalo, USA

## SIGCSE News in Brief

Welcome to the first issue of the SIGCSE Bulletin for 2023.

My co-editor introduced me in the previous issue; I will add that I'm thrilled to have an opportunity to serve this community and help its members better connect with each other as we strive to improve and expand computing education.

This issue's spotlight features Anne-Kathrin Peters, associate professor in technology education at the KTH Royal Institute of Technology. I had the pleasure of meeting Dr. Peters at the doctoral consortium at ITiCSE last

year, and I was deeply impressed by her work on sustainability.

We also have an interview with Stacey Sexton and Amanda Menier. They are the chair and co-chair, respectively, of Trans & Non Binary Computing Education Research, which recently received a grant from the National Science Foundation to further their work. I have attended their first two workshops, and I have appreciated the opportunity to learn more about how best to serve trans and nonbinary students as an educator and researcher.

This issue also includes news from the SIGCSE Board as well as an announcement for the

Recipes for Resistance podcast, recipient of a SIGCSE special projects grant. (And if you enjoy podcasts, be sure to also check out the CSEd Podcast, which also began with a SIGCSE special projects grant.)

We also have pieces from the four major SIGCSE conferences: a call for papers for ITiCSE 2023, a review of Koli Calling 2022, an invitation to attend SIGCSE-TS in 2023, and an announcement for CompEd 2023.

We hope you find this issue to be worthwhile. We encourage you to submit items of interest for the next quarterly issue, and we hope that your new calendar year begins smoothly.

### Upcoming Dates and Deadlines

Conference	Location	Dates	Full Paper Submission Deadline
<a href="#">SIGCSE TS</a>	Toronto, Canada	March 15 – 18, 2023	-----
<a href="#">ITiCSE 2023</a>	Turku, Finland	July 10 – 12, 2023	January 15, 2023
<a href="#">ICER</a>	Chicago, Illinois, US	August 8 – 10, 2023	See website
<a href="#">CompEd</a>	Hyderabad, India	December 7 – 9, 2023	See website

Other conferences operate in cooperation with SIGCSE and are posted on the SIGCSE web site at [sigcse.org/events/incoop.html](http://sigcse.org/events/incoop.html).

### SIGCSE Board DEIA Update

By Alison Clear, SIGCSE chair

The SIGCSE Board remains committed to developing ways forward to ensure the dignity and respect of all members of the SIGCSE community. We will shortly be releasing a statement that covers short-term and long-term strategies and policies to help make SIGCSE a more self-aware and inclusive community. We are continuing to work on the content of this statement so keep a look out on the website, the members list and the next Bulletin.

### SIGCSE Technical Symposium 2023: Information for Attendees

By Maureen Doyle and Ben Stephenson (SIGCSE TS 2023 Symposium Co-Chairs); Brian Dorn, Leen-Kiat Soh, and Lina Battestilli (SIGCSE TS 2023 Program Co-Chairs); and Kristin Stephens-Martinez and Delaram Yazdanehpas (SIGCSE TS 2023 Hybrid Experience Co-Chairs)

The 2023 SIGCSE Technical Symposium will take place from March 15 – 18, 2023, at the Metro Toronto Convention Centre in Toronto, Canada. We look forward to welcoming you to Canada for the first ever SIGCSE Technical Symposium outside of the United States. The program for the 2023 Technical Symposium is online now. It is a diverse program that

showcases the tremendous work done by so many researchers and educators to improve our craft. We truly believe that it has something for everyone and that your biggest challenge will be identifying which sessions you want to attend when there are so many exceptional options.

Our invited keynote speakers in 2023 will be Dr. Robert Thirsk and Dr. Nichole Pinkard. Dr. Thirsk is a Canadian physician, engineer, and former Canadian Space Agency astronaut. He will deliver his remarks during the symposium's opening session on Thursday morning. Dr. Pinkard is an Associate Professor at Northwestern University who has made extensive contributions to learning sciences focused on computer science. Her presentation will close the symposium on Saturday. Our additional speakers include Dr. Susan Rodger, recipient of the 2023 SIGCSE Award for Outstanding Contribution to Computer Science Education, and Dr. Renée McCauley, recipient of the 2023 SIGCSE Award for Lifetime Service to the Computer Science Education Community. Dr. Rodger will present on Friday morning while Dr. McCauley will present during the first timers' lunch on Thursday.

Travelling to Toronto is relatively easy. Its primary airport, Toronto Pearson International, is a major airport serviced by most domestic, US, and international airlines. Direct flights are available from cities around the world. Transferring from the airport to downtown is easily accomplished using the UP Express – a train that travels directly from the airport to Union Station making only 2 stops along the way at a cost of \$12.35 (Canadian funds). Tickets can be purchased from vending machines near the platform using major credit cards. While a taxi or Uber can also be used to travel from the airport to downtown those options are no faster while being substantially more expensive.

This year's conference has four official hotels: Toronto Marriott City Centre, Delta Hotels by Marriott Toronto, Hyatt Regency Toronto, and

InterContinental Toronto Centre. Preferred rates are available at all of these hotels until mid-February when they are booked using the links on the SIGCSE TS website. All of the conference hotels are within walking distance of Union Station, though a short taxi ride might be preferable if you have substantial luggage and are staying at the Hyatt Regency, particularly if there is snow on the ground. The Delta and InterContinental can both be reached from Union Station without going outside, and similarly, one can remain inside while walking from those hotels to the convention center where the Technical Symposium will be held. One must go outside briefly to reach the convention center and Union Station from the Marriott while a longer outdoor walk is necessary if you stay at the Hyatt. We encourage you to book your hotel room in a timely manner because we expect there to be substantial demand for rooms. Toronto Comicon overlaps with the 2023 Technical Symposium and will be held in the convention centre's north building while the Technical Symposium takes place in the south building. In addition, there may be substantial tourist traffic in Toronto during the symposium because most Ontario school boards will be on spring break.

To ensure the health and safety of our Toronto participants, in-person attendees are required to attest that their vaccinations are up-to-date when registering for the conference. At a minimum, we will follow all COVID protocols that are in effect in Toronto at the time of the symposium. The decision about whether or not to require masks for all attendees will be made and communicated in January 2023. Once that decision has been made it will only be changed if doing so is necessary to abide by updated local masking requirements. Any individuals attending the conference are still welcome to wear a mask even if it is decided that masks are not required for all participants. The conference organizers are working hard to balance the safety, comfort, and convenience of all attendees. We appreciate your flexibility if the

decisions that are made regarding masks are not necessarily your preferred option.

Registration for the 2023 Technical Symposium is open now for both in-person and online attendees. We encourage you to register by February 3, 2023, so that you can take advantage of the early registration rate. Registration rates for most attendee categories increase by \$100 on February 4, and again on March 4. Registration remains open until the end of the symposium on March 18.

The hybrid and online portions of the conference will use the WebEx conference platform (formerly Socio) in 2023. Our hope is that this change will provide an even better experience for remote attendees than last year. We encourage everyone to download the SIGCSE TS 2023 conference app once it is available. While we are working to provide the best possible online experience, we do hope that many of you will choose to join us in-person in Toronto. There are beautiful sights nearby, fabulous restaurants, underground shopping and Comicon! In addition, KidsCamp is returning this year so it may be a great opportunity for a north-of-the-border family vacation.

Finally, we'd like to take a moment to thank all of the dedicated volunteers that make the SIGCSE Technical Symposium a success. The members of the organizing, program, and hybrid experience committees have all made substantial contributions of both time and energy, as have all of the associate program chairs and reviewers. Organizing this event simply wouldn't be possible without their volunteer efforts.

We hope that you are as excited about the upcoming symposium as we are. We look forward to seeing you in March, either in Toronto or online.

## **ITiCSE 2023 Call for Papers**

**By Simon (program chair), Judy Sheard (program chair), Mikko-Jussi Laakso (conference chair), and Mattia Monga (conference chair)**

We are delighted to call for submissions to ITiCSE 2023, which will be held in Turku, Finland, from 7 July to 12 July 2023. ITiCSE is a computing education conference held annually in Europe, sponsored by ACM SIGCSE and supported by the ACM Europe Council and Informatics Europe. ITiCSE 2023 will be an in-person conference. All details are at the conference website, <https://iticse.acm.org/2023/>.

Full papers are submitted at two deadlines, a week apart. The title, authors, and abstract are due by Sunday 15 January 2023. Papers that do not have these details submitted by this deadline will not be considered. The complete paper is due a week later, by Sunday 22 January 2023, for dual-anonymous review. Proposals for working groups, an integral feature of ITiCSE, are also due by Sunday 22 January 2023. Submissions for panels, posters, the doctoral consortium, and tips, techniques, & courseware will be due by Sunday 12 March 2023. For more information, please refer to the conference website, <https://iticse.acm.org/2023/>

## **Recipes for Resistance Podcast Announcement**

**By Briana Bettin**

Are you ready to have something special dished up? We're talking about brain food for your senses – with our new podcast! Recipes for Resistance is a multi-modal podcast, plating up new perspectives on the intersections of computer science, justice, and academia. Our podcast episodes are crafted around a kitchen table talk, where we informally discuss the topic of choice and share stories – all while centering justice, joy, and healing. We're a multi-modal podcast, with episodes consisting of three parts: framing the conversation, the episode itself, and follow up and reflection.

We're sure these perspectives will get your mind simmering - and we've already plated up episode number one to share with you all! Join us on this journey and be part of the conversation. Learn more at [recipes4resistance.github.io](https://recipes4resistance.github.io), find us on your favorite podcast streaming platform, and follow us on Instagram (recipes4resistance) and Twitter (recipes4resist).

This project is supported by a SIGCSE Special Projects grant; the PIs are myself and Victoria Chávez.

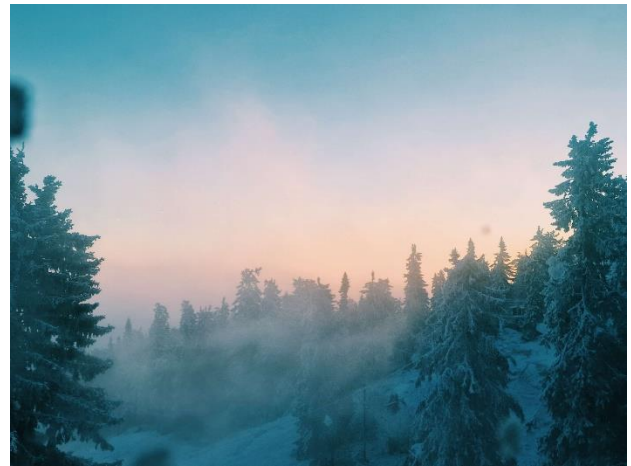
You can find details of the folks we had on for the first episode who are some of the guest hosts (members of the Papaya Project: [the-papaya-project.github.io](https://the-papaya-project.github.io)) on the team page ([recipes4resistance.github.io/about#team](https://recipes4resistance.github.io/about#team)).

### **Koli Calling Conference Report**

By Andrew Petersen and Ilkka Jormanainen

Koli Calling is a single-track conference covering a range of topics related to education in the computing disciplines. The 22nd Koli Calling International Conference on Computing Education Research was held in the beautiful Koli National Park from November 17-20, 2022. The conference was held in cooperation with the ACM and SIGCSE and was organized by the University of Eastern Finland and the University of Toronto Mississauga.

This year, Koli welcomed 84 attendees (53 in person and the remainder virtual) from 15 countries. The attendees enjoyed a keynote, 25 paper presentations, 12 poster presentations, and social events including a hike through Koli and time in the sauna. Koli's weather was cooperative for outdoor activities: we enjoyed sunny weather for the hike as well as views of the lake.



*Photo: Antti Knutas*

This year's keynote presentation was provided by Dr. Tiffany Barnes, a Distinguished Professor of Computer Science at North Carolina State University and a Distinguished Member of the Association of Computing Machinery (ACM). She is Founding Co-Director of the STARS Computing Corps, a Broadening Participation in Computing Alliance funded by the U.S.A. National Science Foundation. Her keynote, "A grand challenge: Achieving equitable computer science education," presented the core design features of STARS activities, conferences, communities, and networks that can expand equity-focused computing education research to a larger audience of researchers, educators, administrators, computing departments, and K-20 students.

Several attendees and program committee members received special recognition for their contributions:

The Best Paper Award was won by Michelle Friend, Monica McGill, and Anni Reinking for "Solve This! K-12 CS Education Teachers' Problems of Practice." Their work identified mismatches between researcher expectations of teacher needs and the needs identified by teachers and presented areas for future work that would be appreciated by the teacher community.

Two program committee members, Kathryn Sanders and Carol Zander, were recognized as

Koli Superb Reviewers for their contributions to the review process. Both provided consistently high-quality guidance to authors in their reviews as well as meaningful contributions to the discussion and evaluation of papers.

The conference could not have been held without strong support from the local organizing committee, led by Samuel Yigzaw. The local committee provided a welcoming environment for both in-person and virtual attendees. The conference is also indebted to Otto Seppälä, a past Koli Chair, for his support in configuring the online environment. We are truly thankful for their service to the Koli community.

We look forward to welcoming the community back to Koli in 2023. We anticipate offering a full research program, as normal, and will also host a Doctoral Consortium. Please look for the Call for Participation, to be released in March 2023. We hope to see you at Koli!

### **ACM CompEd Resumes After Two-year Delay!**

By Brett A. Becker (CompEd Steering Committee Chair) and Venkatesh Choppella (2023 CompEd Chair), on behalf of the CompEd Steering and 2023 Committees

The ACM Global Computing Education Conference (CompEd) was first held in Chengdu, China in May 2019. Due to the fact that CompEd changes countries - and likely continents - each time it is held, it takes place every two years. CompEd 2021 was planned for Hyderabad, India, however the pandemic forced CompEd to be put on hold. The primary mission of CompEd is to bring the SIGCSE conference experience to parts of the world that have not had the opportunity to host one. The CompEd Steering Committee and SIGCSE board decided against holding a virtual conference. The Board and Steering Committee were also committed to India and decided that 2021 was not cancelled, but delayed. After being put on pause again in 2022, conditions are now such that CompEd 2023 has been given the go-ahead!

CompEd 2023 will be held at IIIT Hyderabad on December 7 – 9, 2023, with working groups taking place December 5 – 6. CompEd will also overlap on the final day with COMPUTE, an annual computing education conference organized by ACM India and iSIGCSE (The India ACM SIGCSE Chapter) which will be held on December 9 – 11.

The CompEd 2023 call for participation will be available by January at [comped.acm.org](http://comped.acm.org) and announced on the SIGCSE mailing list. As more information becomes available, it will be posted on the website. The CompEd Steering Committee is also seeking expressions of interest to volunteer for CompEd committee positions which can also be found on the website, in addition to expressions of interest in hosting CompEd in 2025 and beyond.

We hope to see you in Hyderabad in one year!

### **The Trans & Non-Binary Computing Education Research Project**

By Julie M. Smith and Charles Wallace, SIGCSE *Bulletin* Co-editors; Stacey Sexton (Chair, TNB-CER) and Amanda Menier (Co-Chair, TBN-CER)

Stacey Sexton and Amanda Menier, both of SageFox Consulting Group, recently received an NSF grant to explore intersectional identities across a variety of dimensions, including gender, ability, and race/ethnicity.

### **You are the chairs of Trans & Non-Binary Computing Education Research (TNB-CER), an NSF-funded project. Tell us about its origin and goals.**

The project has its origins in a question that we had been discussing among ourselves for a while: What does it mean to have gender-focused computing education interventions when today's students may have a different relationship to gender than those doing the intervening?

We found that there was not much written about this topic in the computing education research (CER) communities that we interacted with the most, even though we knew there was a

(relatively) great deal of focus on these issues in fields like Human Computer Interaction and Artificial Intelligence.

We first wrote about the topic in our 2021 RESPECT position paper “Broadening Gender in Computing for Transgender and Nonbinary Learners” where we laid out what we considered to be some key points CE researchers should keep in mind when working with gender.

Later, we noticed our state’s school data site had enrollment figures for nonbinary students available. We decided to see what was available publicly from all state level education agencies in the US and found about 10 had this data available and those with multiple years of data showed tremendous growth rates. We wrote our findings up for a poster at RESPECT 2022. The interest we received about the poster inspired us to conceive a workshop that would bring together interested researchers and practitioners across disciplines. We received some funding from NSF to put it together, and now here we are. We had our first pre-workshop panel in November, and it was great to reduce the sense of isolation and loneliness that comes with a small research area.

**Tell us a bit about yourselves -- your background, your professional interests, and what you enjoy doing to relax.**

Amanda. *Background:* [I] grew up in New Jersey, was a computer nerd who didn’t realize that computing was a career path or how to get there. *Professional interests:* Organizational and institutional factors, higher education staff. *Personal interests:* A rotating cavalcade currently featuring drones and amateur radio.

Stacey: *Background:* I grew up in rural Kansas, have a humanities, social sciences, and policy background; doing evaluation work for nearly a decade. *Professional Interesting:* Supporting collective dynamics, liberatory frameworks for education, using data to drive action. *Personal interests:* Singing, writing stand-up comedy bits.

**How would you describe the status quo regarding trans and non-binary participants in CSEd research?**

We think that we are at a point where most people recognize that demographics are changing. Whenever we talk about this subject with new folks, many say something like “my neighbor’s kid is nonbinary” or “my colleague has a trans child.” However, lots of people are not sure what to do with that information. Due to the way that research is siloed, it can be hard to devote the necessary time to gain the expertise in contemporary trans theorizing to feel confident enough to do sensitive work. One of our goals with the workshop is to highlight the people who are already making contributions in this area to give people a place to start; an anchor point to proceed from.

We can’t speak to other trans and nonbinary folks’ experiences, but we certainly feel a bit of an obligation to address these issues in our community. We’re here, and we continue to see gender being addressed either in a binary way, or in ways that don’t deal with the complexity of gender itself. And there’s a fear that if we leave this foundational work to our cis peers, that it won’t be right. So, there’s some sense of self-imposed duty to do something about it. Hopefully, though, this effort supports us in establishing groundwork authentically steeped in trans experiences may help overcome this feeling of obligation – so that we can feel comfortable knowing that there is groundwork laid by trans people that cis people can work with.

As the field’s work on gender progresses, we believe that we’re moving from a model of gender inclusion to a more expansive vision of gender liberation. This is a paradigm shift and will hopefully have dramatic influence on the nature of gender-based work in computing education, and research efforts more broadly. As a matter of necessity we will need to engage with dimensions of intersectionality to better situate ourselves in this current historical and political

moment, not letting ourselves be boxed in by outmoded notions of gender which inhibit a more complex approach.

**What resources would you recommend for someone who wants to learn more about gender inclusivity in research?**

Don't expect to be an expert after consulting a single source and recognize that there is not a single way to approach this type of research. Just like any other field, there are multiple approaches and disagreements about what to study, why, and how.

Here are two resources that we've engaged with at SageFox to have a collective discussion about our demographic data collection practices and elevating the tension between wanting accurate demographic data to drive change and the knowledge that simply creating new categories for analysis are not enough to accomplish the systemic change needed to make a just world for trans and nonbinary people: "[New Categories Are Not Enough](#)" and "[More Than Numbers: A Guide Toward Diversity, Equity, and Inclusion \(DEI\) in Data Collection](#)."

**If you could give just one piece of advice to CSEd researchers regarding gender inclusivity, what would it be?**

Don't let it become simply another category for analysis. Don't collect trans data "just because" and reference current best practices if you do. Don't assume you know who the queer kids are, and don't assume that they know either. Treat your trans and nonbinary colleagues as real people and skilled scholars.

**Is there another question that you wish we had asked?**

Are all trans and nonbinary people and experiences the same? Do they have the same experiences in computing? Absolutely not. Your trans and nonbinary students will all have different needs and interests who will need to be related to as individuals, and not as representatives of a category. We also know that queer and trans people of color (QTPOC) face

added layers of discrimination and oppression over and above their white trans peers. Similarly for disabled people.

**How can the SIGCSE community get involved with TNB-CER's work?**

You can visit us on the web at [www.sagefoxgroup.com/tnb](http://www.sagefoxgroup.com/tnb). It's not too late to fill out the interest form and join us January 10–12, 2:00–5:00pm US Eastern time, each day. Reach out to Stacey Sexton with any questions, at [ssexton@sagefoxgroup.com](mailto:ssexton@sagefoxgroup.com).

**Member Spotlight**

By Julie M. Smith and Charles Wallace, SIGCSE *Bulletin* Co-Editors; Anne-Kathrin Peters, KTH Royal Institute of Technology.

In this feature of the *Bulletin*, we highlight members of the SIGCSE community. In this issue's spotlight we hear from Anne-Kathrin Peters, an associate professor of technology education at KTH Royal Institute of Technology.



*Photo: Jonatan Lindén*

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

My involvement in CS education research started with an email in late 2010 informing me about an open PhD position in Sweden, in the



Uppsala Computing Education Research Group (UpCERG). It came from Detlef Rick with whom I had done outreach activities for school children at the department of Informatics at Hamburg University. We found CS education an important part of “Bildung,” understanding the self in relation to the increasingly digitalized world, which should also include critical perspectives on digitalization. In my own experience, having studied computer science and mathematics at the universities in Lübeck and Hamburg in Germany, education provided little support in understanding the self in relation to the academic discipline and profession of computing and the digital world. Writing the application for the PhD position helped me gain some clarity about my experiences with CS education and interests for research. It led to the research I have been doing since.

At the time of applying to the PhD application, I was a teacher in computer science and mathematics in an upper-level high school in Berlin, Germany. I was about to complete two years of practical teacher training. As a teacher, I strived to be creative and provide different experiences of knowing, practicing, and being in computer science. However, I realized I missed insight. Learning about and doing CS education research was an opportunity.

Lucky to have been offered the position, I moved to Sweden to start my PhD adventure, and with that a long journey of “digging deeper and broader.”

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

I have conducted early work on identities in computing education during my PhD project, (summary in Peters 2018). Arnold Pears was my main supervisor, and Anna Eckerdal, Anders Berglund, and Michael Thuné were my co-supervisors, all at Uppsala University at that time. I started my PhD in 2011 and at that time, identity research had been growing in the science education community. Less was done in

computing education. I saw identities as ways of being (doing, thinking, and feeling) that are constructed in social interaction. Certain identities are more “celebrated” or have more status. In my PhD work, I followed more than 20 students through three years of their education doing interviews with them once every year. All students related to a dominant and valued way of being in computing that they called being a “backend problem solver.” Backend problems were seen as the most difficult problems, as purely technical problems that lead to solutions that are hardly noticeable and visible to users. The students learn to solve those difficult problems by learning to use the method “divide and conquer,” reducing problems into smaller problems that are more easily solvable. By identifying with and performing as a backend problem solver, the students can get recognition, e.g. as a competent student. One way of performing being a backend programmer is to position oneself in opposition to being a frontend programmer. Frontend programming was seen as entailing caring about (subjective) user experience, engaging with complex problems that are not purely technical such as ethical dilemmas or sustainability issues. For some students, making sense of themselves as a backend problem solver was not an issue, others struggled. Students who entered the study programme with ideas to connect computing with other fields of interests such as politics or arts could change their way of talking about who they were in relation to computing drastically, from seeing computing as naturally interdisciplinary, to positioning oneself and computing as purely technical, rational, and objective.

I have come to realise how much power education has over students. Identity is continuously (re-)negotiated. Students and educators have the possibility to engage in different and new ways than are predominantly offered and to challenge values and norms. However, when doing so, they also risk being questioned or excluded. Students or teachers

from marginalised groups are always already in a vulnerable position, e.g. due to biases or stereotype threats. Gender research helps understand how being a backend programmer is aligned with masculinity norms. Male students are privileged and less vulnerable, in that way being in a better position to challenge disciplinary norms and identities.

Since my PhD work, I have explored more perspectives on constructions of identities, norms, values, and power in computing, education, and society at large, and possibilities for change. There is a lot to learn from gender researchers, who have been studying the “co-production” of science or technology and gender. Much of this work has focused on questions of equal access or opportunity and discrimination. I have been seeking to study identity in the context of sustainability in a broader sense. CS education seems to encourage students to dis-engage from the world in its complexity. I realised I myself had been part of few contexts in which sustainability, e.g. environmental exploitation, climate change, or mass extinction, was a concern, something to learn about or engage with.

This let me into an eye-opening time of learning about the great predicaments we are facing, climate change and mass extinction to name two examples. We have known about many of the issues for a long time. The damage and exploitation that industrial countries are causing has remained largely invisible to us living in those countries. Today, we are in urgent need for unprecedented societal transformation, in all aspects, in order to pass on a livable planet to the next generations (e.g. IPCC 2018).

In the past years, I have moved between various fields of research such as computing for sustainability, education for sustainable development, and futures studies. I have used my insight into computing education to engage in discussions on, and write about, the role of universities and university education for societal transformation (Barrineau, Mendy, Peters,

2022). I coordinated the climate change leadership initiative at the department of Earth Sciences at Uppsala University for a year and initiated and supported research collaborations on societal transformation across disciplines and organizations. In 2021, I moved to working at KTH Royal Institute for Technology, to drive educational development for sustainability with a focus on equality. While I work with higher education in a broad sense, I still do a lot of work in CS education.

I have a goal of, and have contributed to, establishing sustainability as an important topic in the CS education community. In an ITiCSE working group led by Ian Pollock and Bedour Alshaigy (2019), we have reviewed work on climate change in CS education. Collaborations that formed in this working group still persist. At ITiCSE 2022, Ian, Bedour, Birgit Krogstie and I held a panel discussion “Are we there yet? Incorporating climate change into CSEd.” I am also collaborating with, and have led, an international group of researchers in the ICT4S (ICT for sustainability) community. Last year, I have been working with Elina Eriksson and colleagues at KTH, also part of the ICT4S community, on emotions in sustainability education, focusing on climate anxiety, work that was acknowledged with a best paper award.

Emotions lie outside what has been described as the norm in CS education and is one example of a marginalised aspect that I am working to understand and promote for more sustainable ways of doing computing. Another aspect is care. In an ITiCSE working group this year, we have studied how CS educators think they show or do not show care, emotions and professional competencies. The group was led by Virginia Grande, a PhD student working on role modelling in CS education that I co-supervise, Päivi Kinnunen and myself. Already during my PhD work, I have been developing and researching the open-ended group project course “IT and society” in Uppsala with Mats Daniels, Åsa Cajander and Diane Golay. In this course the students engage in a real, complex, open-

ended question that an external actor posts, in many cases it was the academic hospital in Uppsala. These teaching efforts resulted in several publications describing the challenges in such a course, how to utilise students' diverse backgrounds and support diverse learning. In 2020, we drew on the work I had done with researchers in futures studies to gain new perspectives on the course and us teachers (Peters, Golay, Daniels, 2021).

### **Where do you think computer science education is headed in the next 5-10 years?**

My wish is that there will be more work embracing the predicaments of our times. What do CS and CS education have to offer for societal transformation? If education is to promote new ways of living, it needs to become a place that goes beyond reproduction of competence. Diverse knowledge and experience are needed to accomplish a just transformation of society (IPCC 2022). We need to learn to value diverse experiences and trajectories in education.

The state of the world is severe, and students are concerned. We are at risk of destabilizing our earth system (Steffen et al., 2015). The human enterprise violates against four of nine planetary boundaries (climate change, biosphere integrity, land-system change, biogeochemical flows). What is the role of CS and CS education for a life on earth within planetary boundaries? I think, we need to start asking these and related questions, learning together with the teachers and students. Sustainability modules are currently added into existing curricula, in some cases ticking checkboxes, which are there to enforce change. I hope we will move towards more creative, co-productive learning processes in which people come together around concerns they bring and share rather than because they have to. I hope, the CS education community will engage deeply and critically with the question of what the role of (digital) technology can be for a more sustainable world.

### **What do you think are the biggest challenges facing the community?**

I think the biggest challenge is to be brave and allow for greater change to happen. I have learnt such kind of change is unlikely to occur in highly controlled structures; it requires some chaos and creative reordering. I think, we need spaces in our community and in computing classrooms that are not pre-filled but that can be filled with the concerns and experiences of those in the room. Moving there seems difficult considering the crowded curriculum that we are having. Maybe there is a window of opportunity in times of various crisis. I was surprised by a keynote by Titus Winter, Principal Engineer at Google, at ITiCSE this year, who argued that at least two years of content in existing CS curricula could become optional, which could give room to engage with ethics and computing for the better of society. There might be more readiness for more drastic change and new approaches to education than we think.

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

A great challenge, I think, is to change education so that we can learn with and from those who are exploited, harmed or marginalised in our modern world (human and beyond human). Inequalities and injustice are exacerbating. How do we in CS education engage with and learn about structural forms of oppression and violence? I see this question as important for the work on equality, equity, justice, and diversity in CS Education.

More open, co-productive forms of education that I and others argue are needed require skilled educators who make sure everyone gets a voice and is of value. It entails welcoming different forms of experience and knowing, as well as being sensitive to traumas and difficulties that people might have with them.

Educators play a great role for equality and diversity as they are in a power position, recognizing certain students for who they are

and their competence. There is a lot to learn about inequalities in society, education, and more specifically science, technology, engineering, and mathematics (STEM) education. It is important teachers get time for professional development in order to learn about sustainability, including equality and justice, and develop their teaching. They need to be recognised for this, e.g. in academic promotion.

### **What do you enjoy doing when you are not working?**

I enjoy being with my family. I want to be present with my children. Swedish forests are wonderful and I can feel peace and rest being there. I enjoy being out, hiking, running, cycling and swimming. A new hobby of mine is to learn more about growing food sustainably, in ways that contribute to flourishing ecosystems. I am exploring the idea of establishing a community garden in my neighbourhood, involving the local school. I also love dancing.

### References

- Barrineau, S., Mendy, L., & Peters, A.-K. (2022). Emergentist education and the opportunities of radical futurity. *Futures*, 144.
- Eriksson, E., Peters, A.-K., Pargman, D., Hedin, B., Laurell-Thorslund, M., & Sjöo, S. (2022). Addressing Students' Eco-anxiety when Teaching Sustainability in Higher Education. 2022 International Conference on ICT for Sustainability (ICT4S), 88–98.
- Grande, V., Kinnunen, P., Peters, A.-K., Barr, M., Åsa, C., Daniels, M., Lewis, A., Sabin, M., Sánchez-Peña, M, Thota, N. (2022). Role Modeling as a Computing Educator in Higher Education: A Focus on Care, Emotions and Professional Competencies. Annual Conference on Innovation and Technology in Computer Science Education, ITiCSE.
- IPCC (2018). Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.
- IPCC (2022). Summary for Policymakers. In *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*.
- Peters, A.-K. (2018). Students' Experience of Participation in a Discipline—A Longitudinal Study of Computer Science and IT

Engineering Students. *ACM Transactions on Computing Education*, 19(1), 5:1-5:28.

Peters, A.-K., Golay, D., & Daniels, M. (2021). Using Futures Studies in Computing and Engineering Education: "Emergentist Education" in an Open-Ended Group Project. 2021 IEEE Frontiers in Education Conference (FIE).

Pollock, I., Alshaigy, B., Bradley, A., Krogstie, B. R., Kumar, V., Ott, L., Peters, A.-K., Riedesel, C., & Wallace, C. (2019). 1.5 degrees of separation: Computer science education in the age of the Anthropocene. Annual Conference on Innovation and Technology in Computer Science Education, ITiCSE.

Steffen, W., Richardson, K., Rockström, J., ..., Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, 347(6223), 1259855.