

The Global Control Community

A recent accidental meeting between the two authors of this column [IEEE Control Systems Society President Magnus Egerstedt (ME) and Prof. John Ringwood (JR) from Maynooth University] in an unlikely meeting place—Universidad Nacional de la Plata in Argentina (UNLP)—led us to ponder the truly global nature of the control community. JR was at UNLP for a research visit (having had a collaboration with that university for several years on the control of wave energy systems) and was also involved in the Argentine Meeting on Marine Energies (ENAEM)/Centre for Ocean Energy (COER) Wave Energy Workshop held in Buenos Aires some days previously. During a subsequent research meeting at UNLP, he was told that there might be a brief interruption since an “American guy” was visiting. To his great surprise, ME appeared at the door. ME was on a visit to La Plata to look at possibilities for collaboration between UNLP and the University of California, Irvine. What made this encounter more remarkable was that the two authors had already had multiple chance encounters the year before, including at the European Control Conference (ECC) 2022 in London and an even less likely meeting spot: the 2022 Brazilian Congress on Automation in Fortaleza (Figure 1).

The result of these random, globe-trotting encounters was some semicoherent musings about the likelihood of bumping into each other in such locations and the inevitable global nature of the control community. With

the pandemic in the rearview mirror and having been exposed to the advantages and disadvantages of virtual meetings, classrooms, and conferences, the one area where an in-person experience simply cannot be replaced is when it comes to nurturing creative endeavors and collaborations or widening our networks of collaborators. It is very hard to truly start something new via Zoom. Add to this the fact that the nature of our chosen field is not nationally anchored—a dynamical system is stable regardless of cultural or geographical variations, and a Lyapunov function is as valid in Canada as it is in Sudan—and what we have is a situation where the strength of the overall controls community is a function of its global connectivity. As seen in Figure 2, the locations over the past

decade of our two main conferences, the IEEE Conference on Decision and Control and the IEEE Conference on Control Theory and Application, certainly tell the story of a vibrant, global controls community.

Research, just like elite sports, has always been, by default, a global standard. At the Olympics, we want to see the best athletes compete, and at the IEEE Conference on Decision and Control, we want to hear about the best research. However, one important difference between research and competitive sports is that there is no “intermediate” standard for research; ultimately, all research is judged against the global state of the art (SoA), while there may be local, regional, and national events and levels in sports. This can be a daunting prospect for



FIGURE 1 John Ringwood and Magnus Egerstedt at the 2022 Brazilian Congress on Automation in Fortaleza.

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tive (although many might argue that Irish people don't speak the proper Queen's English), we have considerable sympathy and admiration for the many young researchers who move to other countries for their early research careers, having to deal with foreign cultures, languages, and (not least) bureaucratic systems. Our own research groups comprise more than 10 nationalities (each), which provides a rich base of diverse expertise and culture, including lots of culturally themed parties and gatherings.

Finally, it would be remiss in any conversation on global research not to mention global research challenges, some of which are existential societal challenges. The universality of control, in its potential application to a myriad of areas, makes control an important science, even though it may be hard to describe to the average lay person or, indeed, application specialist. We recall

a new Ph.D. student: to go from solving well-known problems as part of their undergraduate program, with some additional challenges in project work (normally judged against the standard of other such projects, at a local level), to suddenly being on the world stage—competing in the Olympics. This “baptism of fire” involves a significant step up in many aspects: 1) being fully aware of the global SoA, 2) finding a suitable avenue to explore that may contribute to the SoA, and 3) communicating ideas and results in a professional way (written and spo-

ken), possibly in a language other than the native one.

JR recalls his own difficulties with the first point since he did his Ph.D. degree on the control of steel mills, with most of the SoA documented in Japanese. In most cases, he was reduced to looking at the pictures and equations while, if a paper looked especially relevant, he would look for some favors from a friend who was studying Japanese at the University of Strathclyde. While neither of the authors have had a particularly difficult time with the third point from a language perspec-

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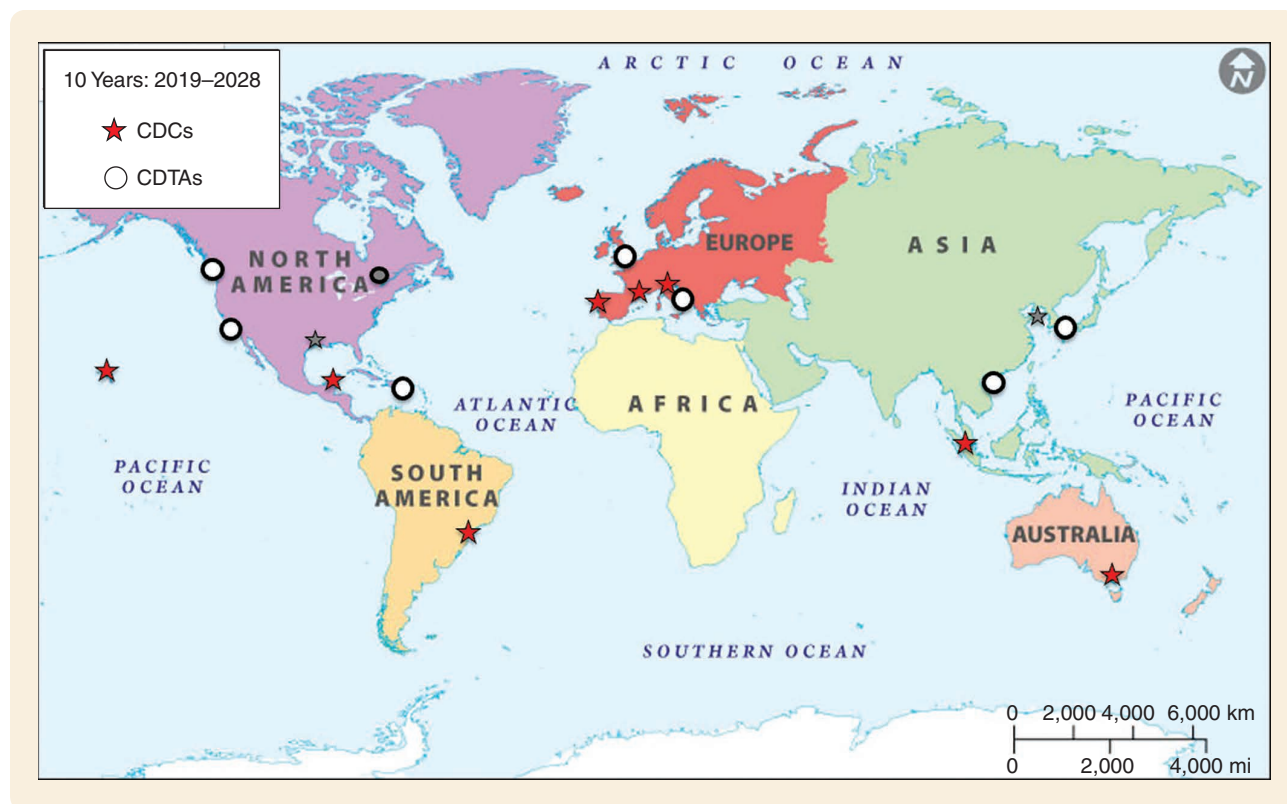


FIGURE 2 The locations—past, present, and future—of the IEEE Conference on Decision (CDC) and Control and IEEE Conference on Control Theory and Application (CCTA) from 2019 to 2028.

if the Chapter could inspire young researchers with a reasonable amount of work, and I decided to increase my commitment to start new attempts.”

—Toshiyuki Ohtsuka, chair of the Kansai Chapter, Japan.

“I like to contribute to developments and programs of scientific organizations. Seeing that there was no CSS Chapter in Hungary, there was no question to establish it.”

—Levente Kovács, chair of the Hungary Chapter and 2021 recipient of the CSS Outstanding Chapter Award.

LOOKING AHEAD

During the inaugural CSS Day in 2022, Chapter activities emerged as an integral component of the program. Locally arranged activities were broadcast to

the global CSS community through the online conference platform; see also [4]. This possibility to reach an even wider audience than the regional CSS members was widely appreciated. Moving forward, identifying platforms and strategies to showcase the diverse range of Chapter activities to all CSS members is a priority. CSS Day will also be a recurring event, and we look forward to strong Chapter participation in 2024. Finally, the IEEE CSS Member Activities Board annually bestows one Chapter with the Outstanding Chapter Award. It recognizes Chapters that demonstrate notable activity or innovation and exert a positive influence on the Society and its members, also considering diversity and inclusiveness. The Chapter volunteers who are recipients of this award not only serve as an inspiration

to other Chapters but also to myself and the Society as a whole.

Emma Tegling

Chapter Activities Committee chair

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» PRESIDENT’S MESSAGE *(continued from p. 10)*

Karl Astrom profoundly describing control as a “soul with no body” at the 1993 IFAC World Congress.

Most of us usually associate control with an application area when trying to describe what control does—robotics is our usual default. Nevertheless, despite the relative invisibility of control, it is universally useful, and a simple Google Scholar search rewarded us with [1], which addresses the issues of climate change and energy use from an essential “control” perspective, examining the potential effect of

various interventions and mitigation (control actions). For JR, the application of control in renewable energy is particularly rewarding, while ME has gravitated toward environmental monitoring applications. They both point to the same thing, though—controls relevance to the broader climate conversation. However, while relatively well-defined problems, such as energy maximization, are somewhat straightforward, the higher-level (but more important) issues of cost reduction of renewables or supply/demand

matching are more challenging. Nevertheless, we must chip away at any pieces of these global problems, and, hopefully, the great global researchers of our time will show the route to sustainable solutions.

John Ringwood and Magnus Egerstedt

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» 25 YEARS AGO *(continued from p. 12)*

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