Succeeding Together

William (Bill) Gropp, President, IEEE Computer Society

Forrest Shull, Past President, IEEE Computer Society

As Bill Gropp prepares to lead the IEEE Computer Society (CS) as its president in 2022, he has a conversation with 2021 IEEE CS President Forrest Shull and gives us insight into key areas of opportunity and growth for the Society and his perspective on the unique importance of CS volunteers and members in advancing the field of computing.

FORREST SHULL: To start with, I was going to set the context. When you were running for election, it was 2020, so we were already into the COVID-19 pandemic. I was curious if you are struck by anything that's radically changed since then. Or if the plans you had when you were electioneering are still pretty relevant.

BILL GROPP: I think they're actually even more relevant. I always wanted to focus on what we do, which is to bring people together. And I think one of the things we learned in the pandemic is how much we need to be together, as human beings. We've seen what we can and cannot get done by being remote. Just for the IEEE Computer Society (CS), we've had many discussions about hybrid meetings and how do we organize the board of governors meeting. How

do we get the interactions that we used to get? To me, it seems very important to build that back up again.

The strength that we have as a Society is the ability to bring people together. It's why I'm a member, and it's why I serve so much in conferences. It's the excitement, the value, and the stimulation that we get just by being together. Of course, it's not just conferences: it's Chapters and targeted efforts like creating standards. All of those things we need to build up again.

At the same time, we've learned a lot about how we can be more inclusive with virtual and hybrid events. We're not going to get back to the way it was in 2019. But there are many lessons from how we've navigated the last year and a half about what we can do better. For example, some conferences would prerecord talks. When the talk was given at a virtual conference, the speaker would be present at the virtual session, not speaking but answering questions, dynamically, that would come from the audience during the talk. And while it's harder to prerecord a talk without an audience, some speakers have really liked the ability to interact directly with the audience without interrupting their talk. We're still learning how to take advantage of these kinds of scenarios, and that's exciting.

SHULL: I'm glad you said that. That's a really positive spin on it. I think these changes also helped get our conferences and activities out to a broader audience. Right? Because people can now participate in some conferences where they didn't have the money to travel or it was a hardship to travel for whatever reason. And now we're a little bit more inclusive and accessible for those individuals.

GROPP: Yes, we've already seen that our virtual conferences are more inclusive. It's not just the travel cost but, to be really frank, in some cases people felt safer attending virtually. It's wonderful that we can provide a safe way for people to attend. Of course, we want to make it so everyone is comfortable attending either virtually or in person, but the fact that virtual events helped us become more inclusive is a fantastic development.

SHULL: So you've talked a lot about conferences already, and I was going to ask about your background in the CS. I think of you as a conference person, and I was just curious: have you always come up through conferences? How long have you been volunteering with us?

GROPP: It's long enough that I can't remember how long it is! I have mostly done conferences. I've also authored and reviewed papers. And I have a kind of standards experience, but it's not an IEEE standards experience. So, I'll get back to that one—they actually wind together.

Although the conference that I've been most associated with is SC (also known as Supercomputing; http://sc22.supercomputing.org), I had experience with other CS conferences. I was tech program chair for Cluster 2002 as well as managing much of the local arrangements. We had some great invited speakers, including the director of research from a smallish company called Google. It was a lot of fun.

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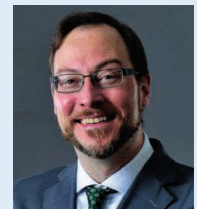
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William Gropp   **Forrest Shull**

For SC, I had a fairly normal "career progression." I started as an attendee and then was a reviewer for papers. But that's really not enough to advance into the conference leadership. I remember one year, I think it was 1998, I was a reviewer for the hardware architecture track. We didn't get a lot of really innovative papers, so I jokingly said, "Well, is computer architecture dead?" A couple other people picked up on that. And so we produced a panel called "Is Computer Architecture Dead?" and I got some really great people to come and talk about where is the innovation in high-performance computing architectures and definitely of course, architecture was not dead. But it was an interesting way to contribute to the conference, by bringing in a somewhat controversial topic for a panel. The sort of thing you want to listen to. And from there, I started getting asked to do more. In 2006, I cochaired tech papers with Dan Reed. Again, it was a great experience meeting lots of people. I was tech program chair in 2009. Then I volunteered to do something out of my comfort zone, which was to be finance chair in 2011. SC is a big conference (about 10,000 attendees at that time) so this is a lot of work, although

there's a professional accounting firm that helps us with a lot of the details. I did that and it went very well, so I was asked to be the general chair in 2013, which was a great honor. I think a key to my getting these opportunities was that I showed that I am really passionate about SC and I was willing to do all sorts of things to help ensure that the conference would succeed and thrive. I think I got a lot out of it.

So to get back to the connection with standards. At one of the very early SC conferences, in 1992 in Minneapolis, a group got together that started what became the Message Passing Interface (MPI) Forum. This is an ad hoc group, and it doesn't have any official body behind it. But MPI has a standards document (www.mpi-forum.org), multiple implementations from multiple vendors, and it remains, nearly 30 years later, the primary way that scientific applications are programmed on large-scale, parallel machines. I don't believe that would have happened had we not been able to all get together at SC.

SHULL: So that's a great story, because a couple things that you said there stood out to me. One is you mentioned *fun* several times, and I don't know that we do

enough publishing of the fact that volunteering is fun. I've always found it that way myself. I mean, it's hard work. When I was editor in chief of *IEEE Software*, I always said that was the most work I ever did and the most fun job I ever had. There's a sense of camaraderie and of building something and doing something new that really comes through in the story you just told there, too.

So, that brings me to another question. I know I've heard you talk about having kind of a career or an advancement track for our volunteers. And I wonder if that ties into some of the kind of progression that you just talked about.

GROPP: Yes, I think we need to be doing more to have that kind of advancement path for volunteers. We need to show people why it's fun and why they should

great Rolodex, as we used to say, these days it's a great contacts list. But I also know that this is a really busy person, so this is not somebody that I could depend on to answer my email. So I would have somebody else who was at the right point in their volunteer career path to take on more responsibility, but maybe, in fact, was a little nervous about taking on a lot more responsibility. So I would pair them up. The more junior person would take my email and would also be really good at getting stuff done. Plus, they developed their network with the senior people, not just their cochair but the other ones as well. That's one thing I would recommend—not necessarily that particular approach—but looking at how we can lower the barrier to bringing in people, letting them gain

for them. Maybe I don't. It never bothers me that somebody asks if there is something that they can do. I do think one of the reasons I mentioned my progression with SC is that I really pretty much started at the bottom. Being a reviewer is pretty close to the bottom. But then looking for opportunities to help out, whether it's helping out with local arrangements, with publicity, or with finances, even if it isn't something that we have a lot of experience with, it's an opportunity to learn. The other thing is, for a lot of these communities, we all want these things to succeed—whether it's a conference or something else— and people will help.

So again, it's part of what makes a professional society special. It's a group of people working together to accomplish great things. One of the nice things in my experience in conferences is that pretty much everybody's pulling together, even if they're from competing organizations that are quite ruthless with each other outside of the conference. The camaraderie in the conference organization is just great.

SHULL: That's a good launching point for the next question I want to ask, which is, what is the role of a professional society these days? You've talked about the community, and I think one thing we've seen is more people getting our services and products à la carte versus coming in and being a designated member these days. So, where do you think things are headed? And what role will we play?

GROPP: I really strongly feel that that a society has to be that just that—it has to be a society. A place for us to bring people together, with shared interest in computing, to accomplish great things. That's pretty much the way we're organized, it's something that we're doing together, as opposed to, "What do I get out of my membership?" Well, what you get out of your membership is that you're connected with a bunch of other people who share interests or who can complement your interests. So that's

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do it—how they can contribute to the field, how they can contribute to their own careers. For me, that opportunity to be part of the MPI standard, and to take a leadership role in one of the most widely used implementations of MPI, was a tremendous boost for my career. Those opportunities that came about because other people had been volunteering to put on these conferences.

One of the tricks in volunteering is how to bring in new people. This is always a bit of a challenge when you're trying to do a project, because you don't know if a new person will work out.

SHULL: Right.

GROPP: In my experience, it's worth the effort and risk, and I have consistently tried to make a point of bringing in new people. One thing I did in 2009, when I was the tech program chair for SC, was that I had what I called asymmetric cochairs. I would have a senior person in the field who had a lot of experience and a lot of connections—a

that experience, ensuring that we support them so that they have fun as well as gaining experience. We can also do more to mentor volunteers and support them in all of these areas, whether it's in conferences, publications, standards, or Chapter activities.

SHULL: I've heard you speak very eloquently before of the need for the CS to be better connected to these early career professionals. What you just said was good advice for the leaders, to try to make that space for those early career volunteers to come on board. Do you have any advice for those early career professionals though? Because I can dimly remember my own grad school days and how intimidating it can be to be in these forums. How do they get involved better?

GROPP: Well, so, part of this is to volunteer to help, not at the top. You don't get to start at the C suite. Most of us don't bite. And so, I've had people come up and volunteer and maybe I have something

another fun thing in some of these meetings is the ability, the ease with which you can meet people with very different perspectives. So again, I can point to SC, but this is true for many conferences. One of the great things about SC is that we have three distinct communities that all come together: we have the academics, university faculty, and students; we have researchers from government and other nonprofit labs; and we've got for-profit industry. Everybody is there. We've got people making presentations in the technical sessions from all three groups. We have an exhibit floor that is an unmatched opportunity for you to go around and see what other people are doing, form collaborations, and get inspiration. You can talk about how you could do that sitting in front of your screen, digging through arXiv, and seeing what people are publishing. But that doesn't work for me. And I don't think it works for very many people.

SHULL: That's an excellent point you made about bringing those different communities together there and it varies—obviously, depending on the domain that we're in—in how much that balance shifts among industry, government, and academia. But I wonder if you have thoughts on what is the value proposition there? I mean, how do we do a better job of knitting these different groups together, especially industry?

GROPP: One of the things I've learned in my day job is that, with industry, it's really important to listen to them. They have some really challenging problems. This really applies to anybody, but I think having better opportunities to find out both what people are really excited about doing (which we're all pretty good about—finding out about the cool stuff), along with what is really challenging for them, what is stopping them from their next big advance.

One of the things that a professional society can do is to bring together a bunch of people in an industry to an environment that is safe for them to mutually say this is the software issue we're all facing or this is the algorithmic issue we're all facing and use that to start seeding some discussions about new collaboration, new problems, and new ways to do things.

I was involved in a project like that with a number of companies in the oil industry that looked at developing sparse matrix solvers. It was an opportunity for them to all get together. None of them, of course, said anything about their real data, but they could provide enough of a description of the kinds of problems that needed to be solved. We were able to go off and look at that and make progress that was mutually beneficial. So, that's one thing that is an example of the kind of value proposition. If you're in an

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industry and you've got a tough problem you've got to solve, maybe you can find somebody in your industry or your company who is good enough or is capable of solving it. But what if it's beyond that? How do you find the right people to help solve your problem? A professional society has many ways to bring people together. It could be conferences, which is what I know best, but there are other ways. You can do it through visiting local Chapters. In some sense, standards is another approach to doing exactly the same sorts of things, by bringing people together to bring clarity to some of our challenges. All of these provide a safe spot to come together—from multiple companies as well as from academia—to thrash out how to develop a solution. That's hard to do if you aren't a neutral broker. It's also hard to do if you don't have the best talent.

SHULL: Since you mentioned it, looking across all of the different areas where we work, from standards to proceedings and conferences, I think it's always been a challenge as far as how to communicate across all of these different groups. What I always find is that people come to the Society, and they know our work in standards, but maybe they don't know or see the other things that we offer for them. So, I wonder if you have any thoughts on where we're headed or what kind of approaches to improving that communication might be most helpful.

GROPP: That's a really good question because it's an area where I think we often tend to organize in silos. One of the things I find really fun is getting communications across those silos. It's hard. There's lots of challenges, as well. Look, for example, at journals and conference proceedings. From the outside, from someone who is not an academic, they might ask, "What's the difference?" Of course, from the inside, there are quite passionate arguments about different models of publications and the relationship between conference papers and journal papers. There are similar arguments in membership activities, for example, about who can organize conferences and workshops. There are a lot of challenges that are based on the sort of organizational things where I think we need to step back and think about how do we get the most value out of being a society. And then everybody will have to make some compromises to do that.

As an example I gave, the MPI standard originated at a conference. Are there other opportunities for our standards activities at conferences? Many conferences have tutorials; are there opportunities to partner with our Professional and Educational Activities Board? I have argued that one reason that the MPI standard succeeded was that many of us presented tutorials and provided training, including

books on how to use the new standard. I think that by looking at how our different activities can support and enhance each other, we can make them all more valuable and effective.

SHULL: I think that's a really nice vision that you have, and part of that comes back to something you said earlier, too, about getting outside your comfort zone, right? Maybe making that leap of faith and approaching some other folks and having that communication. I've been really thrilled this year. I think overall we have a very energetic and an involved board of governors. I wonder if you have thoughts about how you'd like to work with the rest of our senior leadership, including the board of governors, to kind of push more of this "outside the comfort zone" type of work.

GROPP: Absolutely. Everyone who runs for the Board of Governors has a statement about why they are running. I'm going to go to read all of those. I'm going to talk with each of the board members about what they want to do. I'm going to try to find ways to help the board get engaged. We've tended to throw the board into the deep end.

SHULL: Yes.

GROPP: And I'd like to provide more mentoring for new board members. Where's the place where you might fit in? Maybe there's something that has been driving them crazy that they want to change. Let's talk about how we do that. We have a whole bunch of different mechanisms that the president or the board can use to try new things out. I want it to be part of my job to help the board members fulfill their position statements. I think that this will also help us do something that I've seen us do better over the last couple of years, which is to get the board focused more on strategic issues. This year has been great. I appreciated how you've set the tone for that. I really want to build on that and continue it.

And I think learning where the board's strengths are and playing to those is going to be really important.

SHULL: Since you mentioned working in these strategic areas. I'll say the thing I've enjoyed doing with you the most this year has been setting the budget for the new initiative in emerging technologies, which I think is really going to help incubate a lot of new activities around a lot of emerging areas. And I wondered if you could talk a little bit about where you see the CS going and the importance of new and emerging tech to the Society.

GROPP: Yeah, and back at you there! This is really exciting because it really touches on, again, what I think is so important. The CS itself is not a mission agency. We're not a company. We're not going to solve any of these problems, but we can do something that really nobody else can do, which is to bring the right people together to figure out *how* to solve the problems. Particularly in emerging tech, where you don't even know necessarily who you need to be talking to in the interdisciplinary area. You need the ability to think outside the box about how we are going to create the right community to start solving this problem. That's the thing that I think is really exciting. And for the emerging tech, everything is going to be different in terms of what it needs for its next step. Do we need people to get together to do white papers? Do we need people to get together to thrash out what the next grand challenge problems are? Do we already know what the problems are, but nobody's been able to make any progress on them, because we're sitting in our individual institutions? So we need to bring people together. Maybe we can bring people together in conferences and so forth, but maybe there are other innovative ways to create a group that would solve those problems.

How do we get that started? The CS can provide a framework. We can provide some amount of funding, but also

some expertise, in terms of bringing people together, and also ways to reach out to identify people that might be interested. So, another thing about the CS is that it's a society of over 40,000 people with broad interests all across computing that we can reach, including many who are looking to do something really cool and different. How do you reach those people? How do you get through the clutter of all the stuff that we see? It's another strength that we have—we are a professional society that has always focused on quality and integrity. We put together one of these things and help it get organized, and help it get publicized, and pay attention to that.

SHULL: And maybe to come back to a point you made earlier as well: we can add a new set of tools in our tool kit, right? Both in person and virtual. All the things we've been figuring out how to do over the past several years.

GROPP: Absolutely. I think these tools for remote collaboration have gone through an amazing period of improvement by necessity over the past 18 months. It's amazing how much better many of these tools are and we absolutely should be taking advantage of them. We're not going to go back to what it was in 2019 where we were flying all over the place to meetings. I think we will still go to meetings, but in addition, those meetings themselves will be more effective. If they're only in person, I think that some of the virtual technologies will make the in-person meetings more effective. But I think we will see a lot more hybrid meetings, and I think we'll see a lot more virtual meetings emerging from the sort of initiation meetings, which I still feel at least for me, work much better in person. But once I know someone, once I've had a meal with somebody, or I've had been able to sit in a corner and talk with somebody, it's much easier to continue working with them with these virtual technologies because I have established that relationship, which I think is so important to any kind of serious project.

SHULL: Great. So, along those lines, I've been wondering if the publication version of this kind of virtual world might be exploiting more of the open access technologies. I mean, if it works well, maybe it gets our content in front of more people more easily. I kind of wondered what your thoughts were, where you see us going with open access. How important you think that might be?

GROPP: So, open access is here, and we're going to have to take advantage of it. Maybe I'll say at the beginning, all of the publication models, have some groups subsidizing other groups. Open access doesn't change that fact, it just changes who is subsidizing whom. That's just something everybody needs to remember. One of the challenges for everybody is figuring out how to maintain a publications model when you change those subsidies. We have to look at all sorts of ways that we might change the way we do publications. We need to look at the costs and burdens, and actually the data infrastructure is not a big part of that cost. And so, for example, a better understanding the burden we put on reviewers and editors, and understanding the different ways that institutions use and can fund open access. I think that the key thing here is we don't really know what's going to work in the long run.

I think it's great that we are trying quite a few different models of open access. I do think IEEE probably could be a little more effective in explaining to the community what it is doing. But I also think that we still don't have quite the right models. I think it's going to be interesting to look and see how we can continue to adjust the ways that would make the publications model work, both in terms of the financial models but also the publication and review model. One of the strengths of a non-profit, peer-reviewed journal system is the quality of the product that comes out of it. But it's also subsidized by all of those reviewers, right? And the editors who are also volunteers. I think we need to look at this more broadly, how do we

improve the publication model so we don't jeopardize the quality controls, which I think are really critical, but we address some of the costs. One reason I'm bringing this up is that, going back to conferences, some conferences have seen an explosion in submitted papers to the point where it's difficult to do a good job reviewing them. That is a challenge for us: to figure out how can we do that well. How do we manage those overheads? If we can solve those problems, that also gives us more flexibility for making publications accessible to broader audiences. It gives us more flexibility and understanding on how we change those models.

SHULL: As we get close to the end of the hour here, I was going to just end on a personal note, Bill. I heard that you like to read and that you're interested in history, if I got that right? So, I was curious: which areas of history do you think are the most interesting and which ones do you most like to read about?

GROPP: I like to read about the history of technology. I do read a lot of military history. *Neptune's Inferno* was a book about the U.S. Navy at Guadalcanal in World War II. It was interesting, because unlike previous histories that I've read, it discussed the role of radar and the failure to exploit the tactical advantage that radar could provide. It's interesting to look and see how people struggled with transformational technologies.

SHULL: I think reading about times of transformational technology change will do you in good stead. I feel more and more like we're cursed to live through those proverbial interesting times.

Which magazines and journals do you look forward to reading every month? What are the things you keep up with?

GROPP: So as not to get in any trouble, I'll say what I'm going to read for pleasure and read for relaxation. So the nonwork ones.

SHULL: Good. It's actually important that that is part of your repertoire.

GROPP: I read *Scientific American,* and I like reading about the areas of science that I know less about. It's a way to try to keep up with everything else that's going on because it's just amazing. I read *Air & Space*, the Smithsonian magazine from the Air and Space Museum.

SHULL: Oh, excellent.

GROPP: And the hobby that I have, that allows me to completely take my mind off of the day job, is that I build fine-scale models. So there's a magazine called *FineScale Modeler* that I read. It's interesting to see what people are able to do. I am nowhere near that level of skill, but it's fun to see what somebody who is tremendously skilled can accomplish.

SHULL: Okay, so is there anything that I didn't ask that you wish I had? Is there any other message you wanted to get out while we have a few minutes together?

GROPP: Well, there was one phrase that I wanted to put in. I think that the CS's superpower is its ability to bring people together, and that's a way that we can have a big impact. And so when people ask what does the CS do for me, what it does for you is it helps advance the whole field for everyone and gives everyone greater opportunities.

SHULL: Great. That's an excellent note to end on, actually. And I'll just say again, Congratulations. To tie us back to the beginning of the hour, I think you're going to have a lot of fun next year. I think it's a great job. And I think you're going to have a good time with it.

GROPP: I'm looking forward to it. ◼