On Attending Conferences

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Talking is easy, listening far more difficult.

As a researcher and academician, I get many opportunities to give technical lectures on various aspects of computer science. On the other hand, a formal occasion to share other important but nontechnical ideas rarely occurs. Recently, I received one such opportunity quite unexpectedly.

I was attending a two-day conference on parallel and distributed computing at which surprisingly many of the participants were teachers from various undergraduate colleges. Although the organizers had initially invited me to give a technical lecture, they later requested that I deliver the inaugural address as well.

I approached the dais with great trepidation because I had little experience in giving nontechnical lectures. Fortunately, by the time I completed my preamble with a quick overview of the various planned technical sessions, and congratulated the organizers for their good work in planning the conference program so well, I had made up my mind that my talk's theme would be to motivate the audience to meaningfully participate in more conferences. What follows is an annotated transcript of my lecture.

WHY ATTEND CONFERENCES?

As teachers and academicians, we must keep ourselves informed about the latest developments in our field and related areas. Attending conferences and meeting others can help us learn about recent ideas and advances. As the *Rig Veda* says, "Let noble thoughts come to us from all directions." We can make this happen by attending conferences and meeting other people, which exposes us to ideas from all directions.

Some might think they can keep themselves informed by reading books and journals. But learning from these sources offers greater limitations compared to how much can be learned from listening to others. As the organizers for a conference have taken the initiative to arrange the event, and likely have done their job well, the participants have the opportunity to take an active part in making the conference a success.

SPEAKING IN CONFERENCES

Conference attendees should arrive prepared. They should try to contribute at least one lecture to each conference they attend. Such lectures require providing material beyond that available in standard textbooks. Presenters must instead lecture on what they have actively thought about and worked on—their research projects. This raises the more basic question of why we should do research at all.

Some instructors might say that their job is to teach, and as long as they do that, they needn't bother doing research at all. Granted, teaching is a necessary part of our job, but it isn't sufficient to just teach, nor is it enough to just keep reading about what others have already discovered or invented. We must seek to bring our own new perspective to things.

As John Milton noted in *Paradise Regained*, every person who reads without engaging in imaginative thinking simply becomes "deep-versed in books and shallow in himself." There is a great danger of becoming shallow if we abstain from research. Researching an advanced field at the edge of conventional knowledge, such as parallel computing, can prove daunting, yet often complete newcomers can bring novel ideas to the discipline.

OUTSIDERS HAVE ORACLES

An anecdote from the early years of the NASA space program shows how unconventional thinking can lead to radically different solutions. Soon after NASA's early space flights, its engineers encountered a problem: In a time before pocket digital diaries, the astronauts could not write properly during their space flights because none of the existing pens functioned properly in outer space. Under zero gravity and low-pressure conditions, ink flow in the pens would be uneven, making smooth writing impossible.

Two years of research and several projects costing many million of dollars later, NASA's engineers finally succeeded in making a pen that could write in outer space. At this point, the American engineers wondered if the Russians had yet solved the same problem. When

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contacted, the Russians replied simply that they used a pencil.

When I look at the history of science, many instances in which outsiders have brought novel ideas to various disciplines come to mind.

The Frenchman Louis de Broglie predicted the wave nature of electrons and created the field of wave mechanics. Before him, scientists knew that waves could behave like particles, as Albert Einstein described in his famous theory of the photoelectric effect. On the other hand, nobody, including Einstein, had imagined that the dual phenomenon of particles behaving like waves could also exist. De Broglie predicted this in 1924, and Clinton Davisson and Lester Halbert Germer confirmed it experimentally in 1927 by observing electron diffraction with crystals. Surprisingly, de Broglie was not a physicist by training, but a historian who had graduated in literary studies. Physics was simply a hobby he learned much later in life.

Several others independently discovered the conservation of energy law. One of this field's earliest researchers, Julius Robert von Mayer, was not a physicist but a surgeon. Von Mayer observed that the color of his Dutch East Indian patients' blood was a deeper shade compared to his European patients. From this he conjectured that they absorbed less oxygen because maintaining body temperature in a hotter climate requires less energy. Von Mayer conjectured that heat and mechanical work were both forms of energy, and later, after improving his knowledge of physics, calculated a quantitative relationship between them, leading to his discovery of the energy conservation law.

It would seem that such discoveries might be less likely in developing countries. Not so, as another example shows, this time from the field of economics and finance. In the past few years, the notion of micro loans and micro credits has become one of the brightest ideas to emerge in the world of banking and finance. Their inventor, Muhammed Yunus, is from Bangladesh, one of the world's poorest countries. Yet Yunus's ideas have proven so effective in fighting poverty that he has been appointed to the World Bank's advisory committee and received a Nobel Prize.

Georges Clemenceau once observed that "war is too important a matter to be left to the generals." Similarly, parallel computing is too important to be left to the computer scientists. Those with a background in another field—such as physics, mathematics, or chemistry—can still make a worthwhile contribution to research on parallel computing. New ideas often emerge from novel applications.

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LISTENING IN CONFERENCES

It is not enough to talk about our new ideas; it is equally important that we listen to those of others. Most of us are fond of talking. If allowed to stand in one place for two days, I could keep talking without tiring. But when I sit in the audience at a conference and listen, I tire within 10 minutes.

This reminds me of an incident I heard about from a friend. The traffic police in various cities noticed that accidents often occurred involving public transport buses serving the airports. Investigators traced a common reason for these accidents to drivers being distracted by passengers, particularly tourists, asking them for directions or other information.

Consequently, the bus companies decided to post signs on their vehicles to prevent this. All the cities, devised signs with similar messages. For instance, on one city's buses the signs read, "Please do not speak to the driver." Another town's buses had signs that read, "You are kindly requested to refrain from speaking to the driver." In yet another town the signs read, "It is strictly forbidden to speak to the driver." However, in one particular town, the bus signs read, "Please do not answer the driver," because the drivers in that locale would start speaking to the passengers first, as they boarded the bus.

Talking is easy, listening far more difficult. Not surprisingly, then, most of us lack the quality of listening, but we can develop this skill by attending conferences. As teachers, we can also engage in a kind of role reversal, experiencing how our students feel while listening to us lecturing to them on subjects with which they are unfamiliar.

Quite often we find low attendance at conference sessions for contributed papers—people attend only the sessions with their own talks, then leave. Many attendees tell me they feel sleepy while listening to the lectures. I tell them it is perfectly fine to sleep during some of the talks—an energizing siesta such as this can fortify attendees and improve their alertness. For example, Peter Medawar, who received a Nobel Prize in medicine for his studies on organ transplantation, writes in one essay that lectures provide him with his most refreshing sleep.

I have the same experience: Give me a five-star hotel room, a comfortable bed, and a long night of sleep, and I would still wake up feeling tired. But if I can sleep for a few minutes during a lecture, I wake up feeling completely refreshed and ready to focus on the remaining lectures.

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