

Serendipity in Acoustics: An Introduction

Arthur N. Popper



“That was a memorable day to me, for it made great changes in me. But it is the same with any life. Imagine one selected day struck out of it, and think how different its course would have been. Pause you who read this and think for a moment of the long chain of iron or gold, of thorns or flowers, that would never have bound you, but for the formation of the first link on one memorable day,”
Charles Dickens, *Great Expectations*.



Serendipity: An Introduction

This is my last issue as editor of *Acoustics Today* (AT)!

I started editing AT in 2014. During my term as editor, I have solicited and edited something like 275 scholarly articles and an equal number of shorter essays and other material, and I have enjoyed every minute of the “job.” I have met and worked with a grand array of Acoustical Society of America (ASA) members, learned an immense amount about acoustics and other scholarly fields, and have worked with the marvelous ASA Publications staff.

So, as I thought about my final issue of AT, I decided I wanted to do something a bit different and maybe something that would have very broad interest to ASA members now and in the future. Consequently, after conversations with some ASA colleagues, I evolved the idea of having a set of essays that focus on the topic of *serendipity in acoustics* and more specifically, how serendipity has shaped the scholarly lives and careers of members of the ASA.

Defining Serendipity

Let’s start by defining serendipity (since I discovered that not everyone knows the meaning of the word). I like the definition in Wikipedia (see bit.ly/3YQaib5) that says,

“Serendipity is an unplanned fortunate discovery” and that it “... is a common occurrence throughout the history of product invention and scientific discovery.”

But the important thing about serendipity is that it is only of value when it is recognized and followed through. Indeed, serendipitous events happen to each of us all the time, and if we take advantage of any of these events, they can shape our lives. (For example, see the quote above from Charles Dickens, definitely not a scientist!)

But importantly, if a serendipitous event happens, we can only take advantage of it if we have an open mind. Indeed, as pointed out by Busch (2020), “cultivating serendipity is first and foremost about looking at the world with open eyes and seeing opportunities others don’t. It’s not just about being in the right place at the right time and having something happen to us (blind luck), but rather it is a process in which we can be actively involved.”

Serendipity in My Life

Indeed, serendipity has shaped my life, and I am willing to “wager” that if you think about it even briefly, serendipity has had a major impact on your life, and not only as an acoustician but as a person. Just let me give you a few examples of serendipity in my life and see if you have similar, and many other, examples.

More from this author on Across Acoustics



“Save the Fishes!: Offshore Wind Farm Noise and Aquatic Life”

bit.ly/AA-save-the-fishes

In late 1971, a new PhD from Princeton University, Princeton, New Jersey, moved to the University of Hawai'i, Honolulu, where I was on the zoology faculty. Because we were both interested in fish hearing, this fellow, Richard R. (Dick) Fay, contacted me before moving and we "hit it off" virtually instantly. As many ASA members know, Dick and I became the deepest of friends, and we had a truly amazing collaboration for over 50 years. Dick's chance (serendipitous!) coming to Hawai'i profoundly shaped the careers of both of us and led to research and other projects that neither of us would have ever done (or been able to do) individually.

Indeed, one of the most interesting and important parts of our collaboration, came out of a serendipitous moment at a meeting of the Society for Neuroscience, sometimes in the fall of 1978. I happened to be wandering the exhibit hall and looking at books from the publisher Springer. I started chatting with a senior Springer editor at the exhibit. I mentioned that Dick and I would be organizing a session at the 1979 ASA meeting in Hawai'i and wondered if Springer would be interested in publishing the proceedings. The editor was very interested in the idea, and Dick and I published our first book (Popper and Fay, 1980). And this led to further collaboration with this editor and his successors. Had I not had the serendipitous meeting with Mark Licker, Dick and I would not have published our first book, or the 85 that came after it. (We discuss the history of our books in Fay and Popper, 2014.)

Then, in 1975, I went on sabbatical to the Kresge Hearing Institute at the University of Michigan, Ann Arbor, to learn scanning electron microscopy (SEM) for my work on fish auditory mechanisms. One of the first species I prepared and looked at with SEM were lake trout (a relative of salmon). From the limited literature on the ultrastructure of fish ears, I was expecting a pattern of sensory hair cells pretty much like those in homologous inner ear structures in all other vertebrates, including mammals.

But as I scanned the lake trout ear one day, I noticed a very different hair cell pattern; although the cells in the sacculus (a vestibular organ in mammals) were pointed in two directions, those in the trout ear appeared to be in at least four directions. I vividly recall sitting at the SEM trying to

convince myself I was seeing an artifact, and then a serendipitous thought hit me; I realized I was seeing a pattern in the ear that no one had ever imagined or seen, and then I realized that what I was seeing explained how fishes can determine sound source direction (sound source localization). I recall that this whole thinking process lasted maybe 10 seconds and that I left the SEM laboratory practically dancing down the hall in excitement!

I could go on with serendipity in my life, but I prefer that you read what others have to say about their serendipitous experiences. The real point is that if you reflect on your lives, you will "discover," I suspect, that life takes unexpected twists, as suggested by Busch (2020) and by Charles Dickens.

But, far more importantly, the real lesson is that we, at all stages of our scholarly careers (and in our lives, of course) benefit from being open to serendipity. How open one is shapes one's life, and although sometimes a serendipitous event may not be something you want to pursue or you just ignore, at other times, it leads you into new, exciting, and amazing directions. Indeed, as I think of it, maybe there is a companion term, "what if"! What if Dick had not come to Hawai'i? What if I had not gone to Ann Arbor for a sabbatical? And so on.

The "bottom line," at least in my view, is that serendipity has shaped my life, and if you think about it, you will perhaps realize how important serendipity has been, and is, in your acoustic life.

Closing: Part 1

As I close this essay, and my tenure as editor of *AT*, I am going to take the opportunity to say thanks. First, to all the people who have written articles and essays for the magazine. Sure, a few have been "pains" to work with, but 99% have been grand to work with, and I value meeting so many interesting and truly smart colleagues.

Second, I thank all those ASA members who have provided guidance, help, and ideas when I reached out to them with a problem or question. In particular, I have a small cadre of people (I will not mention names, but they know who they are) who, every time I have asked, freely shared great thoughts, sometimes providing new ideas, sometimes collaborating in generating

FROM THE EDITOR

ideas, and sometimes telling me that ideas I have come up with are dumb! I am most grateful for this help and for great friendships.

Third, I have had the good fortune to work with amazing people at ASA Publications in my term as *AT* editor. Jim Lynch, editor in chief of ASA, is a gem to work with (and he continues as a great and valued friend), and Liz Bury, the ASA Publications Managing Editor is a wise, thoughtful, and a grand person to work with.

Of course, the most important ASA person working with *AT* has been Editorial Associate Kat Setzer. Kat is an amazing asset to *AT* and ASA and, she is a delight to work with and no one could be more effective in getting things done creatively and effectively. And Kat is a grand collaborator and, most importantly, a wonderful friend.

Finally, I thank Micheal L. Dent, associate editor of the magazine for most of my time as editor. Micheal has been a grand collaborator and wise editor. Besides doing special topics (such as “Conversation with a Colleague”), Micheal has reviewed and contributed to every article, often making important suggestions that improved the material considerably.

I also thank my old friend William A. Yost for always being willing to discuss ideas, provide guidance, and serving as a most important advisor in my years as editor of *AT*. And, in particular, I want to thank Bill for serving as “special” associate editor in helping to review and provide advice for many of the articles in this issue.

Closing: Part 2

When I took on the role of editor of *AT*, it quickly became apparent that the ASA Publications staff, with all their responsibilities, could not take on the very demanding role of copy editing the magazine. Sure, we could have edited *AT* the same way as most scholarly publications are edited, badly, but I refused to have that. My feeling was that if ASA was to be represented both to members and to others wanting to learn about acoustics, it should be the highest quality magazine possible. So, I asked Jim to permit me to hire a copy editor who would focus deeply on the details of each article and each word in *AT* to make sure that what you read is as carefully produced as possible. Jim agreed.

Fortunately, I did not have to look very far because I already knew (and lived with) a highly expert scientific copy editor, my wife Helen. ASA approved Helen taking on this role, and I am very proud and grateful for the difference she makes in every issue.

Years ago, I read an essay by the chief copy editor of *The New Yorker*, one of the best English-language weekly magazines in the world. She wrote that the best copy editors are those who can just look at a page and, without even focusing on what it said, just “see” errors. Well, Helen is in that category; give her anything to read, whether it be *AT* or *The New York Times*, and she senses errors and things that can be improved and she is pretty much always right!

So, I thank Helen; she not only does an extraordinary job with editing, but she really cares about *AT* and wants it to be the best it can be. And meeting Helen many years ago was the best serendipitous event of my life!

This Issue

I do want to end with a brief overview of this issue. When I came up with the idea, I decided I wanted to have authors who span ASA in as many ways as possible. After some thought, I decided to reach out to friends in ASA and, in particular, past authors of *AT* articles and also try and ensure that most technical committees (TCs) were represented. If I did not fully succeed in spanning the diversity of ASA, that is partly because we have some limits in the number of essays we could include. Then, a number of people I really wanted to do essays had other obligations that would not allow them to participate or they dropped out between the time they agreed to do the essay and when it was due.

As you will see, there is a very broad range in approaches to these essays and in authors’ interpretation of serendipity (authors did not have to adhere to my definition above). Some of the essays are a bit technical, whereas others are much more causal and incorporate life beyond scholarship. But unlike material in past issues where we edited very heavily, in this issue, we have edited only lightly so that the essays would much more retain the “voice” of the authors.

Now for a brief explanation of the next essay, by Steven Weinberg; No, not the Nobel Prize winner but my oldest and closest friend. Steve is a very highly regarded and

nationally known science educator (for elementary and high schools) and textbook author. I invited Steve to contribute because I wanted to demonstrate that serendipity in science is not just what we do in our ASA professional lives, but it extends to other aspects of science and, most notably, to the education of the next generations of ASA members.

One other thing to note in this issue is that we have used past *AT* covers when we had a bit of extra space. These covers, all of which link to their issue online, represent the five images on the cover of this issue, as well as a few others that appeal to us (and for which we could get copyright permission easily!). These covers represent the many we have done in the past 10 years. And we thank all the authors (and the artists) for providing us with stunning images that make each issue of *AT* striking.

Final Words

I very much hope you enjoy these essays and hope that in reading them, you will see, and appreciate, that one of

the most remarkable things in life is its serendipity. And thanks to ASA and to its members for allowing me to take leadership of *AT*. This has truly been one of the most rewarding and enjoyable “jobs” I’ve had during my career.

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Contact Information

Arthur N. Popper

apopper@umd.edu

Department of Biology

University of Maryland

College Park, Maryland 20742, USA

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