My Serendipities: From Social Science to Soundscape

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When I reflect on serendipity in my research and teaching, I have asked myself whether the events I want to talk about are comprehensible to others. After all, what are these events: lucky coincidences or a series of consecutive events that defined the trajectory of my career? Some encounters are indeed coincidental. Spontaneous questions and answers during a conversation may result in actions that come together to initiate events that make a difference or lead to a new direction in life. My definition for the purposes of this essay is that serendipity arises in the presence of open-mindedness, critical observation, and the ability to recognize and capitalize on unexpected opportunities or connections. It is a fundamental aspect of human creativity, scientific discovery, and innovation across various fields and disciplines.

Many fortunate circumstances have shaped my scientific life. At the beginning of my professional career, I opted for the social sciences, phenomenological sociology and applied psychology. Insights into social contexts, particularly through participation in surveys conducted by established research institutes, led me to the analytical aspect of the social sciences and to my first book on work and society in 1978 (Schulte-Fortkamp and Wallmuth, 1978). At the University Göttingen, Göttingen, Germany, luck was on my side as I was able to work with a particular group of sociologists whose influence led me to recognize and analyze inequalities in social contexts.

I applied my new perspective when I started to work at the Ruhr University Bochum, Bochum, Germany, in planning an interdisciplinary training program in natural and social sciences. A few years later, I applied successfully to the Reform University Oldenburg, Oldenburg, Germany, where I initially worked on interdisciplinary concepts for teacher training, and then, serendipitously, I found my place in acoustics!

My encounter with acoustics was the decisive turning point in my career. At the Reform University, I had the opportunity to restart my scientific life in the context of the natural sciences and the important role of acoustics in everyday life. My serendipity specifically in acoustics was the result of unexpected, fortunate discoveries that occurred while studying sound and acoustic phenomena.

Working with scientists from different disciplines, I was impressed with their incredible commitment to applying science for changing lives. Adopting that viewpoint has allowed me to focus on applied science and on research that has brought a new approach to the science of acoustics. I realized that the absolute sound level is not the defining question for human listeners. Rather, the perception, the meanings of different sounds in specific contexts must be quantified and understood.

In my search for like-minded ways of thinking, I found the concept of soundscape! Specifically, discovering the acoustical analyses applied to sound reception and perception in the musical world was my moment of serendipity. This enabled me to consider a new approach

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in noise research, in particular, the many unaddressed questions with regard to exposure to community noise.

At the same time, work that was being done in Europe as a foundation for developing a Future Noise Policy (European Commission Green Paper, 1996) came to my attention. From my point of view, this was a joint awakening in relation to the purely mathematically derived approaches for explaining and addressing stressful acoustic situations. As stated in the International Organization for Standardization (ISO) 12913-1:2004 (2014), soundscape research represents a paradigm shift because it involves applying methods from the social sciences and physical measurements to account for the diversity of soundscapes across countries and cultures. Moreover, environmental sounds are treated as a potentially useful resource rather than as strictly a source of unpleasant sounds. The scientific discourse about the soundscape concept led to the development of advanced methods and tools that allow the systematic collection of soundscape-related data. The discussions about data collection finally led to international standardization efforts that fostered broader dissemination and application of the soundscape concept that defines soundscape as "any acoustic environment as perceived or experienced and/or understood by a person or people in context" (ISO 12913, 2014).

My experiences on the joint work on soundscape with my American colleagues were especially wonderful. I remember with gratitude the discussions with my great colleagues at MIT, Cambridge, Massachusetts, the many inspiring interactions at the Technical Committee on Noise of the Acoustical Society of America (ASA), and in the many special sessions at the ASA or Inter-Noise conferences. One of my greatest strokes of luck was my professorship at the Institute of Acoustics at the Technische Universität (TU) Berlin, Berlin, Germany, that gave me the opportunity to make soundscape research a subject of university education in acoustics. Sometimes researchers encounter unexpected challenges or obstacles in their experiments, which can lead to serendipitous solutions. For instance, while trying to address a specific acoustic problem, they may discover a workaround or alternative approach that turns out to be more effective than the original method. Serendipity often occurs at the intersection of different disciplines. Acoustic researchers may find inspiration or solutions from fields such as materials science, biology, or engineering, leading to unexpected breakthroughs in understanding or manipulating sound.

Modern research on the impacts of noise is no longer conceivable without the soundscape approach. Sound is everywhere, sound is perceived by people, and people decide whether sound is noise or not.

The components of a soundscape cannot be measured with conventional "sound levels" because the meaning of the sounds to the receiver and the context are important. The people affected are the best experts, so they are also the best "measuring devices." When participation is sought from the general population, the soundscape approach closes the circle between project planners and those affected in a very natural way.

The "Nauener Platz" project in Berlin, Germany, is an example of how cooperation can work. A small urban park was redeveloped from 2006 to 2009 with scientists working together with the residents in the area, based on a collaborative soundscape approach. Along with a group of my students, I was able to contribute to a systematic solution for the socially and acoustically strained square in the joint stakeholder project using the holistic soundscape approach (for more information, see Schulte-Fortkamp et al., 2007; Brooks et al., 2014). The result was the development of a cohesive new design for a neglected space based on a mixed methods approach that combined different soundscape elements, including the implementation of audio islands that are benches providing natural sounds as birds chirping and fountain splashing by pushing a button.

My guiding principle, like a credo, in this project was that the real experts are the people affected, whom we call "local experts." From them, we learn the meaning of the sounds in their environment, which sounds disturb them, which sounds they like, and which ones are important for the identification of the place (e.g., bird sounds in a tree-filled space). Together with the local experts and a group of additional stakeholders such as architects, city planners, and administrative officials, the Nauener Platz was turned into a vibrant space for the people who live there. Most importantly, their suggestions, their sound wishes, and their ambitions have preserved the Nauener Platz to this day (see bit.ly/4ey7qFn). This square has now been in existence for 15 years. Due to age, it is a bit

rickety, but it still has importance to the residents. The encounters in the context of this project brought unforgettable moments of serendipity as my students and I learned from the local experts.

There are so many people in my scientific life without whom soundscape research and its establishment would not have been possible. I know it is always difficult to thank people by name because you do not want to forget anyone, so I will reference our book *Soundscape: Humans and Their Acoustic Environment* (Schulte-Fortkamp et al., 2023), where they are all named as chapter authors and in the references to their great publications. But in the context of serendipity, I must mention one encounter in particular. At the 2017 ASA Conference in Boston, I met, by chance, Art Popper. After a bit of conversation, Art suggested publishing the aforementioned book on soundscape in the Springer Handbook of Auditory Research series that he and Dick Fay founded.

Suddenly, there was the opportunity to bring together the knowledge gathered over more than two decades and to record it in a single volume! This would never have happened if I hadn't been able to talk to Art Popper directly in the corridor of the congress building about the possibilities and the necessary procedures. That was a great moment of serendipity!

Another serendipitous meeting was with the initiators of the International Noise Awareness Day in New York in 1997, which led to my initiation of the International Noise Awareness Day in Germany in 1998 that was supported by the German Acoustical Society (DEGA) and became a campaign of the DEGA. For 27 years, joint discussions with those affected and stakeholders have taken place in this context. This action has become a focus of interest in the national and international press. More importantly, those discussions have led to numerous solutions related to noise pollution.

Such chance events are always possible in acoustics or should I say, in the world of acoustic research. Acoustic researchers communicate worldwide through national and international conferences, workshops, and other scientific gatherings in addition to the countless publications on all areas of acoustics. The happy turning point in my professional career was my switch from the social sciences to applied acoustics. I will never forget how impressed I was at my first meeting of the ASA and the openness I experienced in international scientific discussions. Simply sitting down together, asking questions, and thinking about solutions together was inspiring.

Conference meetings also led to being able to break new ground by coming together in large, joint international projects such as COST TD0804 Soundscape of European Cities and Landscapes or the International Organization for Standardization. The objective of the COST project puts the goals in a nutshell. The main aim of the action is to provide the underpinning science for soundscape research and to facilitate significant advances beyond the current state-of-the-art through coordinated international and interdisciplinary efforts. The action will promote soundscape considerations into current legislation, policies, and practice, aiming at improving/preserving our sonic environment.

This project could only come about because our acoustical societies have the basic concept of bringing together the sciences and scientists from the field of acoustics and enabling communication with many colleagues during their conferences. The opportunity to be active in the various committees and functions for any of the acoustic societies also offers opportunities for serendipity.

A final very special serendipity for me. While attending an ASA meeting I was asked if I wanted to run for vice president of the ASA! I did, and after the successful election, I became the first non-North American ASA vice president. Also a few years later, I was given the honor of chairing the ASA's new International Liaison Committee. My involvement with that committee was a wonderful experience that left me with many thanks to all who served on the committee and brought together our diverse worlds in acoustics.

Sometimes serendipity involves a combination of chance, curiosity, and preparedness, leading to valuable outcomes that were not initially sought or anticipated. To be able to continue in acoustic research and to work together with other acousticians has been the greatest gift to me.

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