Acoustic Communication Studies at Simon Fraser University

By Barry Truax

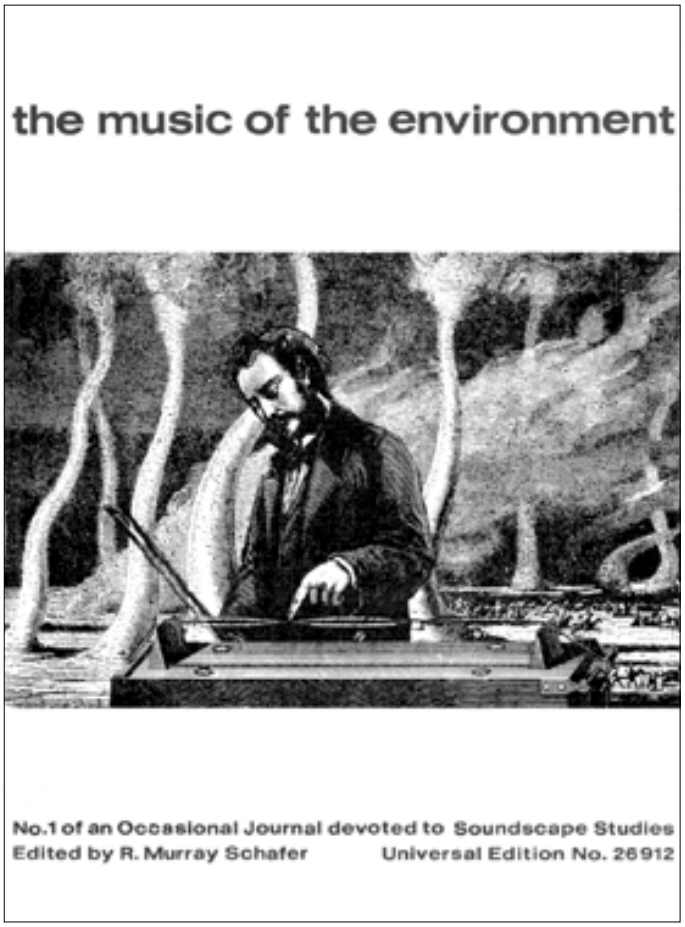
Background

With a nearly 30 year history, the teaching program in the School of Communication, Simon Fraser University (SFU), at both the undergraduate and graduate level, may well be the oldest, continuous running curriculum related to soundscape studies and acoustic ecology. It was initiated by R. Murray Schafer and grew out of his work in music education, noise pollution, and soundscape studies in the 1960s and early 70s. Its current form began with the establishment of Communication Studies as a department in the Faculty of Interdisciplinary Studies at SFU in 1973 with Schafer as a Professor until his departure in 1975, the period that saw the seminal research work of the World Soundscape Project (WSP). Since 1974 the courses have been expanded, taught and supervised by Barry Truax with the assistance of instructors Hildegard Westerkamp, Susan Frykberg, Norbert Ruebsaat and Robert MacNevin.

The Early Courses

A look back at the design and practice of the courses in the early years shows an interesting pattern of development that may assist others in creating similar curricula. Schafer originally taught just two undergraduate courses (CMNS 239 & 339) called, as they still are, "Acoustic Dimensions of Communication." The newly emerging field of Communication Studies, having roots in a variety of traditional social science areas, but professing an interdisciplinary approach to contemporary society, put little emphasis on perception in any form, and none at all on sound. For both undergraduate students and faculty alike, an emphasis on sound as a primary if undervalued aspect of communication came as a novel and welcome addition to the field of study. Schafer's background in music and education, combined with his interest in a broad range of areas in the arts and humanities, provided an excellent background on which to define this new area of study. Added to that was his critical social perspective and a commitment to environmental activism. It remains clear that such a broadly based interdisciplinary perspective is needed to address the issues of acoustic ecology.

Schafer's outline for his introductory course from 1973 reveals the ambitiousness of his vision. It was designed for SFU's standard format of a 13 week course, with a weekly one hour lecture and a two hour small group tutorial. The texts were based on his writings (*The Music of the Environment* and the *Book of Noise*, plus sections from *The New Soundscape*) supplemented by readings from a wide range of sources in acoustics and psychoacoustics, audio recording, radio broadcasting and telephony, and George Miller's *Language and Communication*. The lecture topics were:



The First Soundscape, The Lo-Fi Soundscape, Signal and Noise, Basic Acoustics of Sound, The Recording of Sound, Radio Broadcasting Policy in Canada, The Sound Object, Masking, The Interview Technique, Radio as an Alternative Environment, Telephones and Telephone Systems, and Principles of Acoustic Design. Student work consisted of weekly exercises creating and evaluating soundwalks, researching a community noise topic, studying terminology, recording voice and environmental sounds, analyzing a radio broadcast, doing a masking experiment, recording interviews and preparing a short radio program, and critiquing bad acoustic design features in the soundscape.

For several years, this combination of acoustic and electroacoustic topics were squeezed together into single courses. When I first joined the WSP in 1973 and started teaching, there were also 3 and 6 week sections of the 100-level course in the

Top: Cover of *The Vancouver Soundscape*
Bottom: Barry Truax and Hildegard Westerkamp in the Sonic Studios, S.F.U.

school in which I offered a similarly breathless survey of sound and audio basics, soundscape approaches, acoustic space and rhythm, electroacoustics, media and computer sound production (a *terra incognita* in 1974). Besides Schafer's texts and *The Vancouver Soundscape*, an evolving document then titled "The Dictionary of Soundscape Ecology" with definitions of relevant terminology began to be used. It developed further into its 1978 publication as the *Handbook for Acoustic Ecology*. When I first began teaching Schafer's courses in 1974, there were six two-week assignments in the introductory course (later 5 plus a listening commentary essay) with the topics: Field Recording (sound objects and events, catalogues, sound sequences, or imaginary soundscape creation), The Changing Soundscape (interviews, sound references in literature, disappearing sounds), Community Soundscapes (soundscape analysis, sound profiles, community noise survey, sound level analysis), Sound Presentations (live in-class performance), Radio/Media Analysis (commercial uses of audio, radio broadcast structure, sound in radio or TV commercials, sound references in print advertising), Physiological, Psychoacoustic and Symbolic Characteristics of Sound (both research and applied examples and analysis). More than one topic in each area could be pursued for greater depth. Later, student work began with fixed assignments in soundscape analysis and terminology investigation, followed by free choice of three projects from the first five areas listed above, plus a listening commentary analyzing one of the programs from the WSP's "Soundscapes of Canada" series or other documentaries. The second level course covered the same areas in greater depth and organized student work around two free choice projects that could later lead to individualized Directed Study, a formula still in place today.

A few additional highlights from these early course offerings are worth mentioning. Given the tradition of always beginning with listening and aural awareness (Schafer's "earcleaning" concept), the introductory course in acoustic communication began with the "earplug commentary" - and still does. Students bought or were given a pair of E-A-R earplugs and were asked to use them and report their reactions. A collection of their reports remains on file in the School. It seemed paradoxical to new students that a course on aural awareness would start with earplugs, but the purpose quickly became obvious. It was to challenge the student's c+onventional "taking sound for granted" by artificially changing their hearing sensitivity. Sounds that would have been ignored were suddenly missed, and relief was offered from those that were oppressive. Concentration during academic work was often noted to be improved, even if there was a fear of "missing something". When the plugs were taken out, another dramatic aural shift occurred as the person experienced a heightened auditory awareness because of their lowered hearing threshold before it re-adjusted to the current ambient level. Some students continued to use the plugs after the assignment, while others found them discomforting, but all realized they now had a choice in any unfavourable acoustic environment.

From the start, response to the courses was mostly quite enthusiastic. Students quickly realized that, no matter what their level of interest in sound or music had been previously, the course opened their ears (and minds) to an important aspect of everyone's life and society in general, one that Schafer had presciently pointed out was being endangered. One of the more thoughtful though not atypical conclusions from a 1974 student was as follows. "We all brought pre-determined perceptions into the seminars in the early fall. They were largely structured around visual perceptions. Over the past three months I have been able to eliminate a lot of my visual hangups and to re-assess the significance of sound in my surrounding environment. I know this to be a fact, because my ears have become extremely sensitive to technological sounds that the majority of the public either can't hear or take for granted. I have also learned the value of the natural soundscape which is in as much danger of facing

extinction as the bald-headed eagle. If I learned nothing else this semester the course would still be of value to me."

Two events that have, perhaps unfortunately, not continued as a regular part of the course are the Sound Presentations mentioned above, and my "Lecture on Nothing". The Sound Presentation was based on Schafer's exercises in creative music education in which students organized their peers (and the Instructor) with a rudimentary "score" and used vocal or found object soundmaking to create a performance. These tutorial events, while possibly nerve-wracking for the shyer students, always proved both entertaining and highly participatory for the class, and served as the counterpart to individualized listening. They are still practiced from time to time, but the approach depends on the Instructor. Lectures, in the meantime, had expanded to two hours in order to provide more time for group listening in one of the new lecture theatres with a well equipped (quadraphonic) playback system. During this period I tackled the subject of Silence in a two-part "performance". During the first hour I remained totally non-verbal as a lecturer, handing out quotations about silence to the students with a written message on the overhead projector that they could read them out loud whenever they felt like it. At certain points, tapes such as Hildegard Westerkamp's *Whisper Study* and the theme on Silence from the WSP's *Six Themes of the Soundscape* were played. In between, the students established the pace of the lecture by reading their quotations. I always expected problems with students asking questions before the lecture, but amazingly enough they always accepted my nods and smiles with equanimity! During the second hour I performed John Cage's "Lecture on Nothing" from his book *Silence,* with a meditative electroacoustic tape accompaniment I had prepared. In the printed version of the lecture, Cage indicates how many "beats" of silence are to be inserted in the text, as well as referring to how the text "organizes" the silences and allows the silences to be experienced. At the end of the performance, I would leave the hall quietly (though always exhilarated), letting the tape run to its conclusion.

The Full Teaching Program

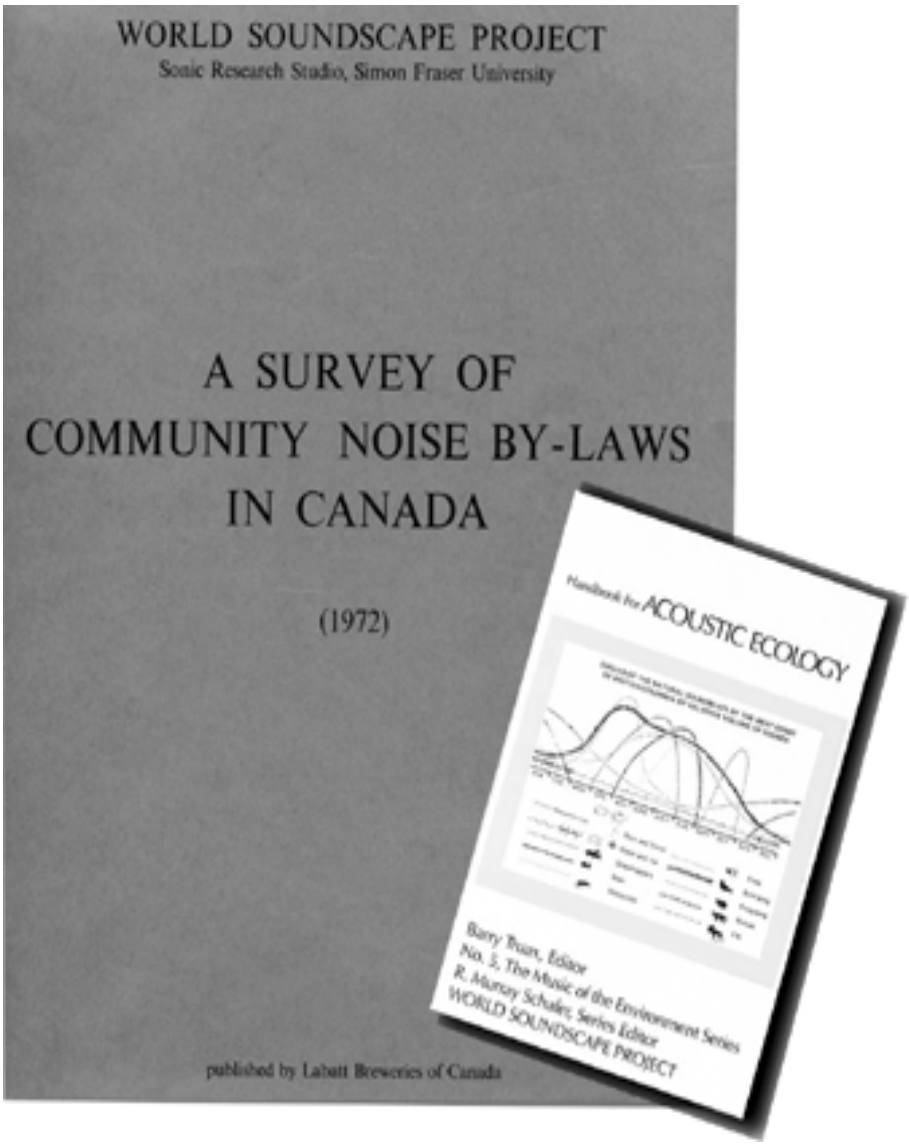
By the late 1970s, the format of today's teaching program was in place, though refinements and extensions continue to be added. First, it was becoming increasingly difficult to cover both the acoustic and electroacoustic aspects of communication in a single semester course. Studio work in particular was very difficult to incorporate because of the specialized techniques and instruction that is required, not to mention the long hours of studio time needed to finish projects. Another sound related course had been introduced in 1976, taught by former CBC documentary producer Imbert Orchard. His expertise in field recording, interviewing, and the production of "aural history" documentaries was legendary on Canada's West Coast, whose regional histories had been the subject of his many productions. Equipped with Uher tape recorders and a reel-to-reel tape editing workshop, this course introduced students to a form of sound production closely related to that of soundscape work, what Orchard called the "document in sound."

When Orchard left, I created two new courses in electroacoustic communication (CMNS 258 and 358) which concentrate on the social, environmental and media impacts of audio technology, and provided a more rational and progressive instruction in studio production. This freed the acoustic based courses (renumbered as CMNS 259 and 359) to deal more extensively with soundscape topics such as listening, voice, the acoustic community, noise, and acoustic design. In fact, both sets of courses deal with the impact of technology, with the contrasting yet overlapping implications of noise and audio, respectively. These themes neatly fit the overall direction of the renamed School of Communication when it moved into the Faculty of Applied Sciences on the dissolution of the Faculty of Interdisciplinary Studies. The School positioned itself as an applied social science with the "social impact of technology" as its overarching theme, a theme for which acoustic and electroacoustic communication has many pertinent examples.

The introductory electroacoustic communication course, also in the lecture/tutorial format, reflects the School's ideal of theory combined with practice. In the audio area, both technical schools and even other Schools of Communication, often separate applied work from anything other than audio theory. However, within a social science milieu, the interplay between analysis and production is incredibly fruitful. For instance, the audio designer, in addition to technical knowledge, needs to have perceptual abilities and imagination, as well as an awareness of the social context, including political economy, within which that technology is inextricably embedded. Likewise, the models and concepts found in communication theory need to be complemented by "real world" experience. Media analysis is a case in point: analyzing what production choices have been made can be complemented by making these choices oneself. Such an interplay of theory and practice gives greater depth both to the understanding of mass media, as well as what constitutes alternative practice.

The lecture content of this introductory electroacoustic course found its way into the second half of my book, *Acoustic Communication*, first published in 1984, and recently revised as a second edition in 2001 (see review page 42). It presents the transition from acoustic to electroacoustic communication in the 20th century as creating a fundamental shift, not merely an extension, with digital technology taking that shift to yet another level. The listener becomes a consumer, and the acoustic community becomes a market. The balance between the local and the global changes dramatically, and the model of the geographical centre complemented by the margins is replaced by the model of the mass media as a "mainstream" which marginalizes alternative practices. Teaching in this area is both exciting and challenging, if only because we are all caught in the midst of ongoing technological change, the implications of which are coloured by both fear and hype. However, this volatile situation gives the subject an "edge" of urgency and no end of contemporary examples for debate. The course has also provided the opportunity for introducing students to non-mainstream applications of audio, such as experimental video and film, electroacoustic and computer music, text-sound composition, and soundscape composition.

Student work in this course begins with an "electroacoustic survey" in place of the earplug commentary. Students are asked to observe their exposure to electroacoustic sound, both electrically produced and electronically reproduced, during a weekday and weekend day. The results between 1979 and 1993 have been compiled and appear in my book (Truax, 2001, p. 172). They show that even an "introductory" student comes with a lifetime of exposure to electroacoustic sound, estimated at over 55 hours per week. One of the tasks of the course is to elucidate that experience and its effects. Besides an essay on media analysis, student work involves practical audio production. The three applied projects are a field recording exercise, an editing project, and a final documentary, aural history project, text-sound piece, or soundscape composition. Field recording equipment over the years has migrated from mono and stereo Uher reel-to-reel machines, to the Walkman Professional cassette recorders, to the current brands of MiniDisc recorders. However, partly to deal



with the numbers of students, production work still includes both analog tape and digital workstations, the latter used for editing and multi-track assembly. The upper level continuation of this course is strictly production oriented in the Sonic Research Studio, again including both analog and digital methodology side by side, leading to multi-track and recently, octophonic sound design using Richmond Sound Design's AudioBox.

The second aspect of the course expansion was the introduction of a graduate level course in Acoustic Communication (CMNS 859), starting in the spring of 1977, and offered approximately once every two years since. This course has attracted a small but ardent group of graduate students from not only the School of Communication, but also from the MFA program in the School for the Contemporary Arts (to which I am also appointed), as well as occasional students from such diverse departments as Geography, Philosophy, Computing Science, Kinesiology, and those under Special Arrangements (i.e. interdisciplinary projects). The course follows the same ideal of the combination of theory and practice, though given the brevity of the 13 week semester, applied projects or field work are generally left to a separate Directed Study course. The course meets twice a week, once to cover the theory of acoustic and electroacoustic communication, emphasizing the research literature relevant to it across the humanities and social sciences. The second meeting covers research topics in acoustics, psychoacoustics, environmental acoustics, and electroacoustics, with selected applications in speech acoustics, audiology, noise measurement and audio.

In summary, the two "streams" of courses, acoustic and electroacoustic, at the 200 and 300 level, which lead to individualized Directed Study or field work at the 400 level, complemented by their graduate level equivalents, form a tightly focused but broadly based program of study in the field of acoustic communication. What seems at first a "fringe" area becomes, for those who wish to pursue it in depth, a multi-faceted field with tentacles of implication across the entire range of academic, professional and artistic endeavour. In my opinion, the growing field of Communication Studies provides the best intellectual foundation for this study, particularly when framed as an applied social science which studies the production and exchange of information. In turn, the impact of technology via noise and audio provides Communication Studies with excellent case examples of the more general theme of technological change. Beyond this, and possibly most importantly for members of the World Forum for Acoustic Ecology (WFAE), models of acoustic ecology in general, and the acoustic community in particular, offer insight into both what technology has invaded and disrupted, as well as how a better functioning "community" as mediated by technology might be designed. The mutual engagement should continue to be beneficial to all concerned.

Not surprisingly, our students, now many generations of them, have come from a wide variety of backgrounds and proceeded to an even wider range of professions and activities. Some who have passed through the courses in the early days have become well known in the arts, such as composers John Oswald, Jean Piché, and Paul Dolden, filmmakers Charles Wilkinson and Peg Campbell, as well as many others. Still others are active within the acoustic ecology movement, but countless more, many of whose faces have become a blur to me, have gone into every imaginable profession. I am always delighted to hear from them from time to time, such as the former student who claimed I saved her life because she had been able to hear the whistle of a train that was about to run into her car in a foreign country. Less dramatic but equally rewarding are reports from those who have found an aural orientation to their lives a benefit and inspiration.

Current Directions

Fortunately, the teaching program, though stable in its course structure, is far from static and continues to evolve. The most obvious pressures and opportunities come from the growth of technology, particularly in the digital domain. Ironically, the Internet which so far has made relatively little use of sound for academic purposes, provides some significant opportunities for both the study and practice of acoustic communication. First is the connection of like-minded (or "ear minded") people on the acoustic ecology listserve. Any subscriber can quickly consult with a few hundred others around the world on any topic of interest, or share information. In addition, the WFAE website provides an

invaluable repository of relevant information and links.

Paradoxically, the introductory course in acoustic communication (CMNS 259), which does not depend on audio technology for production work, has been an ideal candidate for a Distance Education version using the Internet to facilitate an online "tutorial." The course material was originally prepared and taught by Susan Frykberg in 1997. Since she left SFU, the tutor marker for the course has been Robert MacNevin who has both streamlined the administration of the course and revised the Study Guide to bring it up to date and incorporate the *Handbook* CD-ROM. The course is offered twice a year (spring and summer) while the campus version is offered once (fall). Unlike the campus version, the Distance Education version allows students to be located wherever they can access the Internet. Although most tend to be locally based SFU students, there have been several cases where a student is living or traveling further afield, and in fact, such diversity of location, and hence soundscapes, is a benefit to the online discussions by bringing in a wider range of social and aural experience. Several contributions from students of this course have appeared in the *Soundscape* journal.

Sound examples, which are a mainstay of the lectures on campus, are provided to the Distance Education students on 3 CDs which are distributed with the course material. The CDs are: (1) *The Vancouver Soundscape* 1973 recordings, reissued from the original vinyl; (2) a selection of "world soundscapes", examples of "voices of persuasion", cross-cultural voices, disappearing sounds and Hildegard Westerkamp's composition *Kits Beach Soundwalk*; (3) Barry Truax's radio program from the "Soundscapes of Canada" series of WSP documents entitled *Six Themes of the Soundscape*, plus two excerpts from a documentary on noise by former communication student Kevin Bolster.

Understanding acoustic communication, and hence acoustic ecology, inevitably requires knowledge gleaned from the specific disciplines which study sound from various perspectives. It was clear from the early WSP research that a "dictionary" needed to be compiled with terminology and definitions drawn from all of these disciplines. The result is the *Handbook for Acoustic Ecology*, which I have edited (many times over). In dealing with the interdisciplinary nature of this terminology, it became clear in the 1970s that the concept of "hypertext", as introduced by Ted Nelson at that time, was ideally suited for this enterprise. In its simplest form, hypertext is a way of linking one text with another, whether print, sound or graphics, in other words, a form of cross-reference. Therefore, the *Handbook*, even in its earliest typewritten form, made systematic use of both cross-referencing (see, see also, compare) and a print version of the "link" (now familiar to Internet users) as a capitalized term corresponding to the linked entry (e.g. SOUNDMARK). After 20 years, the *Handbook* is now a CD-ROM where these links are active and take the user instantly to the referenced material. Sound examples are also integrated into this new version.

The other approach to the interdisciplinary aspect of the material has been an attempt to trace similar concepts across disciplines. These have included both the analytical parameters of sound (specifically magnitude and vibration) and the various stages of transmission from the source to a medium, propagation through the medium, and interaction between sounds. Analogous concepts found in acoustics (both theoretical and applied), psychoacoustics, electroacoustics, music, and soundscape studies were studied. In the book, this classification scheme took the form of a chart (Truax, 1978, p. xii, xiii), supplemented later by a list of all *Handbook* terms which pertained to each subcategory. In the CD-ROM, this scheme forms a "thematic search index" where each category and subcategory is presented with an explanatory text and active links to the appropriate terms. The visual background pattern of each entry reflects the "parent" discipline, making it clear when one switches discipline. This CD-ROM has proved invaluable for the Distance Education version of the introductory course, where it is not possible to illustrate these concepts in a studio environment. The interdisciplinary scheme also forms the basis of how this material is presented systematically in the upper level course's lab over an entire semester. Showing how traditional scientific disciplines deal with sound as energy and signal transfer also clarifies the essential difference with an information-based communicational model. Therefore the study of this knowledge sheds light on how that knowledge has been constructed, itself a communicational issue.

Conclusion

Over the course of nearly 30 years, the teaching program in acoustic communication at SFU has gone from supporting around 50 course enrollments a year to more than 175 such enrollments, including the Distance Education students. Presumably, with more equipment to support the electroacoustic side, an even greater number could be accommodated. University administrators like to think in such terms - though compared to other more popular areas these figures are small - but numbers alone are a poor criterion for assessing the importance of this teaching program. Unfortunately it remains fairly unique within Schools of Communication, the notable exception being the Department of Communication at Concordia, in Montreal, where Andra McCartney is developing similar courses. Part of the reason for the slow spread of the concept is the lack of instructors trained in an interdisciplinary manner where a combination of social science, artistic, and technical background is needed. In fact, combinations of any two of these areas are increasingly common: music and technology with electroacoustic training (my path), social science and technology with media production, arts and social science with critical theorists, for instance. In some cases, the missing third area can be added through individual initiative. In any case, the social need is undeniable as the issues surrounding the acoustic environment, audio consumerism, and technologically mediated forms of communication (with or without sound), continue to proliferate. If our students graduate with an increased awareness and set of skills to deal with these issues, and if in turn they exert an influence on others, the social benefit will increase exponentially.

Website references:

The detailed course outlines for all of the courses mentioned in this article may be found at: www.sfu.ca/sonic-studio/srs. The Distance Education version of Acoustic Dimensions of Communication may be found at: www.sfu.ca/cde/courses/cmns/cmns259.htm. Other information on the author's work may be found at www.sfu.ca/~truax

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