WORLD SOUNDSCAPE PROJECT FORMAT

Subproject Number	*Title*	*Researcher (the first named is co-ordinator)*
	0 - 9 History	
0.	*Archive of Lost & Disappearing Sounds*	*1. Peter Huse* *2. Bruce Davis*
1.	*Glossary of Sounds in Literature*	*1. Hildegard Westerkamp*
2.	*New Sounds*	*1. Bruce Davis* *2. Peter Huse*
	10 - 19 Broadcasting	
10.	*Preferred Levels in Broadcast Music*	*1. Bruce Davis*
11.	*The Structure of Radio Programming*	*1. Howard Broomfield* *2. Murray Schafer*
	20 - 29 Technology: Engines & Electricity	
20.	*Car Horn Sounds*	*1. Bruce Davis*
21.	*Car Horn Count*	*1. Murray Schafer* *2. Howard Broomfield*
22.	*Quantitative Growth of Mechanical Sounds*	*1. Colin Miles*
23.	*Drone Effects*	*1. Bruce Davis*
24.	*Horns & Whistles*	*1. Bruce Davis*
25.	*Telephones*	*1. Bruce Davis*
	30 - 39 Community	
30.	*Community Soundmarks*	*1. Peter Huse* *2. Bruce Davis* *3. Howard Broomfield*

Subproject Number	*Title*	*Researcher (the first named is co-ordinator)*
31.	*Sounds of Events & Entertainments*	*1. Bruce Davis* *2. Peter Huse* *3. Howard Broomfield*
32.	*Noisy Groves of Quiet*	*1. Bruce Davis* *2. Kathleen Swink*
33.	*Acoustic Park*	*1. Bruce Davis* *2. Peter Huse*
	40 - 49 Particular Field Studies	
40.	*Vancouver Soundscape*	*1. Murray Schafer* *2. Bruce Davis* *3. Howard Broomfield* *4. Barry Truax* *5. Peter Huse* *6. Betty Anne Wong* *7. Hildegard Westerkamp*
41.	*Soundscape Cycles & Rhythms*	*1. Bruce Davis* *2. Hildegard Westerkamp*
42.	*A Listener's Guide to Good Eating*	*1. All*
43.	*The Sound Environment of Schools*	*1. Hildegard Westerkamp* *2. Barry Truax*
	50 - 59 Terminology, Morphology & Notation	
50.	*Soundscape Notations*	*1. Murray Schafer* *2. Bruce Davis* *(All)*
51.	*Dictionary of Acoustic Ecology*	*1. Barry Truax* *(All)*
52.	*Sound Typology and Morphology*	*1. Murray Schafer* *2. Peter Huse*

Subproject Number	*Title*	*Researcher (the first named is co-ordinator)*
53.	*Semantics of Sound*	*1. Murray Schafer* *2. Peter Huse* *3. Bruce Davis* *4. Barry Truax*
	60 - 69 Psychoacoustic & Psychological Tests	
60.	*Sound Association Tests*	*1. Bruce Davis* *2. Hildegard Westerkamp*
61.	*Aural Figure/Ground Perception Test*	*1. Bruce Davis* *2. Hildegard Westerkamp*
62.	*Acoustic Trauma in Symphonic Music*	*1. Hildegard Westerkamp*
63.	*Sound Preference Tests*	*1. Bruce Davis* *2. Hildegard Westerkamp*
64.	*Sound Visualization Tests*	*1. Hildegard Westerkamp* *2. Murray Schafer*
	70 - 79 Language	
70.	*Onomatopoeia in Different Languages*	*1. Murray Schafer*
	80 - 89 Miscellaneous	
80.	*Wired Background Sound*	*1. Peter Huse* *2. Bruce Davis* *3. Howard Broomfield*
	90 - 99 Noise and the Law	
90.	*A Survey of Community Noise By-Laws in Canada (1972)*	*1. Kathleen Swink (All)*

Subproject Number	*Title*	*Researcher (the first named is co-ordinator)*
91.	*A World Survey of Community Noise By-laws*	*1. Hildegard Westerkamp*
	100 - 109 Presentation	
100.	*Documents*	*1. Murray Schafer (All)*

WORLD SOUNDSCAPE PROJECT DEFINITIONS

0 - 9 History

0. ARCHIVE OF LOST AND DISAPPEARING SOUNDS. This work consists of recording various sounds of the past threatened today with extinction, and collecting such information as may be necessary to create a permanent record of the sounds of various times and places. The recordings are made with the utmost care as they may become important museum pieces. Then they are catalogued and mounted. A card corresponding to each recording abbreviates the pertinent technical and environmental data, such as the intensity level of the sound, and the available historical and sociological data on the sound. This information is supplemented in some cases by taped interviews with old people about certain sounds and the history and meaning of these sounds as they know them.

1. GLOSSARY OF SOUNDS IN LITERATURE. Informative and evocative quotations concerning sounds gathered from literary sources, particularly novels of remote times and places. The Glossary is compiled on 8" X 5" cards. Each card gives a complete bibliographical reference in footnote form to the author, title, place, house and date as well as the pages of the publication. Also each card contains, where possible, information as to the place, time and circumstances of the event described. The cards are cross-indexed to give the reader an immediate indication of the types of sounds heard and soundscapes inhabited at different times throughout history, or in different places, or changing attitudes to the same sound across time and space.

2. NEW SOUNDS. This project records new sounds as they enter the environment and notes their exact arrival-time. These sounds are analysed acoustically and examined as possible causes of environmental side-effects. Public responses to new sounds are recorded, and comparisons made with other sounds as both objects and events already 'established,' disappearing or lost. The word new is taken both in the world-wide sense of new technology, e.g. the sonic boom, and in the local sense, e.g. in Campbell River, B.C., where the whooping-type fire siren is 'new.'

10. *PREFERRED LEVELS IN BROADCAST MUSIC. How loud do people like to listen to their car and home radios, record players and television sets? Does age group and/or occupation play a role in preferred listening levels? Sociological and/or geographical variables? Tests are being planned similar to those conducted and published by Somerville and Brownless in 1949. After the World Soundscape Project conducts its own tests an article discussing the new results obtained and comparing them with those obtained by Somerville and Brownless 24 years ago will be forthcoming.*

11. *THE STRUCTURE OF RADIO PROGRAMMING. The development of a method for the stylistic analysis of radio, comparing tempo, intensity and programme rhythms in relation to time of day and content of broadcast. How many words are spoken per minute by disc-jockeys and announcers? What is the tempo of every piece of music played over a sample period? What are the amounts of news, music, commercials, etc. for extended periods, and what is the tempo of their alteration? Graphic level recordings are used to determine the dynamic contours of each station monitored. 'Joins' in programmes are also examined, i.e. those discontinuities between programmes, which are no longer pauses but surrealistic conjunctions of music and speech. The purpose is to show the relations among the tempos of information, music, etc., and 'popularity,' and to report all infractions (regarding the number of commercials, intensity levels of programme material, etc.) to the Canadian Radio-Television Commission.*

20 - 29 Technology: Engines and Electricity

20. *CAR HORN SOUNDS. A study of the history, evolution and regional variations in the sound of car horns, old and new around the world. Tape recordings are being collected and analysed in terms of sound pressure level, frequency range and harmonic structure. Information is being collected from the manufacturers as to why car horns sound the way they do and what acoustic criteria are involved in their design. Because car horns are growing louder, paralleling the increase in the ambient noise level, quantitative evidence of the increase in sound intensity of the car horn will indicate how noise levels in general are increasing.*

21. *CAR HORN COUNT. The car horn may be used to signal danger or warning, to broadcast intent or to express friendliness or hostility, depending on the season, time of day, weather or traffic. In different cities car horns are sounded in different ways, and in some more frequently than in others. The purpose of the car horn count is to compare the use of horns in various cities around the world. Sample counts are being taken at a major downtown intersection in each city for 10 minutes on the hour over the representative eight-hour period from 11:00 A.M. to 7:00 P.M. on weekdays. Characteristic durations and rhythmic patterns are noted and, where possible, sample recordings are made.*

22. *QUANTITATIVE GROWTH OF MECHANICAL SOUNDS. This project assembles statistics on the increasing number of mechanical noise-makers in various countries of the world, and prepares tables, graphs and tape recordings which should effectively illustrate this growth for the public at large. For example, a demonstration tape is planned in which the intensity of each sound (automobiles, motorcycles and minibikes, trucks, power saws, juicers and blenders, power lawnmowers, bulldozers and graders, tractors, etc.) corresponds to the quantitative growth.*

23. *DRONE EFFECTS. Information is collected from all countries on their operative electrical current, coded onto a Hum Map of the World, and the patterns noted. (E.g. areas coming under the American 'modernizing' influence tend to be humming at 60 cycles per second.) The mapping is supplemented by recordings of electrical hums. (60 and 50 cycles give approximately the pitch classes B natural and G sharp as a background noise.) People are canvassed as to these sounds. How pleasing are they? Memorable? Related to expectations of 'prime centre' or 'cosmic sound?' These are steps toward determining the behavioural effects of a constant (subliminal) sonic background.*

newness or its oldness, etc. A single sound may therefore have complex meanings and these may be in harmony with one another or in opposition. The study of the semantics of sound attempts to work out some guidelines by which sounds may be analysed and assessed in relation to these different frames of reference.

24. *HORNS AND WHISTLES. A study of the history, design and application of all the different types of horns and whistles as found in different parts of the world. The various kinds (factory whistles, boat horns, fog horns, train whistles) are grouped as to signal rhythms, tuning, time/place pattern of use and community significance.*

25. *TELEPHONES. The sounds originating with telephones or being transformed and transmitted by them are always, if not present, imminent for most of today's city-dwellers, and these sounds are being more and more standardized as the telephone network tightens around the world. This is a study of these bells, dial-tones, clicks, rattles, whirrs and 'computer-tunes' from their early forms to the present, with notes on their construction, production, and effects on speech. Recordings are made of these sounds and their various dimensions (pitch, duration, intensity, etc.) are measured. Tests by the World Soundscape Project prove that some telephone systems generate sounds so loud that after prolonged exposure, the customer may suffer permanent hearing loss. In such cases, the exchanges responsible are notified, and when enough data is compiled this information is made public.*

30. *COMMUNITY SOUNDMARKS. An investigation and recording of those sounds which have unique social or historical significance in the community. These are sounds such as unique natural sounds, vintage town sound signals such as clocks or bells, distinctive sounds heard nowhere else in the world - particularly those that are regarded with some affection or awe by local inhabitants. Taped interviews with local inhabitants are collected as well to determine and record the affective qualities of the sounds in question.*

31. *SOUNDS OF EVENTS AND ENTERTAINMENTS. A study of the sounds of people together in celebration, competition, worship, relaxation, etc. All kinds of interesting and unusual events and entertainments are being recorded and analysed, particularly those with a strong verbal ritual such as auctions, circuses, church services and sandlot ballgames. This project is also concerned with eventful sounds of possible historical significance, whether they are natural or social.*

32. *NOISY GROVES OF QUIET. A comparison of the ideal sound levels established for various places of repose or intellectual activity with a sampling of the realities across Canada. Such areas as parks, hospitals, libraries, schools and home bedrooms are measured and records kept of the information, which will be made available to engineers and civic officials.*

33. *ACOUSTIC PARK. This is a design project to set an example for the construction of acoustic parks. They are most needed within the urban cores of the world's cities for contrast to the increasing noise and regularity of the city soundscape. Preliminary plans being considered include quiet areas such as a 'temple of silence' of anechoic or some other sound-insulating construction, and a sunken garden rimmed to deflect much of the street sound overhead; forms using running water including rain to make both sound masks and events; an area for an acoustic playground where concerts and group improvisations can take place; acoustic devices for focussed listening; walkways that have walk-on drumheads of especially tough, resounding material, and boardwalks of marimba-sounding planks; etc. Throughout the emphasis is on natural (acoustic) rather than electronic sound production and amplification. The materials used are to be chosen and proportioned to maximize natural modes of vibration and resonance, while remaining for the most part ruggedly durable.*

40. VANCOUVER SOUNDSCAPE. A study to determine the characteristic features of the Vancouver soundscape, to draw attention to its soundmarks, its sky sounds, bright or clouded, sea sounds, calm or wind-blown waves, the sounds of mountains, looming darkly or receding in haze. To distil these and other resonating clues into a sense of Vancouver place. This is the next project planned for publication, and from tape cuts in space and time (representative areas, different times of day and season), the mix-form of two records is emerging. The layout of a companion booklet is taking shape with facts on the growth-sounds of modern Vancouver - the big noise, eccentric time-pieces of noon whistle and twilight gun, harbour of foghorns and longshore clatter - and the past. And there will be secret maps revealing great souls of radio stations floating everywhere and always, and maps of soundwalks to encourage the Vancouver citizen to become more attentive to the acoustic delights and problems of his city. And adorning the centre of the booklet? A hint at mapping the strangely familiar music on the records, a design, part chance and partly within man's reach, an excerpt from a piece that never stops, the Soundscape of Vancouver.

41. SOUNDSCAPE CYCLES AND RHYTHMS. Very little information of a specifically acoustical nature exists about the rhythmic and cyclic aspects of the living environment. This project is collecting data to develop time charts (over a 24-hour period, over a year, etc.) of selected soundscapes such as traffic sounds on a city block, and the seasonal changes of bird, insect, animal and other natural sounds, to show their rhythmic variations. The purpose is to try to discover the rules or patterns governing such rhythms and periodic fluctuations of soundscapes all over the world.

42. A LISTENER'S GUIDE TO GOOD EATING. The characteristic sounds of a restaurant are not usually listed on the menu but they are nevertheless always present as ingredients, enhancing or detracting from the pleasures of the palate. The World Soundscape Project is compiling this information about several restaurants in various cities. Questions such as the following are being answered: Is there music? What kind? Is it live or recorded? Is it indigeneous to the style of food being served? Can the patrons control its presence? How present is it, i.e. how loud and how often is it being played? If there is a sound system, of what quality is it? Is there much kitchen and serving clatter? Street noise? Hum from the lights? What is the ambient or background sound like? How loud is it necessary to speak to carry on a conversation? What languages and dialects can be overheard? Which single sound is the most characteristic? Although an analysis of the cuisine itself, and the service, is beyond the scope of the study, some general comment on these aspects

by the research team is also recorded. This information will be useful to a discerning public in shaping the experience of dining out. A first Guide booklet is being planned for Vancouver, B.C.

43. *THE SOUND ENVIRONMENT OF SCHOOLS. Considerable concern has been voiced over the acoustic environment in rooms and open area of public schools. Sound level readings and other methods of analysis will be used to determine ways to improve those learning environments in need of repair.*

50 - 59 Terminology, Morphology and Notation

50. *SOUNDSCAPE NOTATIONS. This project is experimenting with means of notating soundscapes graphically in such a way that all pertinent information can be indicated (duration, frequency, mass, grain, intensity, etc.) in a manner that it may be comprehended by observers who understand little or nothing of acoustical or musical terminology. The establishment of a simple, flexible but accurate method of soundscape notation will be invaluable when researchers other than acoustical engineers approach the subject - i.e. urbanologists, geographers, sociologists, musicians, etc.*

51. *DICTIONARY OF ACOUSTIC ECOLOGY. The development of a comprehensive terminology for the precise description of soundscapes and their relation to man. The Dictionary co-ordinates the definition of terms related to sound and used within the general fields of physics, electronics, communications and communication theory, medicine, psychology, philosophy, mathematics, linguistics, music and the arts, architecture and environmental design, and ecology. Also included are terms and usages created directly for the new field of acoustic ecology. All the definitions are explained to be understood by an intelligent reader in any discipline, such as a geographer, an urbanologist or a solicitor. Thus the Dictionary serves as a handbook for all World Soundscape Project researchers, introducing the field of acoustic ecology, and defining its terms as they are to be used in all subsequent World Soundscape research reports.*

52. *SOUND TYPOLOGY AND MORPHOLOGY. The first step toward the study of sound morphology is the construction of a classifying system for all sounds. Although musicians, acousticians and phoneticians have descriptive systems for sounds, no system yet exists which would be intelligible to many kinds of researchers (geographers, ecologists, sociologists, architects, etc.) who will now begin to be concerned with environmental sound. Having developed a system for the generic classification of sounds the World Soundscape Project researchers will then set themselves the task of studying the patterns of transformation in various types of sounds through history and across geography - an unexplored field of study to which these researchers give the name sound morphology.*

53. *SEMANTICS OF SOUND. What do sounds mean? The study of the semantics of sounds explores their meanings from many angles. A sound may have a physical description and an affective impact; it may be employed as a signal or it may have large symbolic associations; it may be significant because of its*

60. *SOUND ASSOCIATION TESTS. A series of psychological tests to discover social differences in unconscious or associative responses to various environmental sounds. Groups of people are played tape recordings of certain common or uncommon sounds of the environment and are asked to relate them to certain visual matrix shapes and lists of words with pronounced affective qualities (sensuous, humourous, frightening, etc.). Do certain environmental sounds have particular affective qualities which are common to large numbers of people and yet precise enough to enable us to categorize them as socially desirable or undesirable? Such tests will be useful in the general study of sound symbolism and also may have significance for the framing of future noise abatement legislation.*

61. *AURAL FIGURE/GROUND PERCEPTION TEST. In visual perception the figure is what is noticed: the ground remains invisible. The assumption is that the same can be demonstrated for sound (though it has never been proven). The distinctions we can make in hearing are merely those we do make, depending on education or conditioning. Different societies or groups may perceive different things in the same environment. The World Soundscape Project is developing a format for testing such groups and documenting their aural preferences, those sounds which their consciousness selects as figures from the total sonic environment and which in turn broaden as objects of perception to become new grounds upon which new figure details are detected, and so on. Analysis of data about aural figure-within-figure or figure/ground perception sequences will add much to our knowledge of acoustic ecology, the way man listens, and what he tries to hear in his world.*

62. *ACOUSTIC TRAUMA IN SYMPHONIC MUSIC. Acoustic trauma is a condition of sudden aural damage resulting from short term intense exposure or even from one single exposure to loud sound. Various studies have been conducted on rock music, demonstrating that it frequently reaches intensities which may produce acoustic trauma in performers or listeners. All evidence to date shows that it is not typical of a symphony orchestra to produce such dangerous sounds. Lebo and Oliphant (Music as a Source of Acoustic Trauma, Journal of the Audio Engineering Society, October, 1969) ran tests from a station in the centre of the orchestra and still came to the same conclusion. However, two facts about their study suggested that more research should be done in this area. Firstly, they did compute symphonic sound pressure levels as high as 100 decibels (dBA), a level above (by 5 dBA) the State of California Ear Risk Criteria*

for the corresponding frequency band. Secondly, the music measured was from Moussorgsky's Pictures at an Exhibition - written in 1874 and orchestrated by Ravel in 1922. Hearing the trend toward bigger orchestras and louder music, the World Soundscape Project is conducting further tests during the rehearsal of larger and noisier compositions of the twentieth century, from Stravinsky's Rite of Spring to the massive sound-flow of today's avant-garde composers. Data on the Vancouver Symphony Orchestra and various school and university bands have already been collected. The Workmen's Compensation Board and the Musicians Union will be made aware of the danger levels reached.

63. *SOUND PREFERENCE TESTS. This is a series of recorded environmental sounds played to groups of listeners, who are asked to rank the sounds in order of preference. Of particular interest is the amount of cultural variation in the response to the same sounds or types of sounds.*

64. *SOUND VISUALIZATION TESTS. A number of different environmental sounds are played to groups of listeners, who are asked to draw the sounds as they hear them. Such groups as musicians, acoustical engineers and untrained children will project these sounds in various ways, depending to a large extent on the notational systems (in the case of trained professionals) they are familiar with.*

70. ONOMATOPOEIA IN DIFFERENT LANGUAGES. Some words in a language not only name a sound but also suggest a more or less stylistic imitation of it. This is particularly true of words for animal and other natural sounds. Such expressions in as many languages as possible are being collected - for a dog-sound: bow-wow (English), arf-arf (American), gnaf-gnaf (French), ouch-ouch (Turkish); a cat-sound: meow, purr-purr (English), ron-ron (French), schnurr-schnurr (German); sheep: baa-baa (English), mee-mee (Greek); a bell: ding-dong (English), din-don (French), bim-bam (German); a sneeze: ketchoo (American); atishoo (English); etc. These words are recorded being pronounced carefully by native speakers, and notated in the International Phonetic and Roman alphabets. Artificial words for animal sounds in art works (the chansons of Janequin, the poetry of Arnaut Daniel) and other words of onomatopoeic origin (for bell, whisper, wind, etc.) are being collected in many languages. This project may reveal interesting insights showing how different groups of people perceive the significant features of such sounds differently - e.g. the sounds employed by children and artists being closer to the original sources than those of refined literary language - and conversely, which words or phonemes are universally used for particular environmental sounds. The project may also discover more about how language alters perception.

80. WIRED BACKGROUND SOUND. The use of wired background sound in public places parallels the development of subliminal advertising techniques on T.V. and elsewhere. Low-profile background music accompanies our shopping, dining out, travelling, even our working. Why? What are the effects of wired background sound on consumers, employees, employers, the sales representatives themselves? How does this presence affect the quality of our lives? This project is collecting and collating data about this phenomenon in the form of questionnaire surveys, recordings, advertising material, psychological studies, statistics on usage, etc. The project also investigates the use of one continuous noise (e.g. broad-band sound or 'white noise') to 'hide' or mask another.

90. A SURVEY OF COMMUNITY NOISE BY-LAWS IN CANADA (1972). A compendium of noise legislation in 90 Canadian communities of populations over 25,000. It includes information from municipal officials regarding enforcement of by-laws, the number of complaints laid, the noises causing them, and the convictions obtained. The introduction considers certain facts about noise pollution, analyses the material collected, notes emerging trends, draws attention to model by-laws and offers advice on how to improve existing legislation and enforcement tactics, as well as providing a bibliography on the subject, and a legal guide to the citizen plagued by noise. This survey, which gives the first overview of municipal noise legislation in Canada, is now published and is available. (Cf. Subproject No. 100.)

91. A WORLD SURVEY OF COMMUNITY NOISE BYLAWS. Following the format of the original Canadian survey, this collection of bylaws from major cities of the world will be the first of its kind, and will develop the idea of "taboo" sounds as found in different cultures.

100 - 109 Presentation

100. DOCUMENTS. The world Soundscape Project is issuing a series of documents which presents its research findings to the public in various forms. The following documents have been completed and are available:

1) *The Book of Noise - a primer on noise pollution for the citizen; also suitable for schools. *Available from Price-Milburn Co., Box 2919, Wellington, N.Z.*
2) *Okeanos - a 90-minute quadraphonic tape composition in which a genealogy of images of the sea attempts to bring a sense of ocean to the listener. On rental from the composers.*
3) *The Music of the Environment - an article originally written for the UNESCO Journal of World History, on man's changing relationship to the sounds of the world environment. Price: 50¢.*
4) *A survey of Community Noise By-Laws in Canada (1972) - a compendium of noise legislation in 90 major Canadian cities, with commentaries, analysis and a guide to the citizen on legal action. (Cf. Subproject No. 90.) Price: 50¢.*

(All prices for printed documents to date are to cover postage and handling costs only.) The next document to be issued is a two-record-plus-booklet set called The Vancouver Soundscape. (Cf. Subproject No. 40.)

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