

CHAPTER THREE

THE ANALYSIS OF THE WORLD SOUNDSCAPE PROJECT'S WORKS

This chapter aims at analysing and understanding some of WSP's works as shown in the chronological chart which ends Chapter Two, specifically, those works numbered from 1 to 10. These works are considered by the present writer to be characteristic of the WSP's activities as the Project evolved. Basically, one work is chosen from each year. The works which will be discussed are "A Social Survey on Noise - Vancouver 1969" (1969), The Book of Noise (1970), Okeanos (1971), A Survey of Community Noise By-Laws in Canada (1972) (1972), The Music of the Environment (1973), The Vancouver Soundscape (1974), Five Village Soundscapes (1977) and Handbook for Acoustic Ecology (1978). Besides these works, one research study "Cross-Canada Soundscape Tour", which was carried out during 1973 and reported in 1974, and one Radio Programme, Soundscape of Canada, broadcast during 1974, will also be focussed on. The discussion of "Cross-Canada Soundscape Tour" provides a good example of the Project's field research activities in general, and the analysis of Soundscape of Canada supplements one's understanding of the Project's works other than written publications.

The reason no work is selected from the years 1975 and 1976 is that, although we have some related works by the

members of the Project which are indicated on the chart, and although these works are quite significant as a part of the Project's work, the present writer does not see the same immediate relationship between them and the activities of the WSP as a whole, in contrast with the works numbered 1 to 10. In what follows the individual works are analyzed in chronological order.

A SOCIAL SURVEY ON NOISE - VANCOUVER 1969

In the autumn of 1969, Schafer gave further classes on noise pollution. This time, he organized a social survey on noise as an activity for the class. About twenty-five students, who were registered in the Communications 100 courses, participated by interviewing Vancouver residents on the subject of community noise. Schafer explains this survey as follows:

About 650 people were interviewed on a door to door basis selected at random over a grid including Vancouver, Burnaby and New Westminster... The answers for the first questions have been broken down into general age and occupation categories to facilitate cross-sectional analysis. This did not seem so necessary with the final questions.¹

The interviews were based on eight questions including "To what extent do you find noise a problem in modern life?", "Are you aware of the Noise Abatement procedures and legislation in your Community"? and "Are you in favour of more research into the problem of noise (even if it costs money)?" As for the conclusions, Schafer reports the following:

¹R. Murray Schafer, "Results of a Social Survey on Noise - Vancouver 1969", (1969), p. 1.

Well over 50% of the people polled regarded noise in modern life as an important or even major problem. Of those familiar with the noise abatement procedures and legislation in their community, 66% were dissatisfied. 76% of those polled are in favour of more research to combat noise ... and perhaps most interestingly of all, 60% were not convinced that noise was a necessary consequence of progress - an ancient and, thankfully, dying myth.²

Although these statistics show that more than half the population of the communities are interested in noise pollution, it was also confirmed through this survey that there are still many people who are not aware of, or interested in, noise pollution. Schafer also writes in the conclusions:

While community noise has to some extent always been a problem, it has been regarded generally as a relatively unimportant issue. By-laws are tame; many of them are ancient.³

The main purpose of this social survey was to acquire statistical information about the public's interest in, and opinion of, the problems of noise pollution. However, there is another important point which we should not overlook. That is, the Project used this survey as a part of its political strategy. In the Project's political strategy to combat

²Ibid., p.1.

³Ibid., p.1.

noise in modern society, as we have seen, there are two basic approaches: indirect and direct. In this survey, the former is used. The indirect approach involves raising the political consciousness of individuals so that they start influencing their government. The experience of being visited by students with a questionnaire about noise, and of being asked questions such as "are you aware of the Noise Abatement procedures and legislation in your Community?" could make the individuals interviewed more aware of, or interested in, this issue.

Since during this survey the flow of information was one-directional, from the public to the Project, the political strategy here was to stimulate public interest in the problem, rather than to provide specific information regarding the political aspects of noise pollution, as is seen in the case of later activities by the Project.

THE BOOK OF NOISE

The Book of Noise (1970) by Schafer is a pamphlet which is divided into twenty-four brief sections. This publication attempts to increase public awareness and understanding of noise and its effects. The present writer finds it significant that, although this book is specifically about noise, the Project's concern about this issue derives from the broader concept of "soundscape". In fact, this is the publication where the Project proposes its idea of "soundscape" for the first time.⁴ When Schafer introduces the concept of "soundscape", he suggests that the first way to help or reduce noise pollution is "to cultivate the habit of listening".⁵ Schafer encourages the reader to critically listen to the surrounding environments:

Listen carefully with seismographic delicacy to the sounds of the environment around you.... Listen each day and ask yourself questions about the sound heard. Ears are precious instruments. They should be used critically. Man is the predominant maker of sounds in the modern world, the

⁴Although Schafer's The New Soundscape (1969) already deals with the concept of "soundscape", it is not considered by the WSP as a part of its work. In fact, "A Brief Introduction to The World Soundscape Project" on pages 165-167 in Handbook for Acoustic Ecology (1978) identifies The Book of Noise as the Project's first formal publication.

⁵Murray Schafer, The Book of Noise (1970), p.3.

chief composer of the world soundscape and symphony. Will his composition be distinguished for its elegance and beauty or for its lousy orchestration?⁶

According to Schafer, "noise" is basically defined by two closely related factors. The first factor is the relationship between a certain acoustic phenomenon and the listener, that is, whether the person does or does not want the sound. Schafer emphasizes this "relative" aspect of the definition of noise:

Noise is unwanted sound. It is accordingly distinguished from signals, which are wanted sounds.... Noise is any undesired sound. Noise is the wrong sound in the wrong place. This makes noise, to be sure, a relative term. The same sound heard in different settings may be either wanted or unwanted, signal or noise.⁷

The second factor is the "symbolism" of the sound. Schafer argues that symbolism of a sound determines the reaction the person has to the sound. This point is explained in the following manner:

⁶Ibid., p.3.

⁷Ibid., p.4.

The susceptibility of individuals to different kinds of sound will be different; moreover... the special symbolism we tend to attach to certain sounds is most important in deciding whether they are to be regarded as signals or as noises.⁸

This leads to one of the problems of noise pollution, which tends to be neglected in most cases of noise abatement regulation. Schafer suggests that noise control regulations should consider not only measured sound levels but also the symbolism the individual sounds have for the society:

Thus while noise, like all sound, can be measured, we should not conclude that noise can be controlled adequately by regulations which fix arbitrary limits on certain sounds. This is only possible where such sounds constitute positive health hazards or by unanimous consent concerning their social undesirability.⁹

Schafer identifies "power and progress" which is evoked by the sounds of motors as an example of the prevailing symbols of technological sounds in this society. This point is referred to in the following manner:

⁸Ibid.

⁹Ibid.

Today the hard-edged throb of motors can be heard around us almost continuously. What does the motor symbolize? Two words: power and progress. Technology has given man unprecedented power, in industry, in transportation, in war, power over nature and power over other men. We are infatuated with the motor's speed, efficiency, regularity and the extensions of personal and corporate power it has afforded us.¹⁰

Against this prevailing symbolism of noise, Schafer proposes a different interpretation of noise, that is, "noise in a machine is a sign of inefficiency, an escape of energy".¹¹ Schafer suggests that it is only possible for people to start seriously designing less noisy machines when the symbolism of noise changes from "power and progress" to "inefficiency" in the thoughts of the majority of people in society.

These two factors discussed above characterize the WSP's approach to the issue of noise, which is uniquely based on a much broader concept of "soundscape" and on its concern for the relationships between environmental sounds and society. In comparison to other more quantitative and scientific approaches to noise in such fields as acoustics, urban planning and otology, the present writer considers the WSP's approach

¹⁰ Ibid., p.14.

¹¹ Ibid., p.15.

to the issue to be deeper and more realistic in considering actual human reactions to sounds. Based on this general view of soundscape, The Book of Noise deals with the following two themes: 1) to provide adequate knowledge and understanding of the problems of modern acoustic environments; 2) to propose the solutions to noise pollution.

The first theme begins by discussing the destructive effects noise has on human health. Schafer first describes hearing loss caused by overexposure to noise, which is exemplified by "boilermakers' disease", hearing impairment caused by working in proximity to noisy machines. Schafer also states that noise has harmful effects not only on our hearing organs, but also on other parts of our body, as well as on mental health. He points out as an example the people suffering from nausea, fainting and epilepsy-like fits as a result of living near a rocket launching-pad. He especially notes the effects caused by "infrasonic noise", sounds which are very deep, below our ability to hear them. Exposure to infrasonic noise can lead to "mild nausea, giddiness, ... coughing, severe substernal pressure, choking respiration, salivation, pain on swallowing, ... impairment of vision ... headache and testicular aching".¹²

¹² Ibid., p.12.

This discussion is enlightening because it clearly outlines the wide range of human afflictions which can be caused by excessive noise. Providing this knowledge to the public is important because their awareness about the destructive effects of noise is usually confined to "hearing loss".

In order to describe the prevalence and rapid increase of noise pollution in modern society, Schafer introduces the ideas of "sound imperialism" and "the modern city as blitzkrieg". Schafer explains noise pollution, which is not world wide, as the ultimate result of Western civilization and imperialism:

The huge noises of our civilization are also a crude manifestation of this same imperialistic ambition. We are now in danger of erasing all acoustic refinements with an environmental soundscape that is characterized exclusively by its amplitude and brutality.¹³

As well, Schafer compares the acoustic environment of the modern city with a "blitzkrieg". He describes the urban acoustic landscape as a "neighbourhood Blitzkrieg" in which buildings are continually destroyed and erected, creating a permanent level of uncomfortable noise. He sees this as being like "warfare" in that "For the first time in history ... man is

¹³Ibid., p.13

less safe in the heart of his city than outside the city gates".¹⁴

The above discussions might sound too metaphorical. However, the present writer believes that these metaphors are useful in making the reader understand how critical noise pollution is in modern society.

Then, in order to provide a more specific understanding of noise pollution, Schafer draws attention to the noise in the sky, which is one of the most characteristic noises of the modern acoustic environment. He points out that until recently only a limited number of people living close to airports suffered from aircraft noise; however, because of recently increased air-traffic, the problem has become a general concern for everyone.

Schafer characterized the problem by its indiscriminate pattern of incidence. He remarks:

Noise in the sky is distinguished radically from all other forms of noise in that it is not localized or contained. The plangent

¹⁴Ibid.

voice of the airplane motor beams down directly on the whole community, on roof garden and window, on farm and suburb as well as city centre.¹⁵

This problem has been identified and there is much research taking place on the issue of aircraft noise. However, according to Schafer, the research has dealt primarily with large aircraft. Legislative responses have similar limitations and failings. Schafer also indicates that Canadian airports should regulate noise appropriately by establishing maximum permissible noise levels and enforcing these limits by computerized monitoring systems which are already used in other countries.

Furthermore, the discussion of the "sonic boom" provides knowledge about a certain type of noise pollution in the sky, that is, the noise caused by the supersonic transport (SST). A sonic boom is a noise like a thunderclap produced by the supersonic aircraft when it flies faster than the speed of sound. It is characterized by its extremely wide bang-zone and its destructive power. Schafer explains it as follows:

Unlike the sound of present aircraft the bang-zone of the SST boom will be about 50 miles wide and will extend along the

¹⁵Ibid., p.17.

entire length of the aircraft flight path several thousands of miles... In addition to their startling noise the heavier vibrations of sonic boom can cause serious property damage, smash windows, crack walls and ceilings.¹⁶

He points out that, except for some countries which "have banned the flight of SSTs over their territory outright", there is not enough regulation on the part of the air industry and the government. This means that Schafer's concern about the destructive effect of noise is not confined only to human health, but also includes property damage.

Schafer argues that the commercial airlines' inadequate approach to aircraft noise is one of the causes of noise pollution from the sky. He criticizes the management policy of airline companies which, he believes, spend a large amount of money on hiding the problem, or pretending that aircraft noise does not exist, rather than trying to find positive solutions to it.

As examples, Schafer quotes advertisements such as "Whisper Jet Service" (Eastern Airlines), "Fly across the Atlantic on the quiet (BOAC), and "We have smart new DC-9 jets with their engines quietly at the rear"(Air Jamaica). Of these deceptive approaches by the airline companies, Schafer writes:

¹⁶Ibid., p.18.

What obligation does an airline have to people outside or beneath its aircraft? At the moment, regretfully, none. Legally none, and morally, to judge from the advertising, not much either.¹⁷

Schafer also criticizes the busy schedule prevalent at many airports; using the example of Vancouver's in-town sea-planeport. He also points out that in Vancouver neither the airline companies nor the government provide a service whereby the citizen can complain about airplane noise. He attributes noise pollution partly to careless management of companies, by stating that "Not all the problems are macrocosmic or irremediable; some are just sloppy management".¹⁸

These discussions related to aircraft noise indicate the Project's concern for the social aspect of the issue. Instead of dealing with noise pollution simply as an acoustic problem, the project has tried to incorporate related social activities surrounding the noise issue into its perspective.

Furthermore, Schafer applies this social perspective more directly to understanding the implications of noise pollution in modern society. Schafer considers noise as waste sound, and insists on the necessity for self-restraint.

¹⁷Ibid., p.20.

¹⁸Ibid., p.21.

Using the examples of self-abnegation which is evident in oriental religions, and the customs of fasting in many cultures, Schafer explains how restraint used to be practiced in the past:

Every society of the past has had some built-in philosophy of restraint, some opportunity for people to cultivate the practice of self-discipline and self-denial. Even when there was food enough, the early Christians rigorously practiced Lent... Man refrained from doing what he very well could do in order to gain discipline over himself.¹⁹

Schafer thinks that the modern society ignores, neglects, even ridicules these practices. He characterizes modern society as "a society of indulgence, gratification, production, population and waste". He considers noise as "a fitting symbol for [this] vulgar epoch." He concludes that men must restore the old self-restraint practices to our modern society, by stating that "in the interests of survival we are simply going to have to learn NOT to do certain things of which we are perfectly capable."²⁰

Furthermore, Schafer suggests, when this indulgence and waste of sound become extreme, the society may come to

¹⁹Ibid., p.22.

²⁰Ibid.

experience a state of "anarchy". According to Schafer, there is a possible correlation between "noise" and "anarchy". That is, he thinks that noise pollution can cause social disorder and chaos.

Schafer's analysis of these social implications of noise pollution is quite remarkable. Before Schafer's contribution to the debate over noise pollution, the battle against noise pollution was simply to protect our health and property from its destructive effects. Practicing self-restraint and stopping society moving towards anarchy, which are social concerns, provide much more fundamental reasons why noise pollution should be battled against than protection of health and property, which are relatively personal concerns.

While the first theme deals with the analysis of the existing modern acoustic environment, the second theme is related to more future oriented concerns. The second theme introduces several concepts and ideas which help the reader to consider possible solutions to noise pollution. For example, Schafer discusses the concept of man as "the basic module", that is the basic unit which may be used as a guide for measuring and designing the acoustic environment. By analogy with the field of architecture, where the human body serves as the module, Schafer considers the human ear

and the human voice as the basic modules for the human acoustic environment. An environment where, because of noise for instance, the human voice cannot be heard properly, or the physical function of our body can be damaged, should be regarded as an acoustically inhuman environment.

Then, if noise in a certain environment is low enough to let the human voice be heard properly and not to harm our health, is that environment acoustically a good one? Schafer disagrees, because he believes that this would not be enough. He emphasizes the fundamental necessity of a quiet space and time for men. That is, he thinks that some quiet space and time in the acoustic environment of a community is a basic need, which is the next idea within the second theme. This is explained as follows:

Just as man requires time for sleep to refresh and renew his life energies, so too he requires quiet periods for mental and spiritual recomposure. At one time, stillness was a precious article in an unwritten code of human rights. Man held reservoirs of stillness in his life to facilitate this restoration of the spiritual metabolism.²¹

Schafer describes how these precious quiet spaces and

²¹Ibid., p.24.

times are destroyed in modern society. According to him, the sounds in modern cities have become so emphatic that our personal thought and behaviour are sometimes dominated and controlled by them. For example, he observes the following about the telephone:

Even the telephone has abbreviated the ratiocinative abilities of Western man in a way not yet adequately understood. Never to be allowed an uninterrupted thought again. Never to be allowed the luxury of concentration on a problem or the beauty of undisturbed sleep.²²

Another concept is "acoustic space". Schafer defines the acoustic space of a sounding object as "that volume of space in which the sound can be heard". For example, the acoustic space of a man or a radio will be the volume of space in which the man's voice or the radio's sound can be heard.

He characterizes the modern technological sounds by their expanded acoustic spaces, which are sometimes much larger than the owner's physical space. He states:

When the world was quieter and sonic incursions fewer, privacy was effectively

²²Ibid.

secured by walls, fences and vegetation. When physical and acoustic space were more congruent the latter required no special attention... Modern technology has given each individual the tools to activate more acoustic space. This development would seem to be running a collision course with the population increase and reduction of available physical space per individual.²³

Thus, modern technology makes it possible for people to create acoustic spaces much larger than their physical spaces. It means that, in this modern city, one can acoustically invade others' privacy without stepping into their physical space. Schafer suggests that, in the present legal system, there is no law which protects one from such an acoustic invasion.

As well, Schafer discusses a new usage of sound to isolate people and to ensure privacy, namely, the concept of "sound walls". In modern society, sound is used "as a painkiller, a distraction of the senses from the real facts of existence", which Schafer calls "audioanalgesia". He considers the use of background music, represented by Muzak, as an extension of this audioanalgesia. He describes Muzak as follows:

²³Ibid., p.25.

It is important in this respect to note that such masking sounds are not intended to be listened to consciously. Thus the Muzak corporation deliberately chooses music that is nobody's favourite, and subjects it to unvenomed and innocuous orchestrations (notice that there are no vocalists or solos) in order to produce a continuous presence of "pretty" designed to mask unpleasant distractions.²⁴

He also recognizes the function of "sound wall" in the extremely amplified sounds of popular music that help the listeners to experience "individuation, aloneness, disengagement" rather than encouraging their sociability. He concludes: "Walls used to exist to isolate sounds. Today sound walls exist to isolate".²⁵ Such concepts and ideas are quite innovative; they are helpful and significant not only when we consider possible solutions to noise pollution, but also when we analyze and understand various aspects of our modern acoustic life.

After discussing these two themes, in the last two sections of The Book of Noise, Schafer suggests two immediate ways that individuals can battle against noise pollution around them. The first is to raise voices of complaint so as to reach the proper areas of government. Schafer writes:

²⁴ Ibid., p.27.

²⁵ Ibid.

Our booklet has presented some facts and thoughts. It is now time for others to speak. It is a time for voices. Voices raised in concern (though, of course, not too loudly). Your voice is needed, gentle reader...²⁶

Moreover, Schafer continues encouraging the reader to:

Help to make known the facts concerning Noise Pollution. Discuss them frequently with neighbours, at meetings and citizens' forums. If you have a citizens' anti-pollution organization in your community, find out what it is doing about Noise Pollution. Help them. If you do not have one you might consider founding a Noise Abatement Society of your own... Make politicians at all levels of government aware of the problem. Talk to them. Write to them. Above all, the next time a noise annoys you, complain.²⁷

Schafer also provides more specific information about what kind of noise should be complained about to which section or to whom in the government. For instance, Schafer encourages the readers to call their municipal hall or write to the Mayor or Council to complain about traffic, construction and demolition noises, to call the Air Services Division of the Department of Transport (Federal Government) or write to the Minister of Transport to complain about all aircraft noise, and to call their local Workmen's Compensation Board if the noise level of their working environment needs to be measured.

²⁶ Ibid., p.29.

²⁷ Ibid.

In the last section, Schafer outlines the second strategy. He encourages the readers to adopt an "oriental solution... a solution so elementary it needs stress". He says:

Respect quiet. Keep silent. Keep silent like the points of a compass, like the mystic, like the forest. Close eyes, sit attentively, and rediscover the merest sounds of all.²⁸

The Book of Noise also provides a selected bibliography for the readers who wish to know more about noise, and the addresses of some noise abatement societies. The postscript refers to the visions of different religions about the end of the world. Indicating that they all contain a prophecy of a mighty noise, Schafer warns that the noise pollution which modern man is producing may be our way of realizing these prophecies.

In The Book of Noise, the Project uses three strategies, that is, conceptual, educational and political. Among the three, the educational strategy is emphasized the most. The whole book, as it is described by the Project itself, is "a primer on noise pollution for the citizen; also suitable for schools". It aims at making the public realize the true

²⁸Ibid., p.30.

danger of noise pollution, and proposes new concepts and ideas that might lead to some possible solutions to the problem. This educational strategy is successful in that the book discusses noise from various points of view including scientific information, anecdotal evidence and philosophical and religious views, all in a style which is familiar and plain.

Some of the sections of this book are related to the conceptual strategy. For example, the second section introduces the concept of soundscape. However, the emphasis in this section is on explaining how to start listening to environmental sound, which is an educational strategy, rather than on giving a clear definition of the term, soundscape. As we have seen before, the concept of soundscape is only suggested by the following sentences:

A fascinating macrocosmic symphony is being played ceaselessly around us. It is the symphony of the world soundscape. And we are its composers.²⁹

Therefore, the conceptual strategy in The Book of Noise should be considered as secondary to its educational strategy.

²⁹Ibid., p.3.

On the other hand, the political strategy is more clearly emphasized in this book. For example, the instruction to the readers on how to complain about noise so that their complaints reach the proper section of the government represents one of the typical tactics of the indirect approach of the political strategy. The part providing the addresses of some noise abatement societies is also part of the same tactic.

OKEANOS

Okeanos (1971) is a 90-minute quadraphonic tape composition, composed by Schafer, Davis and Fawcett at the Sonic Research Studio at SFU. "Okeanos" is the Greek word for "ocean". The meaning of "okeanos" is explained as follows:

The Greeks distinguished between Pantos, the mapped and navigable, and Okeanos, the infinite universe of water. Pantos corresponds to the closed world of Euclidean geometry, Okeanos to mystery and tempestuousness - for a storm on an unknown sea could swallow up a ship without warning or trace.³⁰

In this piece, the ocean is dealt with as an eternal place for the birth of life, for the creation and conservation of energy, and for the restoration of life.

This piece is a search in sound for the symbolism of the sea, that is, "a 'genealogy of images' of the sea attempting to bring a sense of ocean to the listener".³¹ According to Davis, Okeanos is:

³⁰ R. Murray Schafer, The Tuning of the World, (New York: Alfred A. Knopf, 1977), p. 170.

³¹ Barry Truax, ed., Handbook for Acoustic Ecology, (A.R.C. Publications, 1978), p.166.

A composition of contemporary and antique articulations that seek the experience of a being which is at once water, creature and the wonder and terror it invokes in other creatures. The poetry, music and natural sounds have been brought together in such a way that the intention is not collage, but story.³²

Thus, Okeanos is a musical narrative/fantasy based on the image of the sea. This image is developed using natural and electronic sounds as well as voices reading texts.

The composers actually went out to the seashore several times over a period of months to collect the sounds of waves in order to record variations according to the weather and season. They also collected bird songs and calls, and the sound of stones as something or someone moves over them. These sounds are in some cases modified electronically. The electronically produced sounds may be divided into two types: sounds of varying pitches and sounds with no predominant pitch. Generally, the former is used to suggest underwater sounds from different depths; while the latter forms of white noise are used to signify violent waves and storms.

The composers also collected literary works about the sea by various authors. The works were carefully chosen to repre-

³²SFU News Release, March 6, 1972.

sent the images of the ocean taking into account temporal and cultural differences. The sources range from Hesiod's Works and Days to Ezra Pound's Cantos.

As a musical narrative, Okeanos is a story about the evolution of life on the earth, which emerges from the ocean and eventually returns to it. The story is developed using various sound materials which imply the individual events. The content of each text is also carefully related to the development of the story.

The piece begins with the emergence of life at the bottom of the ocean. The primitive stage of life is flowing within the deep sea currents. Then, it evolves further and begins to propel itself within its watery environs. Big waves pull the aquatic life to the surface and then drive it back into the depths. This process is repeated a number of times. But in each case, the aquatic life is carried closer to the surface. Finally, the aquatic life emerges as an amphibian, pulling itself up onto a rocky shore. We hear intermittent sounds of the creature's moving on a rocky beach together with the weak rasping of its breathing.

The advent of a storm is foretold by the Greek myth of Jason. The text reads:

Night threw her shadow on the world,
Sailors out at sea looked up to the circling
bear and the stars of Orion,
Travellers and watchmen long for sleep and
oblivion came at least to mothers
mourning the death of children,
In the town, dogs ceased to bark and men
ceased to call out to one another,
Silence poured from the mind of the darkness,
the gentle sleep did not visit Medea,
in her yearning for Jason fretful cares
kept her awake.
She feared the great power of the bulls,
She saw him face them,
She saw him sink beneath their hooves.
And her heart moved like sunlight thrown
by the waves, to the sea.³³

From the rumbling of the earth erupts an enormous wave and
wind heralding the onslaught of violence from the sea.

Eventually, we are engulfed by the ocean. Together with
a choir singing De Profundis, we hear underwater sounds as
well as a male voice reciting the story of Jonah:

For thou hast cast me into the deep,
in the midst of the seas...

The weeds were wrapped about me...

The storm continues, raging as brutally as before. Suddenly
long blasts of a horn resound from the heavens. The horn
calms the storm, quieting the wind and waves. The moment of
peace returns. After a short silence, we again hear under-
water sounds, now with short recitations of the lament for the

³³This text and the subsequent text are from a tape recording
of Okeanos (1977) dubbed from the WSP's original.

dead in the sea. Finally, we find ourselves standing by the
shore, looking at the ocean, surrounded by the sound of the
waves.

As a musical fantasy, Okeanos uses various techniques
to evoke images in the listeners' minds. At several points
within the piece, the voices reading the texts are electronic-
ally modified. For example, there are two sounds which are
in fact processed recordings of the text. The first has been
speeded up so that we hear nothing but intermittent high
pitched sounds, like birds' tweeting; the other has been mixed
with the sound of bubbles, so that it seems as if the bubbles
within the waves are bringing the voices from the bottom of
the sea to the surface. Another technique overlaps fragments
of voices so that they form a texture which suggests the shape
of waves. The voices are rhythmically interwoven so as to
produce a mass of sound which mirrors the shape of waves as
they move in the water.

Another technique relies on sounds that do not include
voices reading texts. This technique tries to produce
"acoustic illusions" in the listeners' auditory perception.
Over a white noise background which suggests waves and wind,
we hear the emergence of sounds which have relatively high
frequency. These sounds are not distinct, and can be inter-