VANCOUVER RAINSCAPE

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WHY RAIN? WHY VANCOUVER?

(1)

- RAIN IS NOT JUST WEATHER, IT IS A SONIC EVENT
- RAIN TRANSFORMS:
    - ACOUSTIC TEXTURE (FROM SHARP, METALLIC HITS TO SOFT DIFFUSE PATTER)
    - PERCEIVED LOUDNESS
    - SOUNDSCAPE HIERARCHY (RAIN OFTEN BECOMES THE DOMINANT SOUND)
    - BEHAVIOURAL PATTERNS (FEWER PEOPLE OUTSIDE, SLOWER TRAFFIC, ETC.)
- RAIN IS A DEFINING PART OF THE CITY'S ATMOSPHERE, IDENTITY AND LIVED EXPERIENCE. VANCOUVER'S SOUNDSCAPE IS DEEPLY SHAPED BY HYDROLOGICAL EVENTS FROM DRIZZLE TO EXTREME RAINFALL ASSOCIATED WITH CLIMATE CHANGE.

HOW DOES HEAVY RAINFALL TRANSFORM THE SOUNDSCAPE ACROSS DIFFERENT ENVIRONMENTS IN VANCOUVER?

This study aims to understand how rainfall acts as an environmental sound designer reshaping Vancouver's urban acoustic ecology through changes in loudness, spatial diffusion, masking and listener perception.

(2)

METHODOLOGY

(3)

THREE-SITE FIELD STUDY:

SFU BUS LOOP (DENSE, REFLECTIVE SURFACES, TRAFFIC NOISE)

RESIDENTIAL NEIGHBORHOOD (QUIETER, SOFT GROUND, MORE VEGETATION)

URBAN PARK (OPEN SPACE, TREE CANOPY, SOIL/GRAVEL PATHWAYS)

DATA COLLECTION (3)

- Field Recordings:
  5–10 minute audio captures at each location during rain and after rain.
- Decibel Measurements:
  Taken using a mobile sound-level meter app to compare loudness across environments.
- Field Notes:
  Documented immediate observations — weather intensity, surfaces present & human activity.

Tools & Equipment

- Smartphone microphone (or external mic if available) for recording.
- Decibel Meter App for sound pressure measurements.
- Notebook / Phone Notes App for observational notes and memos.

FINDINGS

Residential Area (Hillview St)

DB reading: 48 Avg 54 High

Time: 12:55pm

Observations:

1. Gutter + Roof Drainage Dominating
   - Heavy rainfall made downspouts, gutters, and roof runoff the most prominent acoustic features.

2. Cars: Reduced but Noticeable in Specific Ways

Even though residential streets are quieter, cars still shape the rain soundscape:

- Tire pavement interaction becomes much louder due to wet surfaces.
- Sounds of “wet swooshes” & “splashes”

FINDINGS

Urban Park (Port Moody Park)

DB Reading: Avg 58 High 67.5

Time: 5:31pm

Observations

- Diffuse, softened rainfall sound
- Rainfall disperses across grass and soil, creating a less sharp, more “absorbed” sonic texture compared to hard urban surfaces.
- Leaves, branches and soft ground reduce reflections, resulting in lower overall loudness and fewer high-frequency rain impacts.
- Natural ambiences remain partially audible
  - Rustling branches or wind may still be heard beneath rain.
  - Human presence is limited, creating an “open,” low-density soundscape.

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FINDINGS

SFU Bus Loop (Cornerstone)

BD Reading: Avg 63.5 High 75
Time: 2:45pm

Observations

- Rain on infrastructure: sharp impacts on metal shelters, benches, and signage; creates bright, high-frequency textures.
- Bus traffic masking: engine idling + departures mask lighter rain sounds; during pauses, rain becomes suddenly dominant.
- Human movement: footsteps on wet pavement, umbrella sounds, water splashing as passengers board/exit.

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DISCUSSION

ACOUSTIC CHANGES	• RAIN INTRODUCES A NEW DOMINANT SOUND SOURCE THAT MASKS TRAFFIC, VOICES, AND BACKGROUND NOISE. • WATER INTERACTING WITH SURFACES (PAVEMENT, ROOFS, VEGETATION) ADDS TEXTURE AND INCREASES HIGH-FREQUENCY CONTENT.
SPATIAL CHANGES	• HEAVY RAIN REDUCES LONG-DISTANCE AUDIBILITY → THE CITY FEELS "SMALLER." • HARD SURFACES (DOWNTOWN) AMPLIFY RAIN, WHILE SOFT/VEGETATED AREAS (PARKS) ABSORB SOUND, CREATING CONTRAST.
PERCEPTUAL CHANGES	• PEOPLE PERCEIVE THE ENVIRONMENT AS CALMER OR MORE ENCLOSED. • REDUCED HUMAN PRESENCE + INCREASED WATER NOISE . • RAIN CAN INCREASE FEELINGS OF SHELTER, ISOLATION OR QUIET FOCUS DEPENDING ON SPACE.

DISCUSSION

CROSS-LOCATION COMPARISON	BUS LOOP : TRAFFIC BECOMES BACKGROUND; PRESENCE OF RAIN BECOMES FOREGROUND PARK: RAIN SOFTENS THE ENVIRONMENT; RUSTLING LEAVES + LOW TRAFFIC CREATES AN IMMERSIVE NATURAL SOUNDSCAPE. RESIDENTIAL: SUBTLE SOUNDS (GUTTERS, DRIPPING, DISTANT CARS) CREATE A RHYTHMIC, INTIMATE AMBIENCE.
OVERALL INSIGHT	HEAVY RAINFALL DOES NOT JUST ADD SOUND—IT REORGANIZES THE ENTIRE SOUNDSCAPE, SHIFTING WHAT IS AUDIBLE, HOW SPACE FEELS, AND HOW LISTENERS EXPERIENCE THE CITY.

CONCLUSION

Heavy rain transforms Vancouver into a city tuned by water where familiar noise fades, subtle textures rise and the boundaries between environments blur.
For a moment, the city becomes a single, continuous soundscape shaped by weather rather than human activity.

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