

# Contrasts Tokyo Walks: Composing an Interactive Soundscape Experience

*Iannis Zannos*

*Presented at TAm Music Festival 2021. March 21, 2021*

## **Abstract**

The present paper discusses the conceptual background and compositional procedure for "Contrasts: Tokyo Walks" (short: CTW), a locative sound art piece prepared for a series of locative music concerts entitled "Walking: Spatial Musical Instrument Concerts 2020" (「あるく！ 空間楽器コンサート 2020, "Aruku! Kūkan Gakki Konsāto 2020"). It focusses on two aspects of the "Sonic Walk" project which provided the platform for the creation of the piece: (a) Spatial distribution of sound objects on a map viewed as compositional score to be performed through movement of the audience, and (b) concepts from acoustic ecology and culture theory that guided the choice and arrangement of sounds in the piece. It outlines some ideas from culture theory and musical theory which influenced the development of the piece, cites examples from previous works which deal with these concepts, and discusses how these guided the choice and arrangement of sounds in the piece.

## ***Sonic Walk software as spatial musical instrument***

The "Aruku!" concerts series were organized by Furukawa lab, directed by Prof. Kiyoshi Furukawa of Tokyo University of the Arts, and were created and performed entirely on the new platform for interactive geolocate sound art created by Furukawa lab. This platform forms the core of the "Sonic Walk" project of Furukawa labs and belongs to a category of tools for interactive sound works using interactive online maps as main medium. A distinctive characteristic of the project at Furukawa lab is that it treats the interactive locative medium as musical instrument, that is as a tool that can be used by composers to make music which is experienced independently by members of the audience using the platform. In this sense, the placement of a collection of sounds on the map constitutes a musical score. Thus, in the Sonic Walk project, each member of the audience is a musician that interprets the geo-locative score by perambulating in the area of the map either in real space or virtually on the screen of the device used for the piece. This represents a radical departure from the traditional concept of score as notation of events to be played in a fixed time sequence. While experiments with non-linear scores abound, the locative maps-based approach differs in that it relies on the spatial dimension and the individual listener's actions for its realization. Spatial distribution thus forms a basic element in the formal language of pieces of the "Sonic Walk" project.

The idea for the spatial organization of sounds in CTW was derived from a previous work of mine: Sands of Time (2004). This is a kinetic sound art installation made in collaboration with Jean-Pierre Hebert, using a plotter driving a metal ball to draw geometric patterns on sand. For this piece, I chose Schoenberg's model of harmonic regions as a pattern for arranging tones on the 2-dimensional plane, so that the ball moving on that plane would produce a sequence of tones emulating the movement of chords along the plane of Schoneberg's harmonic regions.

			d#	F#	f#	A	a	C
			g#	B	b	D	d	F
			c#	E	e	G	g	Bb
	d#	F#	f#	A	a	C	c	Eb
	g#	B	b	D	d	F	f	Ab
	c#	E	e	G	g	Bb	bb	Db
F#	f#	A	a	C	c	Eb	eb	Gb
B	b	D	d	F	f	Ab		
E	e	G	g	Bb	bb	Db		
A	a	C	c	Eb	eb	Gb		
D	d	F	f	Ab				
G	g	Bb	bb	Db				
C	c	Eb	eb	Gb				

*Figure 1: Schoenberg's Map of Harmonic Regions*

A further source of influence on the design of the piece was the research on neural networks in harmonic analysis (Marc Leman 1996). I tried to model the idea of activation spreading between nodes in a network directly by scaling the amplitude of adjacent nodes in the grid of tones in inverse ratio to their distance from the position of the ball on the drawing table. This enabled me to enrich the sound palette of the installation by juxtaposing two contrasting types of textures in different areas of the table, namely percussive sounds on single pitches vs. smooth textures on chords. Here is an extract from the piece:

In contrast to the straightforward rectangular area which formed the spatial framework for "Sands of Time", the sound recordings for CTW had an irregular layout which derived from my spontaneous sound walk along the northwestern perimeter of Tokyo University Campus and around Shinobazu Pond. From a total of more than 2 hours of recordings, I selected 15 sound samples, resulting in the following layout on the map:

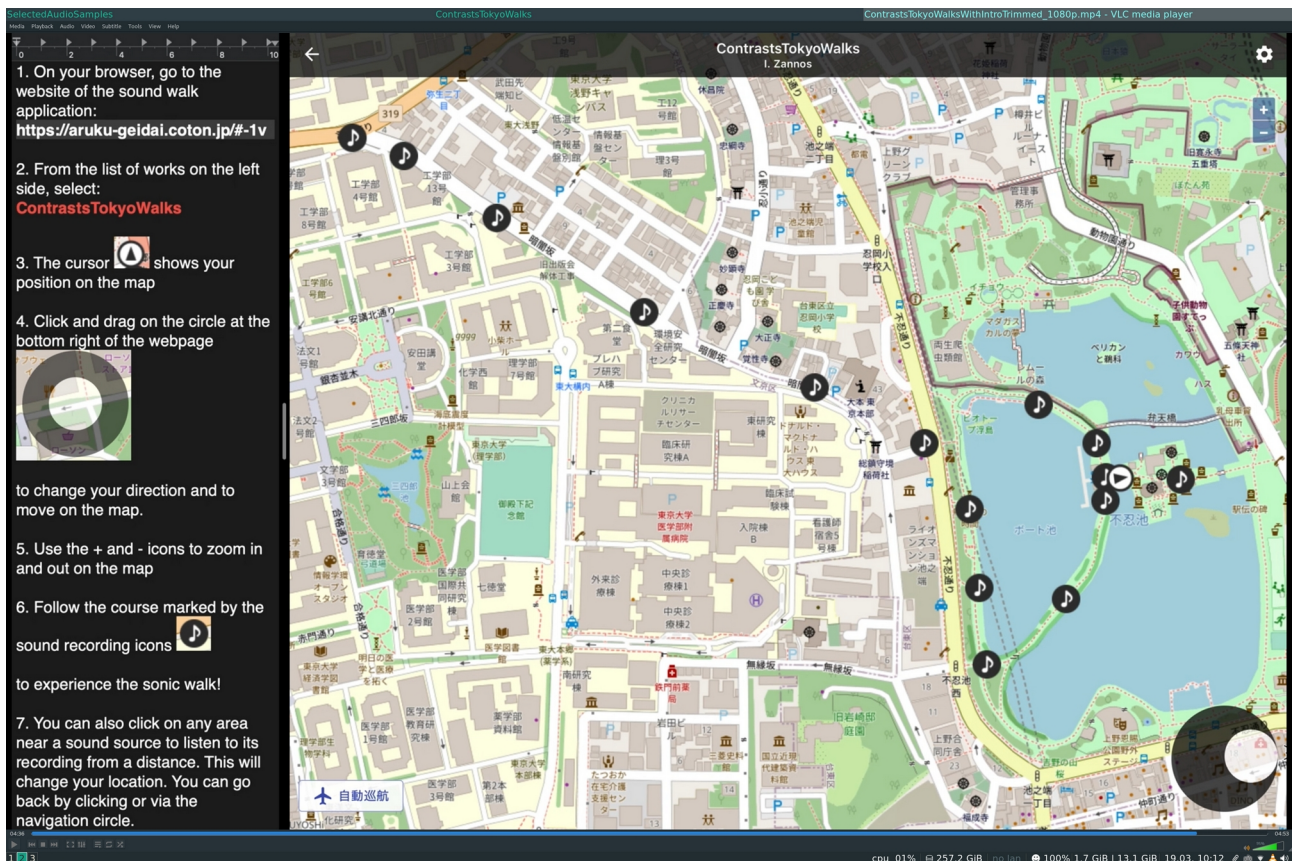


Figure 2: Map of Contrasts: Tokyo Walks

The urban Environment of Tokyo is particularly rich in contrasts between artificial and natural sounds. The Differences and contrasts between sounds which are easily overlooked when walking through an urban environment become magnified when listening to recorded sounds which constitute snapshots of characteristic moments and have a prominent spectral or structural sonic profile. The contrast between sounds produced by humans and machines, and those produced by insects, birds and the wind reminded me of the concepts of Biophony and Anthropophony from Bernie Krause's Acoustic Niche Hypothesis in Acoustic Ecology. In the process leading up to CTW, I drew from the experience of an earlier experiment on a similar theme. This was entitled Rhythmanalysis, inspired by the analysis of rhythm in the experience of urban space in the synonymous work of Henri Levebvre. Written for a project dealing with the Migration crisis in the Eastern Mediterranean in the early 2010's, this piece attempted a speculative recreation of the coexistence of animal species from remote and contrasting domains, namely swallows recorded by myself in Corfu and Wedell Sea Seals from Antarctica from the Macauley library of Natural Sounds at Cornell. Here are 2 excerpts, the beginning of the piece, and the clash-like climax at 6-7 minutes.

The ambience along Tokyo Campus perimeter and Shinobazu Pond is conveyed in the piece through sounds recorded at timepoints during the day purposely selected to intensify the characteristic ambience of each location. The inherent musical potential of these sounds becomes apparent as the listener navigates between the locations paying attention to their different sonic profiles. The samples selected are:

### **1.0.1. kiroi**

"Kiroi" contains the call of a boy calling out "kiroi" (yellow) at the street crossing of kototoi dori and hongo dori, to indicate to his companions that the street light has gone yellow. This marks the beginning of the sound walk.

### **1.0.2. bird\_cricket**

Along Kototoi Dori: lots of passers-by, steps on road, bicycle, voices, isolated bird-like cricket call, insects, static noise from electrical cables.

### **1.0.3. cricket\_ff**

Recorded at Kototoi Dori, under bridge between Yayoi Campus and Engineering Campus, this section contains the loudest insect sounds, shrill cricket sounds, mixed with loud hum from electrical cables and transformers.

### **1.0.4. loud\_cricket**

Still along Kototoi Dori, loud, disruptive passage of cars, mixing in with the sounds of crickets and electrical cables.

### **1.0.5. crickets**

Cricket sounds, with distinct single cricket calls at intermittent intervals.

### **1.0.6. echo\_cricket**

Chorus of crickets, interspersed with rhythmic calls, from the region just after the Yayoi gate of the campus. The concentration of insects is higher here because of the trees around the perimeter of the campus, and the sounds reflect off the walls creating echoes.

### **1.0.7. cricket\_taps**

In the vicinity of a vending machine, a more low pitched rhythmic cricket call.

### **1.0.8. hanbaiki**

Closeup of the sound of the vending machine (brief excerpt).

### **1.0.9. crossing**

At the crossing to the perimeter path of Shinobazu pond, brief screech of car brakes at the crossing signal, and alternation of car noises with softer background ambience from the pond region.

### **1.0.10. lake\_plane**

Walking on the path along the pond, the tranquil atmosphere of the waters is overwhelmed by sounds of helicopters and airplanes flying overhead and of cars on the road by the path. The crickets' calls become more audible towards the end.

### **1.0.11. melodic\_road**

On the path between the perimeter and the temple, the car sounds recede to the background, the insect calls become more prominent and melodic, and are interspersed with steps and talk of passers-by.

### **1.0.12. rough\_steps**

Still on the path between the perimeter and the temple, approaching the temple: Alternating steps of passers-by and cricket calls.

### **1.0.13. sweet\_crickets**

At the other side of perimeter path of Shinobazu pond, the crickets possess the night atmosphere, as much as is possible in a busy city centre. Children talking in the distance.

### **1.0.14. pilgrims**

"pilgrims" is the final sample, marking the end of the walk. It contains the loud high-pitched sounds of insects mixed with the steps and dialogue of two chinese women visiting the temple to pay their respects to the effigy of Ugajin (宇賀神) at the entrance.

## ***Conclusion***

This was my first experiment with Sonic Walk as a compositional tool and instrument. I wanted to see how a soundscape is re-created from the original recordings using the online maps as instrument. The treatment of sounds was thus limited to selection of samples, and minimal processing to make looping possible. An interesting outcome was the unexpected emergence of a narrative from the sounds, when listening to them in sequence while paying analytic attention to the details. A reference to the modes of listening of Pierre Schaeffer suggests itself for future work. A further item included in the future work agenda is a more musical re-composition of the soundscape involving processing of the recordings based on the narrative. Epilogue

Walking in an unfamiliar city is like being in a labyrinth. In that sense, the myth of the Labyrinth may well be one of the early myths dealing with the creation of the first cities, and the transition to complex civilized societies, as also suggested by its association with its constructor Daidalos as the primordial architect/engineer. At the same time, both the myth and archaeological evidence suggests early associations between technologies of navigation and the construction of mental virtual space models. Thus, ancient Labyrinths, modern online Maps, and interactive soundscapes are all connected to primordial civilizational themes of virtual worlds as central notions interconnection technology and civilization.



*Figure 3: Claude Shannon's with his Theseus project: A mouse learns to traverse a Labyrinth, as an early experiment in Artificial Intelligence.*

## **References**

### **1. Publications**

- Behrend, Fauke. "The Sound of Locative Media". *Convergence, The International Journal of Research into New Media Technologies*, 18(3), pp. 283-295. (PDF): [https://www.researchgate.net/publication/258129776\\_The\\_sound\\_of\\_locative\\_media](https://www.researchgate.net/publication/258129776_The_sound_of_locative_media)
- Grosliéziat Chantal. 2003. « Les quatre écoutes selon Schaeffer », In : , *Bébés chasseurs de sons. Premières sensations et créations sonores*, sous la direction de Grosliéziat Chantal. Toulouse, Érès, « 1001 bébés », 2004, p. 109-116. URL : <https://www.cairn.info/bebes-chasseurs-de-sons--9782749212791-page-109.htm>
- Indans, Reinis, Hautal, Eva, and Burghardt, Dirk. "Towards an Audio-Locative Mobile Application for Immersive Storytelling". *KN: Journal of Cartography and Geographic Information* (2019) 69:41-50. <https://link.springer.com/article/10.1007/s42489-019->



## 00007-1

- Lefebvre, Henri. 1992. Éléments de rythmanalyse. Paris: Éditions Syllepse.

### 2. Labs, Organizations

- Furukawa lab: <http://furukawalab.org/>
- Echoes labs : Geolocated sound and audio AR: <https://echoes.xyz/>
- noTours <http://www.notours.org/> (Augmented Aurality for Android)
- Sonic Maps : <https://sonicmaps.xyz/>
- GMS Museum : <https://gpsmuseum.eu/engine/>
- Hush City Mobile Lab : <http://www.opensourcesoundscapes.org/research/hush-city-mobile-lab/>

### 3. Projects

- Sonic Walk Project at Furukawa lab: <http://furukawalab.org/2019/11/30/%e3%82%bd%e3%83%8b%e3%83%83%e3%82%af%e3%82%a6%e3%82%a9%e3%83%bc%e3%82%af-%e3%83%97%e3%83%ad%e3%82%b8%e3%82%a7%e3%82%af%e3%83%88-sonicwalk-project/>
- My City, My Sounds (ZKM) <https://zkm.de/en/project/mycity-mysounds>
- Next City Sounds (ZKM) <https://zkm.de/en/project/next-city-sounds>

### 4. Events

- Next City Sounds @ ZKM <https://zkm.de/en/event/2015/12/globale-next-city-sounds>