Max/MSP Patch & SuperCollder Synth:

The Silk RoadFantasia

The Silk Road Fantasia is a computer music work consisting of a Max/MSP patch and a SuperCollider synth, presented in two parts: *The Silk Road Fantasia: Journey* and *The Silk Road Fantasia: Desert.*

The Silk Road Fantasia: Journey is an improvised interactive electronic music piece that combines vocals, Zhongruan (a traditional Chinese folk instrument), and real-time interaction with Max/MSP. It uses a unique blend of Western Chinese vocal techniques, conventional Chinese instrumentation, and modern music technology to narratively depict the journey of Zhang Qian, the ancient Chinese explorer who opened up the Silk Road.

The Silk Road Fantasia: Desert is a SuperCollider live coding work. It primarily uses atmospheric synthesizers defined by the "SynthDef" module to evoke the vastness and mystique of the Silk Road desert landscape.

These two pieces—created with Max/MSP and SuperCollider—offer a fresh interpretation of the exploration of the ancient Silk Road, merging traditional storytelling with the power of modern audio-programming environments.

Max/MSP Patch: *The Silk Road Fantasia: Journey*

-for Vocal, Zhongruan, and Max/MSP

YouTube Link: *https://youtu.be/9rqJU8SELoo?si=aK_6rgneej6O2GOi*

The Silk Road Fantasia: Journey is a piece of improvised interactive electronic music. It is inspired by the story of Zhang Qian's expedition to the Western Regions during the Han Dynasty, which led to the foundation of the Silk Road. It combines vocals

and the traditional Chinese instrument, the Zhongruan, with real-time interaction through Max/MSP to create an improvised interactive electronic music performance. Within Max, I designed various interactive effects (Fig. 1) to reflect the challenges of founding the Silk Road. The Zhongruan, an instrument I used in the performance, has great historical importance as it is the predecessor of the Han Pipa and played a significant role in musical and cultural exchanges along the Silk Road.
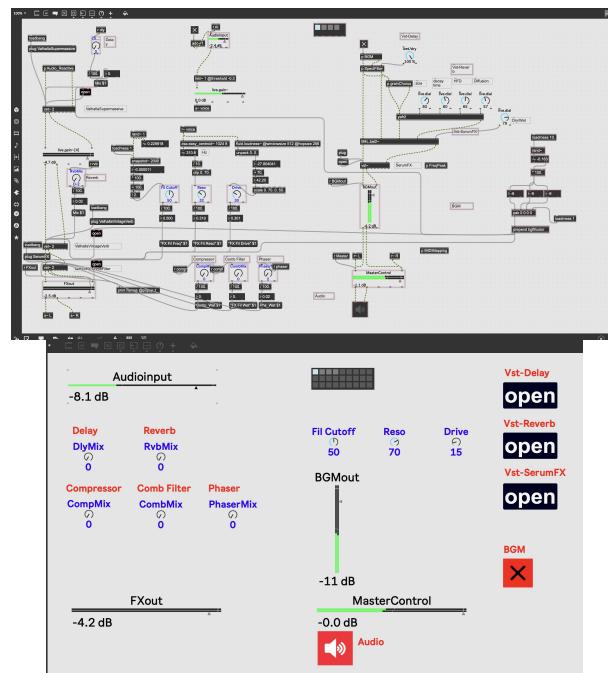

Fig. 1. Original patch & presentation mode

1. Technology Documentation:

I primarily designed two sounds in Max: a background sound and a jumping sound, both controlled by Zhongruan and vocals.

Background Sound: I connected a granular FM soundscape pad to a spectral filter. In this spectral filter, the spectral data comes from "zsa.easy_bark~" object (Fig. 2) that analyzes the signals from the microphone in real time, and "zsa.easy_bark~" object can analyze the bark coefficients in the input signal and feed them into the

spectral filter to generate a drone sound controlled by the vocals and Zhongruan, symbolizing the strong winds of the Silk Road's vast deserts.

Jumping Sound: Based on "FluCoMa's Audio-Reactive" patch, I created a synthesizer that changes according to the microphone input in real time. I also designed a pair of thresholds for controlling "fluid.onsetslice~" object binaurally and used the "fluid.loudness~" object to analyze the true peak of my voice in real time. Through various mathematical operations (absolute values, addition, subtraction, multiplication, division), I made it so that the stronger my input signal, the lower the threshold would be, resulting in a denser Max-generated sound (Fig. 3). Within this effect, I also added objects to the right channel that randomly adjust the threshold within a specific range, aiming to bring more random and experimental effects to the performance. These sound effects also symbolize the grains of sand blowing across the deserts along the Silk Road.
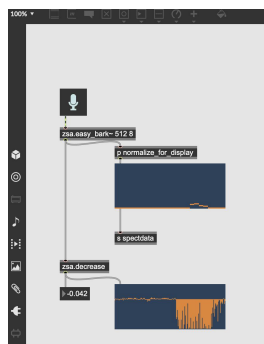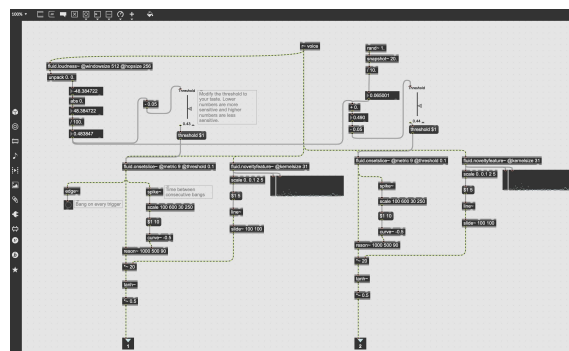

Fig. 2   **Fig. 3**

Building upon the two primary sounds mentioned above, I also incorporated effects such as "Valhalla Supermassive", "Valhalla Vintage Verb", and the comb filter and Multiband Compressor from SerumFX to add more complexity and variety to the jumping sound effect in Max (Fig. 4). These effects were mapped to the AKAI Midimix controller (Fig. 5), allowing for real-time adjustments during the

performance. Through these dynamic changes, I aimed to enhance the piece's complexity, tension, and emotional impact.

Fig. 4   **Fig. 5**

I used a Neumann TLM170 large diaphragm condenser microphone to capture the sounds of the Zhongruan and vocals, which are fed into Max for interaction, and a pair of Neumann KM184 small diaphragm condenser microphones for live recording.

The piece is 5 minutes and 30 seconds long, and it consists of an introduction, two contrasting parts, and a coda.

2. Music Documentation:

Intro (00:00-00:48):

The piece starts with vocals singing three words from ancient Chinese poetry depicting the Silk Road: "Tian" (heaven), "cang" (vast), and "ye" (wilderness) from the phrase tian cang cang, ye mang mang (the sky is vast and boundless, the wilderness stretches endlessly). In real-time, the Midimix controller gradually introduces the background drone sound from Max. As the plucking of the Zhongruan

intensifies, it brings out the jumping sound effect in Max, illustrating the early stages of the expedition into the desert along the Silk Road.

Part I (00:48-02:18):

After the introduction, a background sound of bells (Fig. 6), symbolizing camel bells along the Silk Road is played in Ableton Live and continues until the end of the work. The vocals shift to fragments of the Uyghur greeting ياخشىمۇسىز (yaheshimosezi), paired with the Zhongruan to propel the music forward. A higher dry/wet ratio of the reverb effect controlled by MidiMix enhances the sense of space, followed by tremolo and glissando techniques on the Zhongruan accompanying the increasing mix of compression effects from SerumFX to evoke the biting desert winds. This section builds towards the first climax, concluding with plucked notes from the Zhongruan, synchronized with the interactive delay sound from Max.
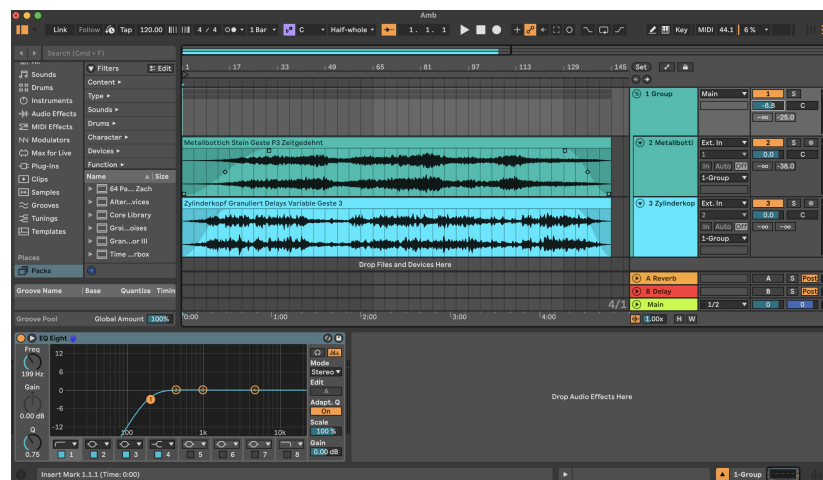

Fig. 6

Part II (02:18-04:46):

The second part builds upon the first, beginning with the harmonic tones of the Zhongruan. It continues with tremolo and glissando techniques, accompanied by vocals interacting with Max, and introduces a comb filter effect with resonance, still controlled by MidiMix, intensifying the sound and adding a metallic texture. These

sound effects symbolize the deepening journey along the Silk Road, where the challenges grow more and more severe. After reaching a climax at 03:29, the comb filter and the compressor effect continue to build, amplifying the emotional intensity of the music. The section concludes with vocals mimicking intense wind sounds and granular vocal particles.

Coda (04:46-05:30):

The coda features vocals and increasingly fast strikes across the four strings of the Zhongruan up and down, paired with the gradual rise of the compressor effect's mix, pushing the performance to the last peak. The piece concludes with the plucking of the Zhongruan, enriched with Zhongruan's delay sounds, symbolizing the arduous journey along the Silk Road, finally reaching its destination.

3. Summary:

In summary, *The Silk Road Fantasia: Journey* is set against the backdrop of the Silk Road expedition, using vocals and the Silk Road's representative instrument, the Zhongruan, in real-time interaction with a designed Max coding system. This fusion of traditional performance with interactive electronic sound manipulation adds greater tension and dynamism. The intelligent combination of vocals, instruments, and electronic music highlights the hardships of the Silk Road journey, imbuing the piece with a unique style.