**B — IS FOR BIRD: A CHINESE FOLKTALE FOR GAME-AUDIO, CHINESE PIPA AND RESYNTHESIZED SYRINX**

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**Abstract**  
*B — is for Bird* is a duet for Pipa, (a four-stringed Asian lute) and *resynthesized Syrinx* (a system for mimicking birds’ vocal anatomy). B’s setup involves the acoustic instrument performed alongside a live game-audio system (currently written in Unreal Engine 4), which features a virtual pipa and mechanical birds in a Chinese-style botanical garden. The piece is a collaboration between the author (a composer of interactive music), Yuhe Liu (a pipa player) and Alena Mesárošová / Manuel Ferrer (a 3D-modelling team). The composition navigates a Chinese Folktale nar-

**Keywords**  
Pipa Instrument  
Syrinx  
Birdsongs  
Meta-bird  
Game-audio  
Modular Synthesizer  
Virtual Reality  
Composition
After a brief introductory chapter featuring Hu, the piece is structured in three contrasting scenes working as virtual instruments for aural navigation. The players have to explore each sonic gardens in order to unveil their distinctive audio typomorphologies and focused modes of interaction.

a) The Whispers’ garden: consists of a giant procedural audio tree, which spawns sonic logograms (Chinese characters) representing whispering phrases as the language and grammar of a sonic poem. It employs phase-vocoder techniques and dynamic audio procedurally triggered as tree branches and nodes sprout.

b) The Yunluo or Water lilypond garden: showcases a number of timbrally-tuned gongs mounted in a wooden frame, which emerge from the oriole’s interaction with the water-lily flowers and their musical petals.

Video: https://vimeo.com/229351488
c) *Zhuangzi’s garden*: portrays the performative interplay between an interactive virtual pipa, the real one (originally played by Yuhe Liu) and a number of mechanical birds. Master Zhuang, a 4th century BC Daoist philosopher, and his parables informed this scene. His folktales were often typified as a discussion between imaginary and/or real characters as in this piece. This section has a precomposed audio stem and the real-time instrument-bird counterpoint takes place above it.

**Fig. 2**
The interactive garden map (of Chenshan) to access the three aural paths.

**Fig. 3**
A procedurally-generated whispers tree spawning Chinese characters as seeds.

**Fig. 4**
A musical lily pond garden scene.
COMPOSING THE RESYNTHESIZED SYRINX

Birdsongs and nature have inspired humans and informed musical compositions and other art forms for centuries. Compositionally, the author investigated a number of routes to reconstruct bird’s vocal anatomy via synthesis and sampling techniques. Full details about the constructed system are included on a related paper: Climent, R. "B—is for Bird-. 2016. A game-audio musical work for resynthesised syrinx". Ouvir Ôver Journal. Commission and published by Federal University of Uberlandia, Brazil.

WRITING FOR PIPA IN COLLABORATION

WITH YUHE LIU

The author first came across the plucked string pipa thanks to Luo Chao-Yun (Pipawoman, Taiwan), who back in 2008 performed at the LICA-Mantis Festival, England alongside Tai-chi dancer Chen Wai-kai. However, the pipa materials featured in this piece (both 3D model and transformed sounds) come entirely from Yuhe Liu’s collaboration. The instrument was recorded at the NOVARS Research Centre.
**WIDER GAME-AUDIO CONTEXT**

The author’s game-audio portfolio of musical compositions explores creative expression at the intersections of the Real, the Virtual and the Augmented. It pursues the connections between Modularity, Hybridisation and Extended Realities. Related research projects can be found here: http://game-audio.org

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Fig. 7
Yuhe Liu’s pipa, after being 3D modeled along mechanical birds and musical lilies.

Fig. 8
B is for Bird falls within the Bio simulators typology.
REFERENCES


