

ICARUS

Christos Michalacos

ICARUS explores improvised musical structures within a game setting, where the player navigates between five musical chapters. Each of these levels defines a particular set of musical interactions, sonorities, and performance possibilities through distinct mappings and level design. The performer is free to improvise, fail, explore, and through trial and error understand what the game rules are and complete each chapter. This results into a dynamic audio-visual performance, where while the rules are fixed, each level can be completed in multitude of ways. The game is designed specifically for the augmented drum-kit and the instrument's affordances; performance minutiae, digital electronics and musical parameters are analyzed and used as control input to the game. As the musical instrument offers a much wider range of expressive possibilities compared to a conventional game controller, the result is a musically expressive game play performance where the game acts as the mediator to the improvised drum-kit performance, while the music becomes the live soundtrack of the game.

This piece, through a series of fixed game levels explores mapping relationships between game, instrument and musical output. The fixed nature of each level aims to introduce very specific musical problems to the performer/improviser that need to be solved as part of the game mechanics in order to proceed to the next section. Some of the theoretical underpinnings of the work and findings are documented the upcoming article 'Designing Musical Games for Electroacoustic Improvisation', to be published on the upcoming Organised Sound Journal Vol.26, Number 1 Issue, by Cambridge University Press.

The piece has been performed and exhibited internationally at CHI Creativity & Cognition (2019), San Diego and at xCoAx (2020), Graz (online), while numerous performances throughout 2020 were unfortunately cancelled due to C-19.



Background

ICARUS (2019) is the author's second game for the augmented drum-kit. It was premiered at the ACM Creativity and Cognition '19 conference in San Diego (Figure 4). Unlike *Pathfinder*, where the player navigates within an open world in a three-dimensional space, *ICARUS* comprises five distinct mini-game chapters presenting different challenges. Each of these defines a particular set of musical interactions, sonorities, and modalities through distinct mappings and level design. The performer is free to improvise, fail, explore, and through trial and error understand what the game rules are and complete each chapter.

Documentation available at <http://christosmichalakos.com/works#/icarus>



GAME CHAPTERS

The chapters are described as follows:

- *Title Screen*

Making a reference to commercial games where one needs to push a gamepad button repeatedly in order to start a process (such as pulling an in-game lever or turning a wheel), the player needs to repeatedly perform hits on the floor tom in order to turn a circular dial; the moment that the dial reaches the end, the game starts.

- *Chapter 1 – MACH333*

The game's introductory chapter requires the player to perform 333 hits on the snare drum, before the time elapses. Failure to do so results in a fail state, when the game needs to start again. Successfully performing the task leads to the next level.

- *Chapter 2 - VEGA*

The player's avatar rotates randomly in 360 degrees. Each hit performed while the red light is visible subtracts one value from the number on the screen, while for each hit performed when the blue light is visible, one value is added. If the number reaches 0 then the game is over, while if it reaches the value 555 the game moves on to the next chapter. The player must be closely paying attention to the light's state—it might be tempting for example to perform as many drum-hits as possible when the light is blue, however, if the light suddenly turns to red and the hits carry on for an equivalent time duration, all progress will be undone.



- *Chapter 3 - Lagrangian*

This chapter is inspired by Lagrange points, which are the points of gravitational balance between planetary objects, where a smaller object will maintain its position relative to the large orbiting bodies. A sphere pulls the player's avatar towards it, while the player attempts to stay away from it through audio input in an attempt to maintain a stable position, not too far from or too close to the sphere. There is no fail state in this stage; if the player manages to stay in an area of balance the game moves into a *Secret Chapter*, while if the sphere manages to overpower the player's efforts the game simply moves to *Chapter 4 - RIGEL*.

- *Chapter 4 - RIGEL*

Rigel recreates an old coin-flipping logic game. The goal of the game is to switch all lights to the same colour. Correct musical gestures switch two lights at a time, which has interesting implications, having to choose which two lights to flip in order for all of them to eventually have the same colour. These are controlled through hits on different drums. As a twist to the existing puzzle game, the lights reset to randomised positions if the player performs notes above a certain threshold. As such, the player needs to solve the puzzle without exceeding a certain amount of amplitude, around pianissimo, making this chapter a softer section of the piece.

- *Secret Chapter*

Following Pathfinder's improvisation areas, this chapter is comprised of a progress bar that moves upwards when the performer produces the correct musical gestures, which are selected randomly every time the game restarts. Thus, through improvisation, one finds the desired sonic input that leads to the filling of the bar and the progress to the next section.

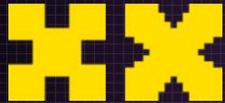
- *Chapter 5 - ICARUS*

The final chapter is a game of stamina. The performer essentially needs to continually perform on all drums as quickly and loudly as possible, until the progress bar reaches the top of the screen. Even small periods of inaction cause the progress bar to drop significantly lower, so if the improviser stops before the level is over, the tasks become increasingly more difficult as the player's physical stamina falls the longer the level is played. In theory, it is entirely possible for the performer to get stuck in this level during a performance without being able to proceed to the end. As inactivity does not lead to a fail state and the game being over, this means that the performer will simply have to abandon the game, which in the author's view is a riskier situation than having a game over screen.





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Icarus: A Game/Performance for the Augmented Drum-Kit

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Keywords: Games, NIME, Improvisation, Live Electronics, Game Audio, Music Games.

The piece is designed specifically for the augmented drum-kit and the instrument's affordances; performance minutiae, digital electronics and musical parameters are analyzed and used as control input to the game. The augmented drum-kit was developed over the course of five years, and consists

DISSEMINATION

The piece has been performed and exhibited internationally at CHI Creativity & Cognition (2019), San Diego and at xCoAx (2020), Graz (online), while numerous performances throughout 2020 were unfortunately cancelled due to C-19.