

Harmoni-us

Extended Abstract

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ABSTRACT

Harmoni-us is a top down iso city-builder sim where the player is given agency over a small community of musical creatures called Harmonians.

CCS CONCEPTS

• **Applied computing** → **Media arts; Sound and music computing;**

KEYWORDS

Foundation of Digital Games

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1 INTRODUCTION

Harmoni-us is a top down iso city-builder sim where the player is given agency over a small community of musical creatures who are affectionately referred to as Harmonians.

When Harmonians come into contact with one another, they learn to coexist by creating beautiful symphonies with one another. Not all Harmonian relationships come easy, however. Sometimes their songs come into conflict, creating strange new sounds that confuse the local populace. This disturbance can alter the rate of population, change the economy of resource production, and ultimately disrupt the steady growth of the settlement.

Players choose whether they want to encourage this new growth by being inclusive to the new Harmonian populations, finding new and interesting songs, and learning how to create the buildings that make the immigrating Harmonians feel at home. Or they may choose to censor and convert the foreign Harmonians, and seize



Figure 1: *Harmoni-us*

their old homes to better support the current economy and soundscape.

Harmoni-us is a game in a constant state of flux, where the player must decide the destiny of their budding community. Harmonians are always learning and growing from the current state of affairs, and no two soundscapes from a playthrough will turn out the same. Ultimately the player must decide for themselves: does harmony mean many voices as one, or a voice of one for all?

2 DESIGN AND DEVELOPMENT

Harmoni-us is a game in-progress, initially created for the Art Games Jam at the Goethe-Institut Boston in May 2017. *Harmoni-us* remains in the early stages of development; the initial prototype is essentially a proof-of-concept, to be fleshed out during 2017-2018.

Harmoni-us can be played at <https://japes610.itch.io/harmoni-us>

2.1 Art Games Jam

Art Games is an international game jam network sponsored by the Goethe-Institut in early 2017, in eight diverse locations, including Seoul, Mexico City, Sao Paulo, Jakarta, and Boston. These follow a common game jam model in which a theme is introduced in conjunction with keynote presentations, after which participants are invited to engage in icebreaker activities, form teams, and work together to design, develop and deliver a game in a 48-hour period.

In contrast with other game jams, the Goethe-Institut encouraged participation from artists and others who have not have had

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experience making games, with the idea that 'the diversity of the participants will inspire them to renegotiate the boundaries between art, politics and games, and to reflect on the conditions and conditionedness of their own medium'.

<https://www.goethe.de/en/uun/ver/arg/ueb.html>

2.2 Idea Development

Our team formed organically, through a set of icebreakers that led to conversations about topics including:

- The relationship between politics and musical structure
- Virtual musical instruments that allow players to compose and play music
- Interactive and musical toys that encourage a process of discovery
- Procedurally generated music/sound/content
- Musical harmony as a metaphor for totalitarianism
- Social inclusion and diversity vs. homogenization in societies
- Resistance to nationalism and anti-immigration
- Emergent digital systems

As we worked through these topics on the first night of the Game Jam, we knew that to create a playable prototype within a 48-hour period, it would be beneficial to work within a structure familiar to game players and developers.

We felt that an isometric game modeled on the Real-Time Strategy or Sim genre could provide an interesting framework, with an isometric camera view, a mechanic of placing buildings and other structures, and a method of allowing character entities to be autonomous or self-reliant. We also felt that using an RTS structure to support the creation of a harmonious society would be an interesting twist on a genre typically used for violent conflict.

This led to some thoughts about game play:

- Could placement of structures be a free-form experience for the player, rather than directed by prompts or specific goals?
- Could placing certain kinds of structures generate and/or attract specific entities?
- Could players be encouraged to create a diverse community with multiple entity types?
- Might color be a means of distinguishing groups of structures or entities?
- Should a resources system be designed to build the structures?
- Could each entity procedurally create music, so that all entities working together are generating a musical composition?
- Can a custom music processing system be developed to support the game?

3 DEVELOPMENT TEAM

- JP Héroux: Art, Animation
- Ben Houge: Sound, Code
- Justin C. Rounds: Code, Design
- Jeff Warmouth: Code, Design

4 GAME MECHANICS

The mechanics in the prototype were initially designed by the team, and fine-tuned and coded by Justin C. Rounds and Jeff Warmouth.



Figure 2: *Harmoni-us* Game Play

The mechanics are still in iteration, so this is a description of the current state of the mechanics.

Game play happens on an isometric playing field. The player can select from several buildings in primary colors. Once placed, buildings generate and attract Harmonians. A Harmonian gains Citizenship when entering the Area of Influence of a Building. This generates resources for the player, which can be used for the placement of additional structures. Placement is free-form on a grid, allowing different configurations and musical compositions to be created.

4.1 Initial Game State

- 10 starting resources
- No Buildings or Harmonians on the play field
- UI that allows player to construct Buildings
- Game play begins after player places first Building

4.2 Buildings

- Obtained by spending resources.
- RGB buildings cost 5; CMY buildings cost 20
- Can be placed on any unoccupied grid space
- Placing a Building spawns 1 local Harmonian (who immediately becomes a Citizen), and several off-screen Harmonians of like color over time
- Building has a maximum number of Harmonians it will create
- Building has a 2-unit radius Area of Influence
- Buildings attract Wanderers of like color
- Future Plans: Buildings can be combined

4.3 Harmonians

- Harmonians constantly wander, tending toward the closest Building of its color
- Promoted to Citizen upon entering Area of Influence of matching color Building

4.4 Citizens

- Citizens generate 1 resource for the player
- Citizens wander in the vicinity of their Building

4.5 Camera

- Camera zooms out each time a building is placed
- Wandering Spawners moved out at each zoom phase

- Future Plans: Add RTS Camera Control

4.6 Environment

- As camera zooms out, Environment elements become visible
- Currently, Environment elements are obstacles to placement
- Future Plans: Environment will contribute to game play

5 AESTHETICS

5.1 Art Direction

JP Héroux developed the art style and generated all 3D assets, textures, UI elements, and the intro animation. Harmonians and Buildings were created using 3D voxels, in keeping with the isometric style.

It was determined that the Harmonians would be subdivided into Primary and Secondary colors, with the possibility of combining Primaries to generate Secondaries.

5.2 Procedural Music

Ben Houge composed and coded the music system, and determined the aesthetic direction of the music, as informed by the visual aesthetic.

The music in HARMONI-US is generated procedurally by a sample manipulator written in C# and Unity. There are a small number of core samples, which are heavily manipulated by custom code. Every aspect of the music - its rhythm, voicing, harmonies - is generated procedurally during gameplay. A core rhythm track keeps time, while each Harmonian emits music that is synchronized every frame, harmonized through code, and placed in 3D space.

6 FUTURE PLANS

As noted, the build is an early proof-of-concept, and we have a great deal of work to do. Planned features and modifications include development in the following areas.

6.1 Environment

As the camera zooms out, environment elements will be revealed, such as trees, terrain and water features. Game goals and Harmonian/Building design features will be coordinated with environment:

- Obstacles might block placement as you expand out from the safe start zone, with some Harmonian colors and types equipped to remove specific environmental blocks (Green are equipped to clear trees, cyan are equipped to cross water, etc.).
- Some colors might generate resources more efficiently when near a specific environment element, or when also in combination with another color (i.e. when you have both Green and Yellow next to a tree, the tree bears fruit and your population grows).

6.2 Harmonian Behavior

It has always been our goal to create an emergent system, but we have not yet fully explored the potential complexity of the system of Harmonian behavior. Currently, Harmonians have a single trait

(color) which controls their relationship to buildings and citizenship, and drives their music generation. Potential issues to develop include:

- Harmonians might have multiple characteristics (for instance: color, shape, texture, sound, movement, etc.)
- This would allow for a diverse set of attributes that determine its identity and behavior towards others.
- Affinity groups among Harmonians with matching attributes
- Discord between Harmonians with incompatible attributes
- Cities might have cultural profile that gives advantages or disadvantages to certain attributes
- A sense of consequence for the player if the desired harmonious state is not reached
- Levels that include clearer goals and objectives for the player, with the option to also play in a free-form manner

6.3 Buildings and Cities

Placing buildings near one another should create more complex relationships than we have currently developed, for instance:

- Placing two different primary-colored buildings in proximity should create a secondary color
- Placing matching-colored buildings next to (or on top of) one another might create a larger building
- These combined buildings could have behavioral effects on Harmonians or affect resource production

7 CONCLUSION

The team feels that the initial prototype has interesting potential but needs a great deal of design and development work to be the complex emergent interactive system that we envision. User playtesting and feedback from the game community suggests that the game needs more clearly-defined goals and objectives for the player, a stronger sense of consequence (i.e. meaningful decisions), and the possibility of having a less balanced system that more closely matches the complexity of a real society.

We plan to continue design, development, and testing to craft a unique and interesting play experience.

A APPENDIX A: DEVELOPMENT TEAM

JP Héroux

JP Héroux is currently working as a Customer Service Rep. in the games industry at Turbine in Needham, MA. Through the Game Jam he took a big step towards his goal of working in industry as a Game Designer.

Ben Houge

Ben Houge is an internationally active American artist operating at the nexus of music composition, video games, performance, sound installation, and digital art. Since relocating from Shanghai to the Boston area in 2010, his projects have included an asparagus opera, a six-channel sound installation based on live subway sounds, algorithmic choral music, and a real-time video piece visualizing data from the Boston Harbor Islands.



Figure 3: The development team: JP Héroux, Jeff Warmouth, Ben Houge, Justin C. Rounds

Justin C. Rounds

Justin C. Rounds is a transmedia artist, musician, and educator living and working in Boston, Massachusetts. Employing painting, performance, and interactivity, his work investigates dynamics of power and control in culture and society, using processes emerging from the intersection of art and technology. He is an active member of Atlantic Works Gallery in East Boston, adjunct faculty at Northeastern University, and passionate about helping people use technology creatively.

Jeff Warmouth

Jeff Warmouth is a contemporary media artist and professor of Game Design at Fitchburg State University in Massachusetts, USA. His conceptual work asks the viewer to unravel their relationships to language, identity, and culture. His work has been featured at galleries, museums, and festivals worldwide, most recently at the 404 Festival in Argentina and Colombia.

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