

CASE STUDY 2

Atari 2600 Game Hacks Balancing access + preservation



The Team: University of Arizona Libraries partnering with the Learning Games Initiative Research Archive.

The Challenge: created an emulation environment of the Atari 2600 so that users could play a collection of game hacks.

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Unit + Institution's name

University of Arizona Libraries partnering with the Learning Games Initiative Research Archive (<https://lgira.mesmernet.org/about>)

Unit members

The team was led by Monique, the Digital Preservation Librarian and the project members are a Research Data Management Specialist, a professor of public and applied humanities, and an Associate Research Dean.

The preservation/emulation problem: "Spending time with hardware and peripherals"

The UofA team partnered with LGIRA to provide access to game hacks developed by Gray Games, a video game company that specialized in homebrew and hack games. The team created an emulation environment of the Atari 2600 so that users could play a collection of game hacks like 'Astro War' and 'Acid Trip'.

A game hack takes an existing video game and modifies it in some ways so that it differs from the original title. Game hacks can be simple (like changing graphics or colors) or involve complex variations with completely new themes. Some game hacks allow users to use a different system controller so that players can use a different control scheme or a completely different controller. Acid Trip is a game hack of the Pac-Man universe, using purple frowning ghosts instead of Blinky, Pinky, Inky and Clyde. (https://videogamehomebrew.fandom.com/wiki/Acid_Trip).

WA challenge for emulating games can be the features of unique consoles and gaming systems. In addition to emulating the environment of the game, preservationists also want to replicate the experience of playing it with different controllers and peripherals. Mapping controllers like joysticks involves 'mapping' actions from a handheld controller to a computer keyboard or mouse. Because different game titles can use different features of controllers, all possible actions must be mapped for a reliable emulated experience. As a result of the unique consoles and peripheral controllers in the games collection, game preservationists like the UofA team must spend lots of time with the physical

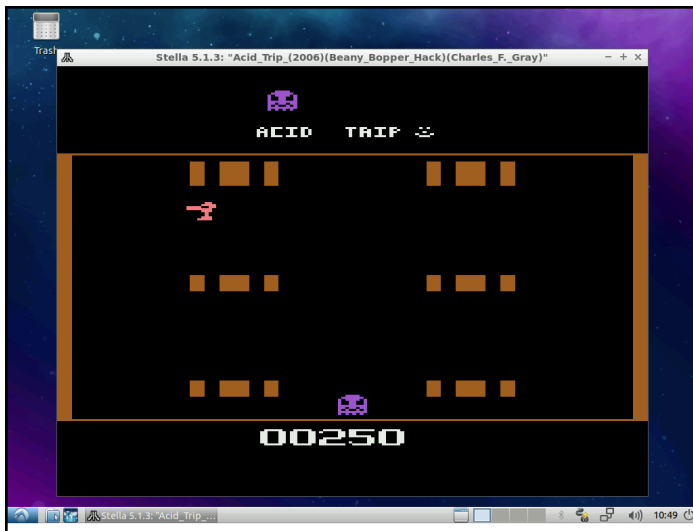


Figure 1. Screenshot of Acid Trip with the Stella Atari 2600 emulator.

<https://stella-emu.github.io/docs/index.html#ControlMap>



Figure 2. Atari 2600 console and joystick controller.

collection to understand and document the hardware, peripherals, and materials--using different games cartridges and game controllers to understand how to emulate them. While the team is preparing to describe, emulate game hacks, and map controllers, they must also consider the representation and description of these materials for users.

Overcoming roadblocks: Balancing access between preservationists and users

Most software preservation workflows assume that lots of time will be spent building and preparing the emulation, but mapping controllers for custom game hacks and consoles involves spending more time with the gaming equipment in order to render it reliably. For many circulating collections, users are prioritized when allotting time with materials. The LGIRA archive uses a preservation through use model, where archive users are encouraged to use original equipment, game controllers and game cartridges. Prioritizing users physically accessing materials meant that the preservation team had to plan and coordinate collections access to the physical aspects of the gaming console and controllers in advance.

Where the emulation lives

Not currently available. Contact LGIRA to inquire regarding use.

Discussion questions / Share-back prompts

1. The team had to balance their time with the collections so other patrons could access the hardware as well. What kinds of solutions could a services team anticipate to balance access to hardware between preservationists and the users the archive serve?
2. Mapping controllers is an essential part of this type of emulation. How should this mapping be communicated to users who may have never used a peripheral like a joystick or paddle?
3. Game Hacks are variant creative works of original games, are there legal issues that an institution should consider before copying, describing, or providing access to an emulated game hack that borrows heavily from another game title's world or themes?

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Running the activity For the educator

About the exercise

This discussion activity takes 10-20 minutes, and is designed for an audience of LIS graduate students or early-career preservationists. Before reading the case study together as a group, consult the Learning Goal and Terms to Introduce below. Once you have read the case study and described its context, ask participants to break into small groups for discussion questions and sharing ideas.

Learning goals

Oftentimes in planning preservation workflows and in project management teams will allow for more time spent on emulation itself, but in this case study, the team unexpectedly found that more time needed to be spent with the hardware and controller peripherals in order to map the game experience properly. The archive's preservation through use mandate challenged the team to weigh priorities between physical access and providing virtual access through emulation because if preservationists spent more time with consoles and controllers, users potentially would not have immediate physical access to collections.

Terms to introduce

- Game Hack
- Mapping (controllers)
- Peripherals
- Preservation workflows
- Preservation through use model

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