

PATTERN ACCELERATOR

RAPID PATTERN GENERATION, PATTERN LIBRARY, PATTERNS AS PEDAGOGY, PATTERN ONTOLOGY FOR AI SEARCH TRAINING

CHRISTOPHER BARNEY, College of Arts Media and Design, Northeastern University

This is a report about the hour-long session held at the PLoP conference where Professor Barney shared his work on game design patterns.. The first aspect of this work discussed was the process of rapid pattern generation through the examination of artifacts that embody patterns. The details and purpose of the Pattern Language for Game Design's online pattern library were then presented. The ways that the above topics form the basis for a pedagogy for teaching design were then detailed. Finally, the potential for using the structure of this pattern library to generate training data for the AI search of a large library of patterns was introduced. The session concluded with the question of whether the above approach has application in other areas of pattern research. Subsequent to the end of this session, a discussion was sparked regarding the use of the discussed game design pattern library technology as a base for creating a living generalized pattern library; this resulted in the formation of a working group to investigate this possibility.

Categories and Subject Descriptors: **[Human-centered computing]**: Interaction design—*Systems and tools for interaction design*; **[Information systems]**: Information systems Information retrieval—*Specialized information retrieval* **[Applied computing]**: Education—*Digital libraries and archives*

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Additional Key Words and Phrases: pattern language, workshop, pattern-based pedagogy, pattern creation, pattern library

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1. INTRODUCTION

Since their inception, many different groups have taken on the task of generating new patterns in wildly diverse ways. In this session, Professor Barney presented a lightweight, repeatable method for generating patterns. The details of this process are covered in detail in his book Pattern Language for Game Design. The ability to create patterns rapidly can result in pattern collections of unprecedented size. To support this, a format, structure, and software tool for storing and accessing patterns was needed. To this end, Professor Barney created a web-based interface for storing detailed patterns in a relational database. Given the tools described above, it became possible to use the process and results of large-scale pattern generation by students as the basis for a design-focused pedagogy for game design. That pedagogy may be applicable to any field that produces examples of its design in the form of observable artifacts. The potential adoption of the above process, repository, and pedagogy will require more advanced technology to ensure pattern discoverability at scale. Professor Barney introduced the possible use of existing patterns stored in an ontological structure as training data for AI search.

2. SESSION DISCRIPTION

Basic and complex pattern generation exercises were presented:

General Patterns Exercise

1. Name a design element.
2. Name (at least) 10 games that make good use of that element.
3. Describe how each of those games uses the element you chose.
4. Describe the design problems the games use the element to solve.
5. What are the Patterns in the ways the elements are used that relate to the problems they solve?
6. Pick one of those patterns and describe it. (on the Pattern Library website)
7. You may repeat step 6 for each pattern you observed.

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Game Systems Game Mechanics Patterns Exercise

1. Purpose: This exercise will ask you to decompose a complex system as it exists in several games and analyze the implementation and effects of its compound mechanics and resources for a pattern.
(Hint: Choose the system you are using for your final project... this seems obvious but I'll say it out loud.)
2. Group: Select a relatively complex game system. You should be able to clearly articulate the function and structure of this system.
3. Group: List and describe one game that includes this system for each member of your group. (Ideally you would do this for 10 games with dissimilar implementations of the system, but I am trying to be realistic about your time.)
4. Individually: List and describe all of the compound mechanics that make up the system you are examining in your game.
5. Individually: List and describe all of the resources that are used by the system you are examining in your game.
6. Individually: For each compound mechanic, describe how it uses resources to interact with the other mechanics in the system.
7. Group: Compile all of your analysis of the resources and mechanics of the game system from 3-5.
8. Group: Write a paragraph describing each pattern you see in which atomic mechanics are included in the compound mechanic, the effects they have, and how the compound mechanic functions in the games.
9. Group: Select at least one pattern and enter it into the Pattern Library

The Pattern Library Website

(<https://patternlanguageforgamedesign.com/PatternLibraryApp/PatternLibrary/>) was introduced:

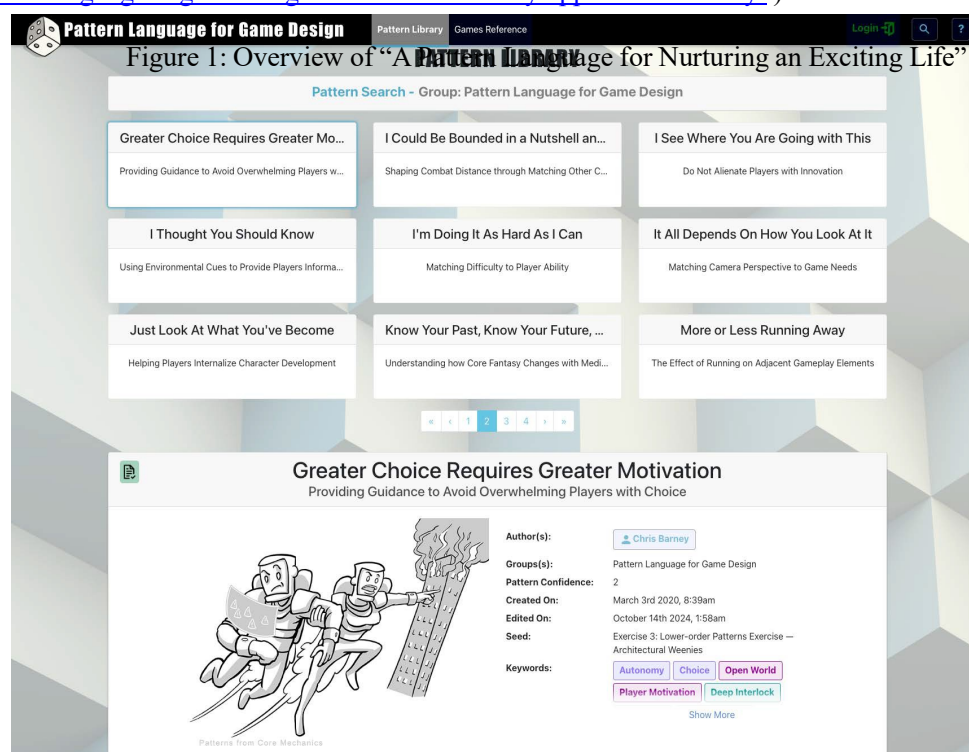
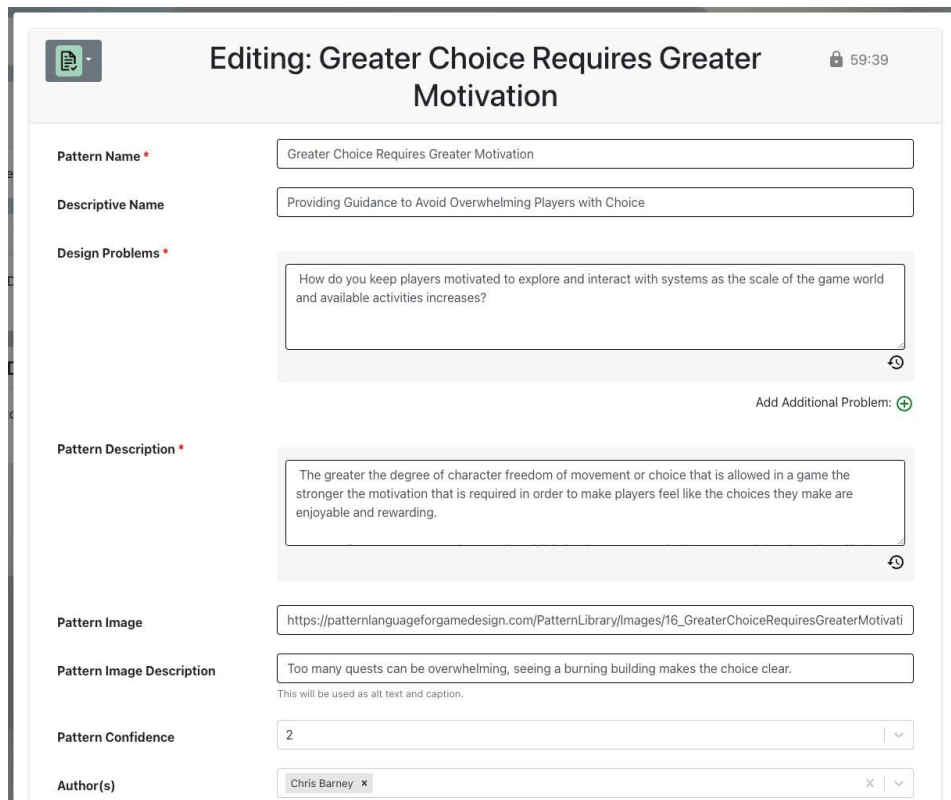


Figure 1: Example from “Pattern Library Website”



Editing: Greater Choice Requires Greater Motivation 59:39

Pattern Name * Greater Choice Requires Greater Motivation

Descriptive Name Providing Guidance to Avoid Overwhelming Players with Choice

Design Problems * How do you keep players motivated to explore and interact with systems as the scale of the game world and available activities increases?

Pattern Description * The greater the degree of character freedom of movement or choice that is allowed in a game the stronger the motivation that is required in order to make players feel like the choices they make are enjoyable and rewarding.

Pattern Image https://patternlanguageforgamedesign.com/PatternLibrary/Images/16_GreaterChoiceRequiresGreaterMotivati

Pattern Image Description Too many quests can be overwhelming, seeing a burning building makes the choice clear.
This will be used as alt text and caption.

Pattern Confidence 2

Author(s) Chris Barney

Figure 2: Role-Playing as interviewer and interviewee in Teams of Three

The basic structure of integrating pattern generation into a pedagogical loop was presented:

Using Pattern Creation to Teach (Process)

1. Explore concepts through reading or lecture
2. Select a part of the above material to explore further
3. Choose and complete a Pattern Exercise based on the chosen concept
4. Peer review of pattern work (Supported by the Pattern Library)
5. Implement a project (Playable Concept) based on one or more patterns
6. Peer review project work to assess the efficacy of the patterns

The ontological structure of the Pattern Library was detailed.

The session concluded with Professor Barney asking the other attendees whether this process and technology have applications in their respective fields of pattern research. Due to time constraints this discussion and discussion of the use of the Pattern Library online tool as a model for creating a living repository of patterns that fosters a active community of readers and contributors was continued in a subsequent session led by Antonio Mana.

3. SESSION RESULTS

The questions raised at the end of the session resulted in an ongoing conversation throughout the rest of the conference. Rebecca Wirfs-Brock, in a later talk, introduced the idea that many existing pattern repositories are graveyards, that patterns stored there are 'dead,' both no longer growing and often no longer observed. Antonio Mana later presented a talk where he asked if there was a general desire for a shared repository of patterns. Based on these factors, a working group was created to explore the possibility of using the technology behind the Pattern Language for Game Design pattern library to create a generally available tool for storing and sharing patterns in a way that encourages cooperative development and continued growth of patterns.

4. CONCLUSION

While the process used by Professor Barney is idiosyncratic and does not encompass many of the specific processes and features of other patterns of research, the format of the game pattern library is robust and may be of significant use to the patterns research community.

ACKNOWLEDGEMENT

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REFERENCE

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