

1 Social Games that You Can Play with Massive Content

This Dagstuhl report details the findings, including a zine and prototype, by June Bhartia, Duygu Cakmak, M Charity, Kate Compton, Antonios Liapis, Tiago Machado, Dipika Rajesh, and Anne Sullivan.

2 Premise

Like dragons sitting on vast hoards of data, we enjoy an unprecedented wealth of content today.

We have access to cultural content - every historical object from the world's museums, all the posts on Wikipedia, all the assets on Itch.io, or all the slow-burn romances of Archive of Our Own.

We have amassed decades of personal content, a mountain of unsorted photos, social media threads, and algorithmically recorded logbooks of your relationships, playlists, physical locations, GitHub checkins, and heartbeat.

We have generative algorithms, large and small, that create new content on demand. We can create new game maps, text snippets, poems, images, novels, and films, at the press of a button.

Massive data is an important new technology - but humans love to invent new games to play with new technology! So what games can you play with massive content? And why do so many of them involve *other people*? For this paper, we use “games” loosely in the “playful experiences” sense used by game philosophers like Bernie De Koven. So for this paper, Pinterest is a game, as is making a mix-tape for your best friend.

In this Dagstuhl working group, we looked at many social experiences that use massive content sources, and we've discovered that they have many common design patterns. Below, we will explain a few of these patterns, and examine them in use cases. This paper is far from exhaustive - we believe there is more to be discovered.

3 Components

To create a playful user experience with massive content, one needs three things:

- **Sources** - you'll need a massive source of content
- **Features** - interaction design patterns for what the users will do with the content, like surfing, annotating, or sharing it with others
- **Uses** - why is interacting with this content meaningful? Are we motivated by the content, or about our journeys and exploration, or is the content just a tool to socialize with each other?

For example, the <https://libraryofbabel.info/> Library of Babel is a site where every possible book exists, as a reference to the Borges story [3]. Its source is a generator that can create any "possible combination of 1,312,000 characters" on demand. Its primary feature is that each book is represented by a unique URL. Of course, most are random character combinations. But there is a small Reddit forum <https://www.reddit.com/r/BabelForum/> *dedicated to finding and sharing occasional discoveries within it*. Sources fall into several categories:

- Personal data: Anything we produce in our daily lives, from emails, to photos, personal notes to shopping list, the music or the crafts we created
- Shared data: where people collectively and intentionally create large amounts of data, for the shared good
- Cultural-collections data: (Museum images, literature) Museums are full of art, digitalized, amazing poems, to literature feasts.
- Commercial data: data that is either gathered commercially or scraped from commercial enterprises
- The social data we share explicitly - to be consumed by others in the void - Itch.io
- The social data we share implicitly - the comments to your friends' post, or some blog that you share for bookkeeping
- Algorithmic generators: data which doesn't *exist* until the moment that it is created

None of these categories pre-suppose the relationship between the owner or creator of the source and the creator of the game, and the players of the game, may have any possible relation to each other. One could make a game for oneself out of one's own data, or be paid by a big-data owner to make a game for others (a common form of digital humanities grant from museums)[4]. Some games are made with data that was not intended (or allowed) to be used for play, which can be a source of both conflict[6] and transgressive power.

Features are the interaction, interface, gameplay, visualization, or sharing features that enable different kinds of exploration and social interactions.

For example, Max Bittker's "River"[1] is a page where players can explore images that people have posted to Are.na. Exploration is done by clicking on one image among many, which causes the page to refresh with other images that are closest to that one in a vector embedding space (more similar). When this happens, the URL changes to the ID of the clicked image. So, if a player finds a favorite "region" of the content (<https://river.maxbittker.com/?id=1747330>, <https://river.maxbittker.com/?id=2878636>), they can share it with others.

We found many such features, and many were common across multiple experiences. Some features enable or disable ways to navigate through the content. For example, River does not allow **searching**, to instead encourage serendipitous discovery

by **proximal exploration**. Exploration can be implemented by many different algorithms and heuristics - similarity-based, curiosity-based, or collaborative filtering. We can direct players to parts of the space near things they like, or direct them to places they have not explored, or to places that *no other user* has explored yet. We can even leave **footprints** to tell them how many other players have been here (<https://www.whatbeatsrock.com/>), or give small UI prizes for discovering new parts of the space, as <https://neal.fun/infinite-craft/> does.

We can consider each unique page with its “central” image to be a **landmark** that we can share via URL but it also offers landmarks as **collectibles** and **boundaries** (“Obama eating ice cream” “Heavy Metal Lettering”) that players can try to discover. This simple feature (it is just a text suggestion) turns the free-form browsing into a seeking game, instead. Landmarks in a large generative space can enable navigation, social conversations, or gameplay challenges.[7][8]

Other features enabled players to understand their movement through the space or create **paths and trails** for others to follow. Trails can serve as a memory of how someone has moved through a space or record a path to guide someone else. In River, when M Charity achieved the nearly-impossible feat of navigating to “Obama eating ice cream” they were able to use the browser’s back button to demonstrate the path they took, image by image. In experiences like Spotify, we see users curating and sharing unique paths as a new form of content itself, sometimes to take the listener on an unexpected sonic journey and sometimes to make art out of the titles (<https://www.reddit.com/r/weirdspotifyplaylists/>).

We expect **curation sports** to emerge as their own form of play, as users discover particularly interesting spots or become famous as guides or expert-explorers in the space [?]. We also speculated about heuristic **curation pets** as a feature - not monolithic algorithms to create the “best” choices, but “characters” with viewpoints on how to move through the space, like the Tumblr bots mentioned in the case studies below. Could you make a mix tape for a friend? Could you make a **mix-tape-making pet** to give them instead?

Trails, landmarks, heuristics and more can be **reified** into content themselves. Often these are by URL, but can also be embedded in a PNG (as the creatures in the game Spore). This lets the feature engage in the technological ecosystem in any way a URL or image does: A landmark in a generative space could be hidden as a QR code or NFC chip on a sticker or trading card, and physically gifted, swapped, or hidden in a castle!

The final component is the **use** of these experiences. An experience can have any number of features and choose many kinds of content to explore. But what communities and social interactions arise from those choices? What external or artificial structures give them different meanings? We found many such emergent behaviors and social phenomena: showing off, games challenges, surfing, making gifts, intellectual advancement (understanding/exploration/learning), collaborative mapping, inspiration, creating organized information and annotation (the urge to tidy up a space), self-reflection, and discovery.

When we looked at social experiences, we found two common kinds:

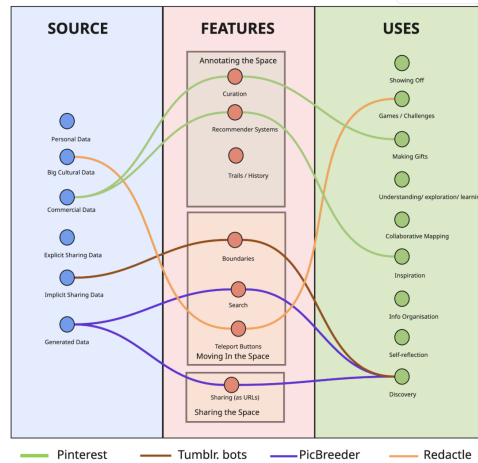


Figure 1: Enter Caption

- Collective Experience (sharing the experience) - You go through the experience individually, but share the outcomes with others.
- Collaborative Experience (sharing the space) - You work together in the same environment, creating and contributing to a shared outcome.

4 Case Studies

Pinterest Boards - June and her friends have developed an annual tradition where they curate Pinterest boards for each other. These carefully crafted collections serve as gifts that keep giving: recipients discover new recommendations and inspirations based on their friends' thoughtful curation choices.

Redactle - This daily word-guessing game presents players with a randomly selected Wikipedia article that has been completely redacted (blacked out). Players must uncover the content by guessing words, gradually revealing the hidden article. The shared daily challenge creates natural conversation points, as friends compare their strategies and discuss the surprising topics they have collectively uncovered.

Tumblr Bots - Automated accounts scan Tumblr posts to identify text strings that correspond to DNA sequences, then post about the organisms they represent. This creates an unexpected treasure hunt where the community celebrates rare biological discoveries hidden within everyday social media content. Users take pride in finding particularly unusual organisms embedded in casual posts.

PicBreeder - This evolutionary art platform demonstrates a complete cycle of generative content interaction:

1. **Generated Data:** AI networks called CPPNs create diverse images

2. **Search:** Users browse and select favorites from random assortments
3. **Discovery:** The algorithm evolves new images by combining and mutating user selections
4. **Sharing:** Each creation has a unique URL, allowing users to share both final images and the complete evolutionary lineage that produced them

When Antonios opens PicBreeder, he encounters a random collection of AI-generated images. By selecting his favorites, he guides an artificial evolution process that produces new images similar to his choices. This allows him to both discover the algorithm’s capabilities and share his creative journey with others through the platform’s URL-based sharing system.

5 Further Work

As we discussed these areas, we found example after example that were relevant, each having a different set of features and emerging uses. During the workshop, we also created a zine form and an experimental prototype to use the patterns in River for exploring Itch.io games. We hope that this will provide a starting point for others to

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