InfiniteCATs

Semantic Crafting as a Substrate for Creative Activity Tracing

check it out!

shmuh.co/infinitecats

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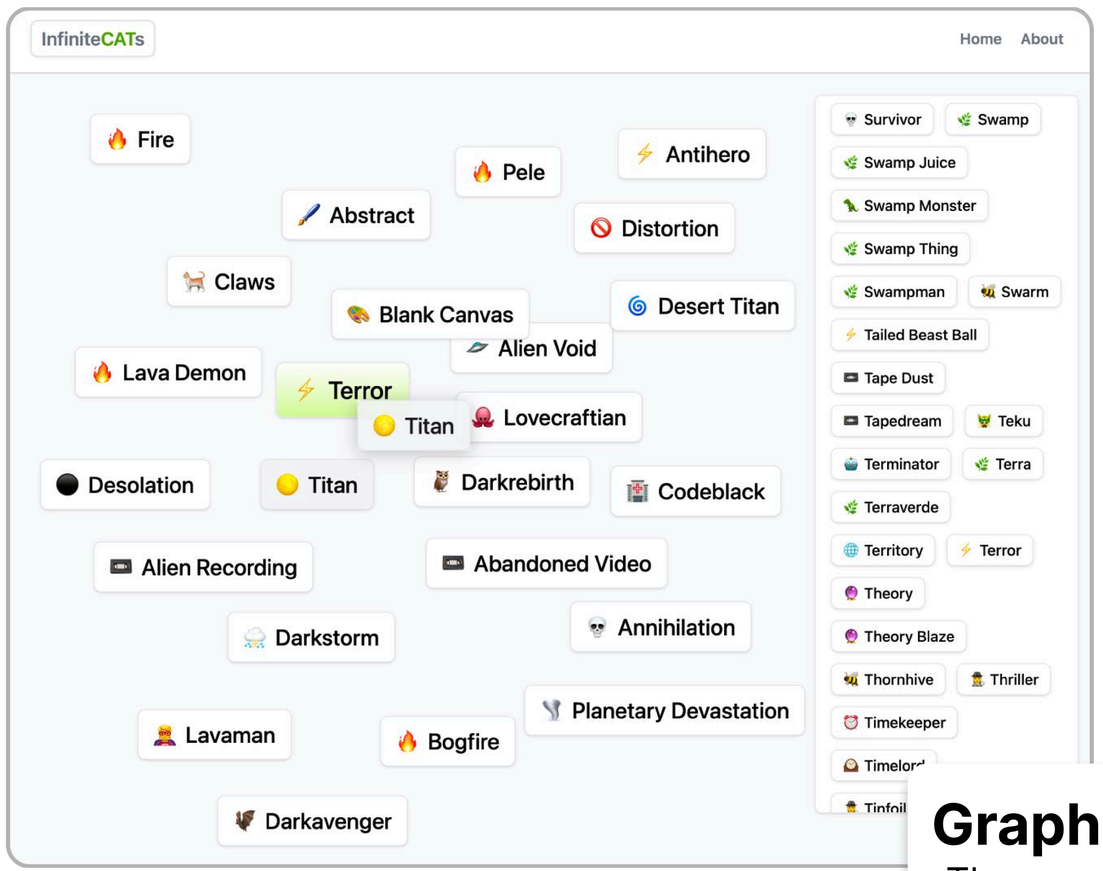
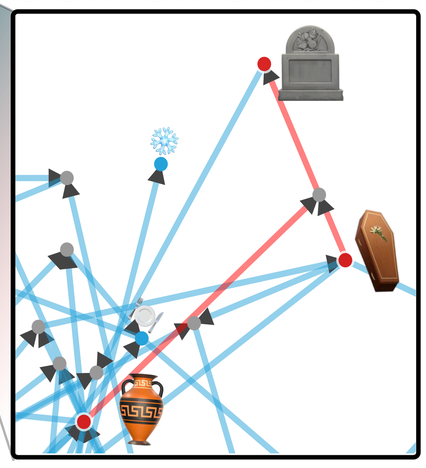
Large Language Models are increasingly intermediating creative processes, shaping the spaces that users explore, and how they reach them. We lack insight into how LLM-intermediation is implicitly shaping creative exploration processes, and user's strategies for navigating this. Players of semantic crafting games like Infinite Craft merge concepts to craft new ones, from a constrained set of initial options, with each combination result determined by an LLM. This simple, yet expressively open-ended substrate presents as a well-scoped environment for observing LLM-mediated autotelic creative activity.

Interface



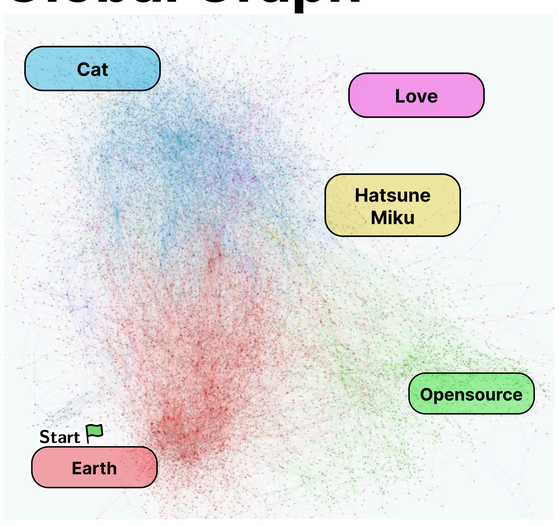
InfiniteCATs builds upon an open source version Neal Agarwal's *Infinite Craft*. Players drag concepts together to "Merge" them into new concepts. Merges are handled via a call to a LLM.

Combinations



We plot combinations using a graph structure. Here **(in red)** ***Cemetery*** combines with ***Ceramic*** to make ***Tombstone***

Global Graph

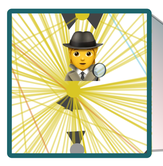


Here's the union of all graphs made during our pilot study. The large communities correspond to the semantic regions our players were interested in exploring.

Graph Features

There were many Source-Like nodes and Sink-Like nodes. Source-Like nodes indicate users' choices. Sink-Like nodes suggest the LLM-driven combination system's tendency towards certain outcomes.

L has many outgoing edges—it was *used* in many combinations



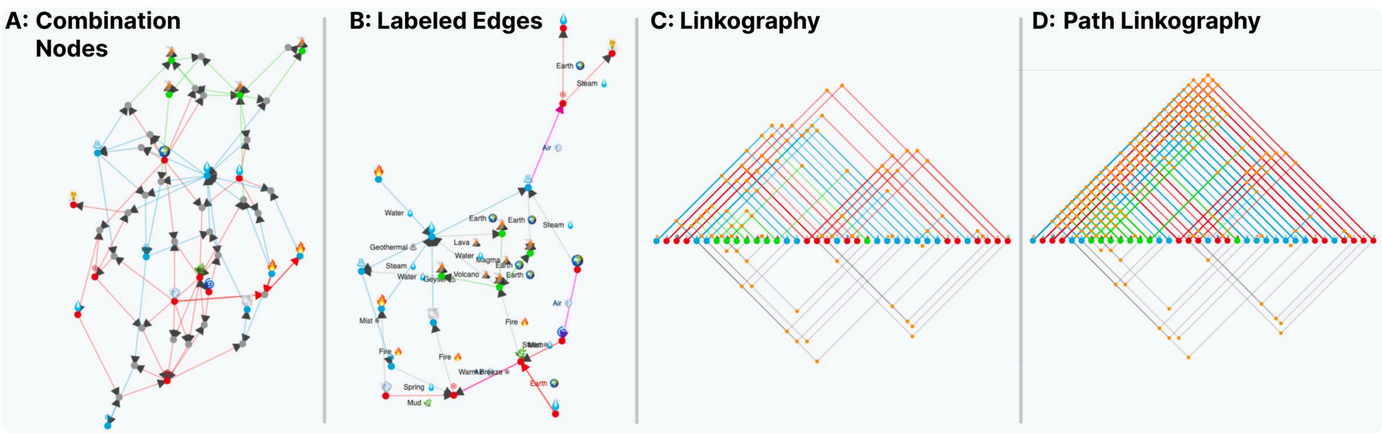
Shipping has many incoming edges—it was the *result* of many combinations

Communities

We divide the graph into communities using the Louvain method, and color the nodes & edges accordingly. We saw communities form around semantic themes (ex: the **Opensource** community in red) and particular user strategies (ex: the **L** community in yellow).

Different Graph Representations

This poster highlights the **Combination Node** (A) graph style, were merges are represented with grey nodes. We created additional representations: The **Labeled Edge** (B) shows merges as a source node and a labeled edge of the dragged node. The **Linkograph** (C) and **Path Linkograph** (D) show each created material in chronological order, with edges above the line representing combinations and entire path recipes respectively. Different formats visualize different types of user action.



The graph used as the background for this poster is a subset of P2's from our pilot study. While the pilot study was undirected, these preliminary graph structures suggest signals and patterns we can look for in future studies.