Wikitree

Wikipedia mapping companion

Problem

Research can often result in sprawling journeys with cyclical and branching explorations involving backtracking and falling down rabbit holes. At the end of these journeys a user's browser window may be crammed with open tabs, each with their own long navigation history. Both tabs and history are serial, linear paradigms, and fail to represent the full shape of ground covered during research.

Wikitree aims to more effectively map these journeys.

Motivation

Why research maps?

Research is rarely limited to a single source. Whether an undergraduate student reading a Wikipedia article, a scholar reading a research paper, a scientist reading the results of an experiment, or a lawyer reading legal precedents, people in the process of learning usually need to read related works in order to gain a larger understanding of the concepts they're studying.

We believe research journeys can be accurately mapped with directional networks. We want researchers to be able to stay in their flow state of digging and exploring, while also holding a big-picture overview of their progress. In this way, people can dive deep while simultaneously maintaining perspective.

Why Wikipedia?

Practically speaking, Wikipedia is a good starting place for building research network maps, as its articles are already interlinked in a rich network structure and are read by a large and diverse audience.

But we're also driven by our ideals. Wikipedia is a modern exemplar of our species' increasing democratization of knowledge. Historically, knowledge has been limited to those with the privilege and resources for academic training. Even within the last century, encyclopedia collections have been prohibitively expensive. Public libraries help ease this barrier by offering free access to reference materials. However, only with Wikipedia is the largest, most cutting-edge encyclopedia now available for free to anyone with a basic computer and Internet connection (both increasingly ubiquitous resources).

Approach

We display the research map and article reader side-by-side, so the user can access both simultaneously. The research map updates as the user clicks through links in the current article. The map serves as navigation: clicking a node loads the represented article into the reader. The map can also be curated, with popover controls for pinning nodes, removing nodes, and breaking links. Sessions are saved and displayed in a pop-out sidebar, so the user can pause and resume multiple projects.

We use the D3.js force-directed graph layout to render the nodes and links. We use Wikipedia's MediaWiki API to fetch title suggestions, article content, category pages, and full search results. We display the Wikipedia article content in an HTML iFrame element and bring in Wikipedia's own stylesheets to give the articles a native look and feel. We use DOM Local Storage to save sessions to the browser. We use AngularJS as our client-side framework and Node.js with the Express framework as our server, hosted on a DigitalOcean droplet.
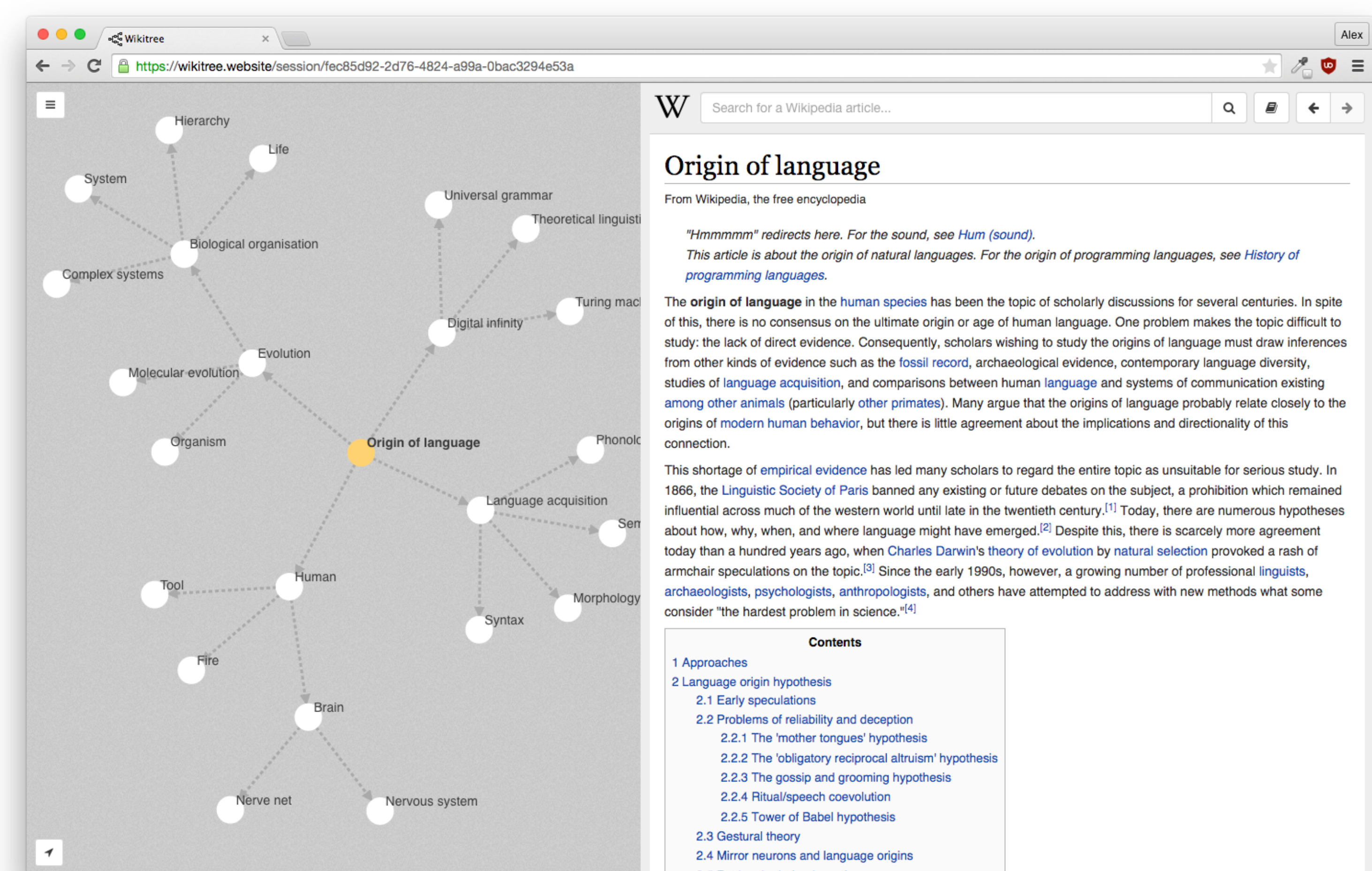
Future Work

New features

- Suggested nodes (driven by analysis of sources such as network structure, text content, and user patterns).
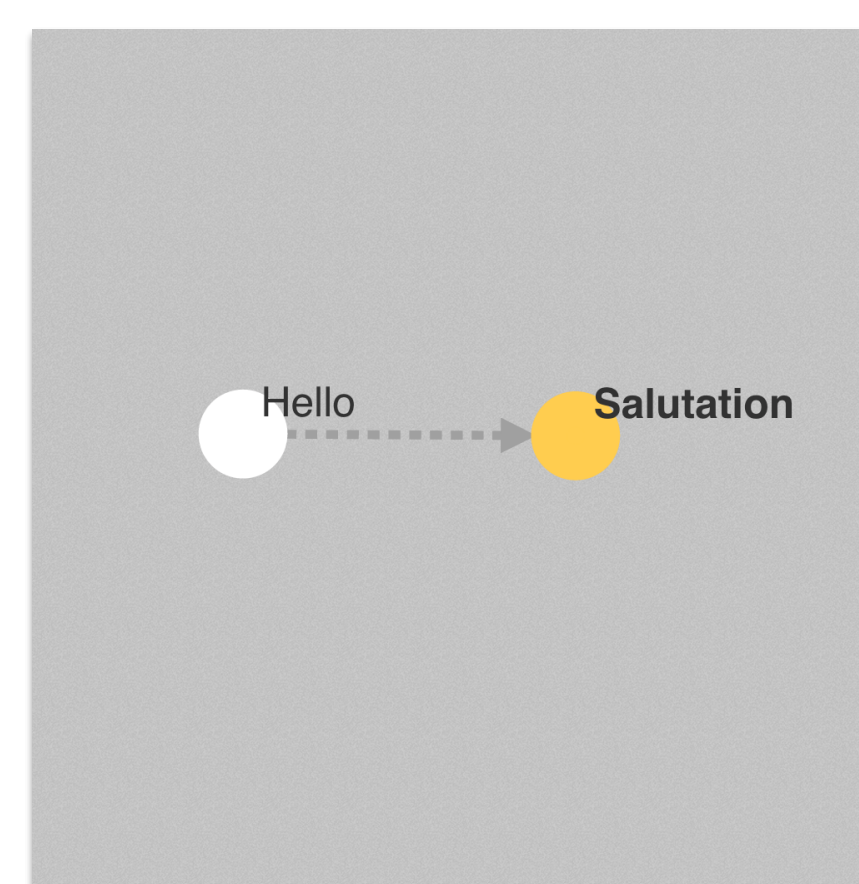- Article text highlighting and annotation.
- Server-side user accounts.

New audiences & datasets

- Web users and their browser history (visitation network)
- Researchers and their academic papers (reference network)
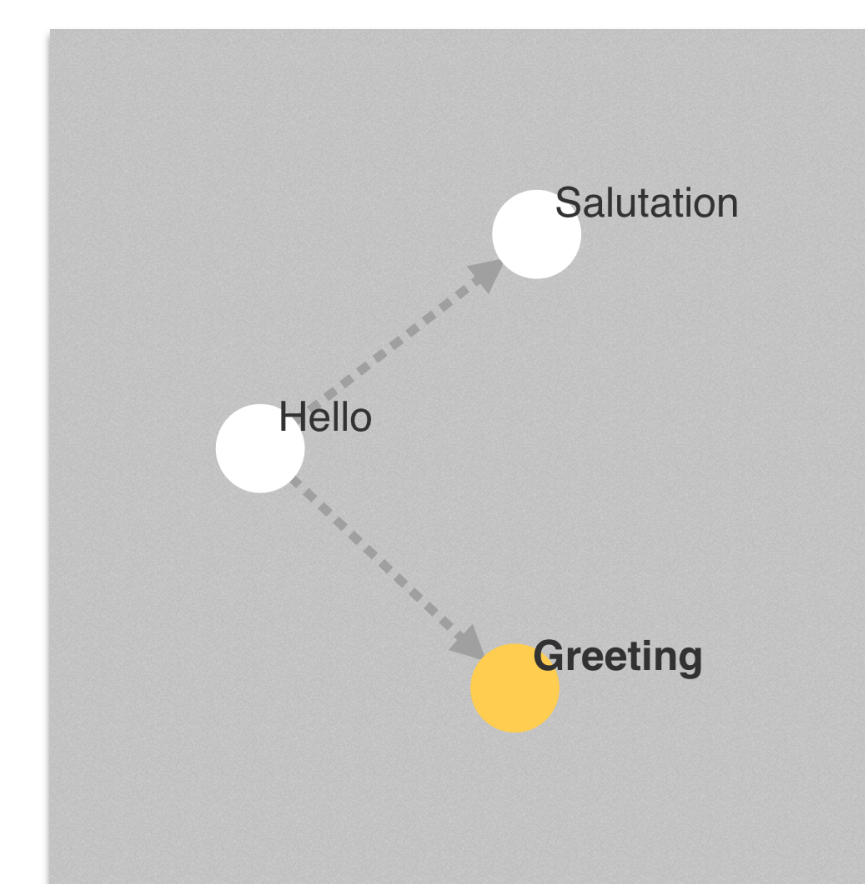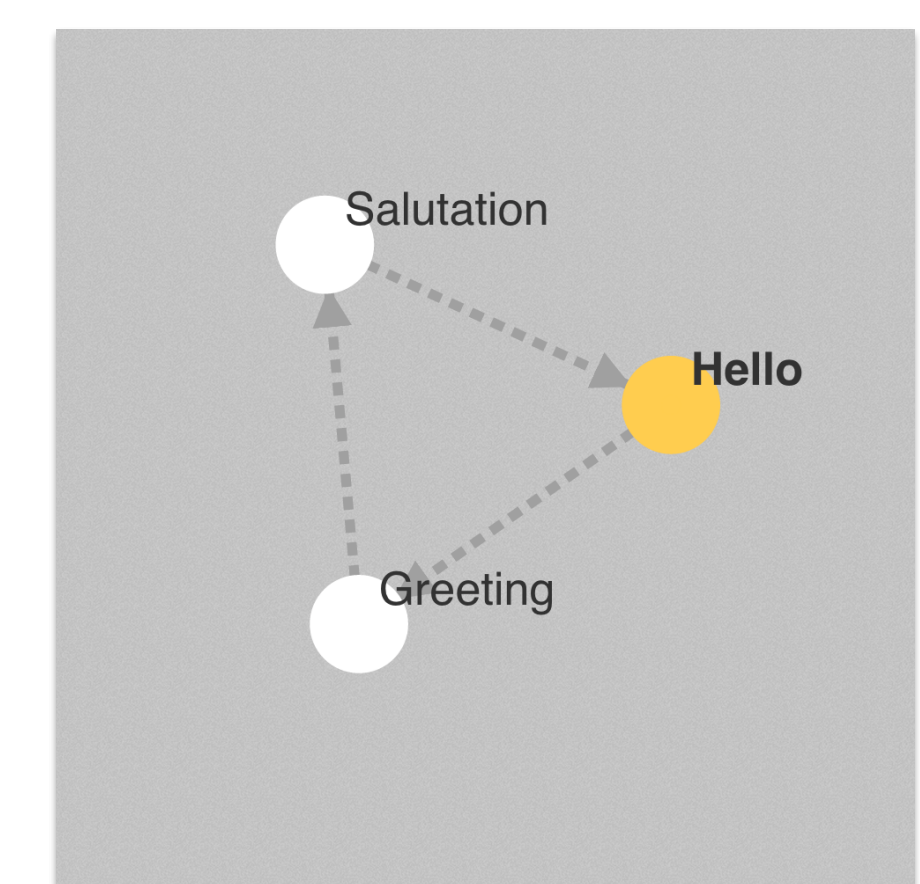- Lawyers and their case law (precedent network)

Results

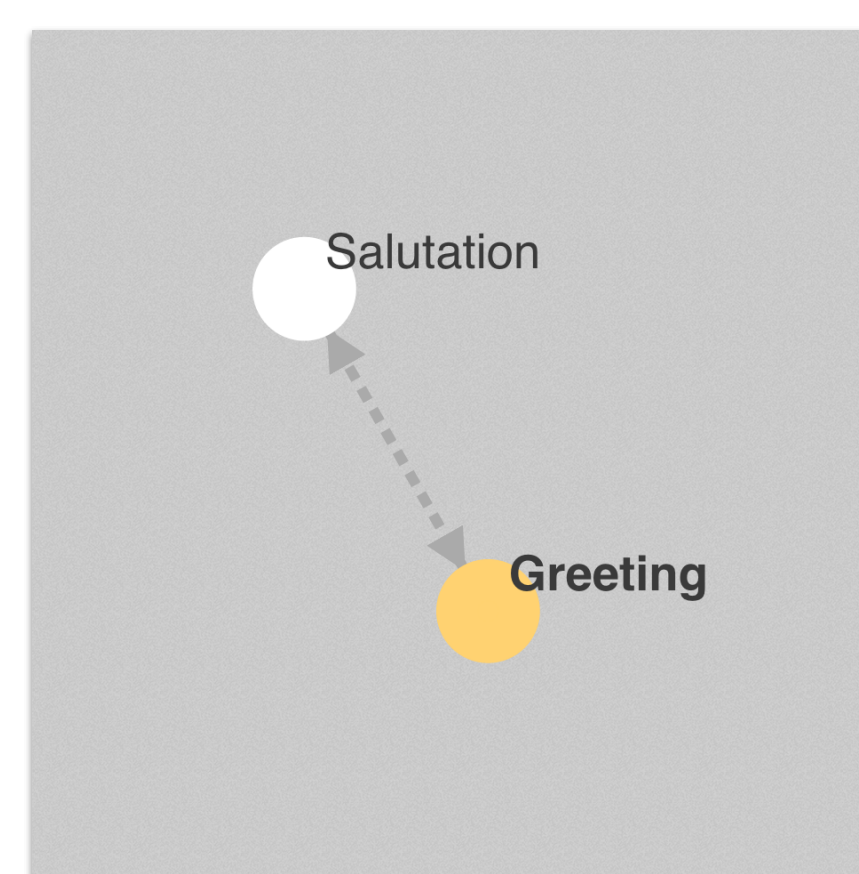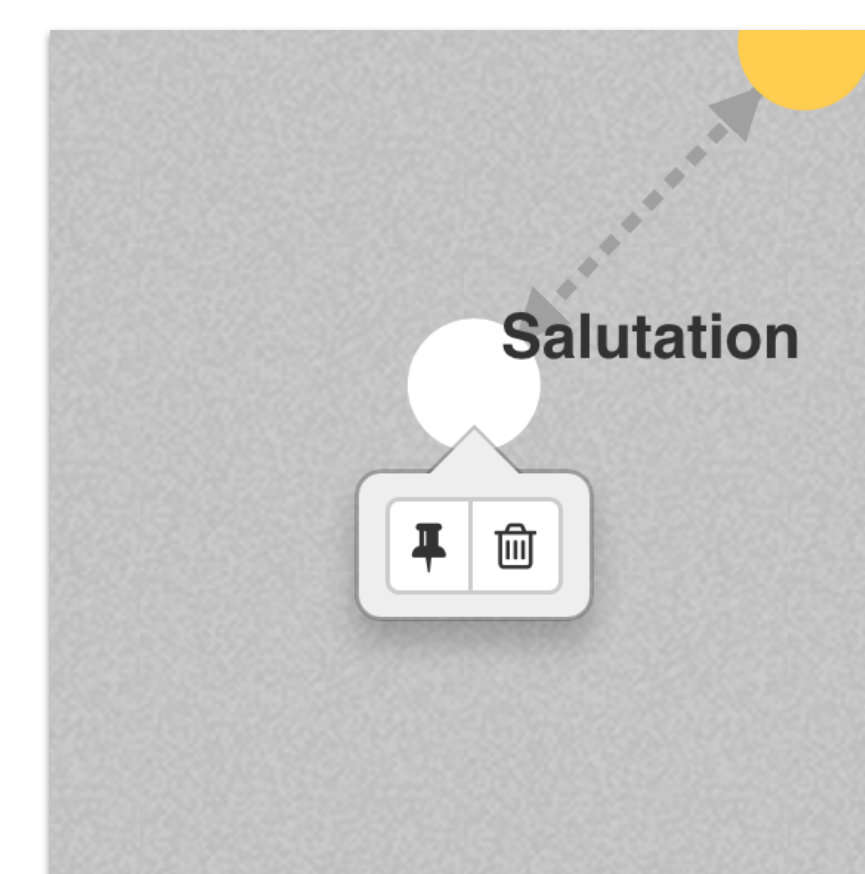Wikitree's network map and article reader

Directed link

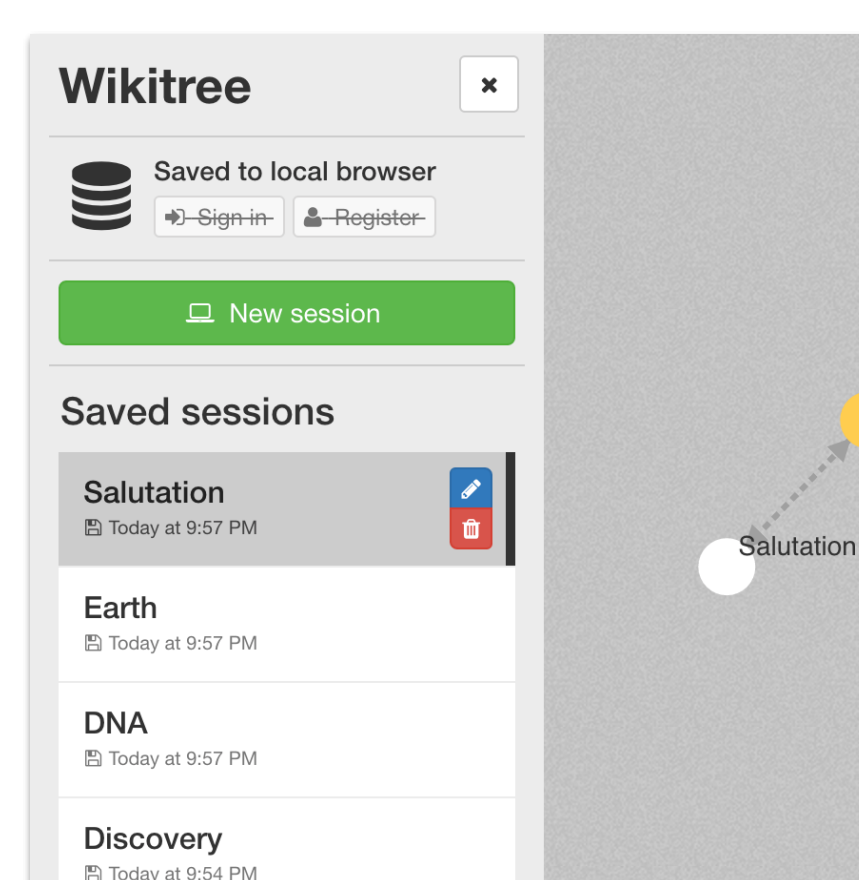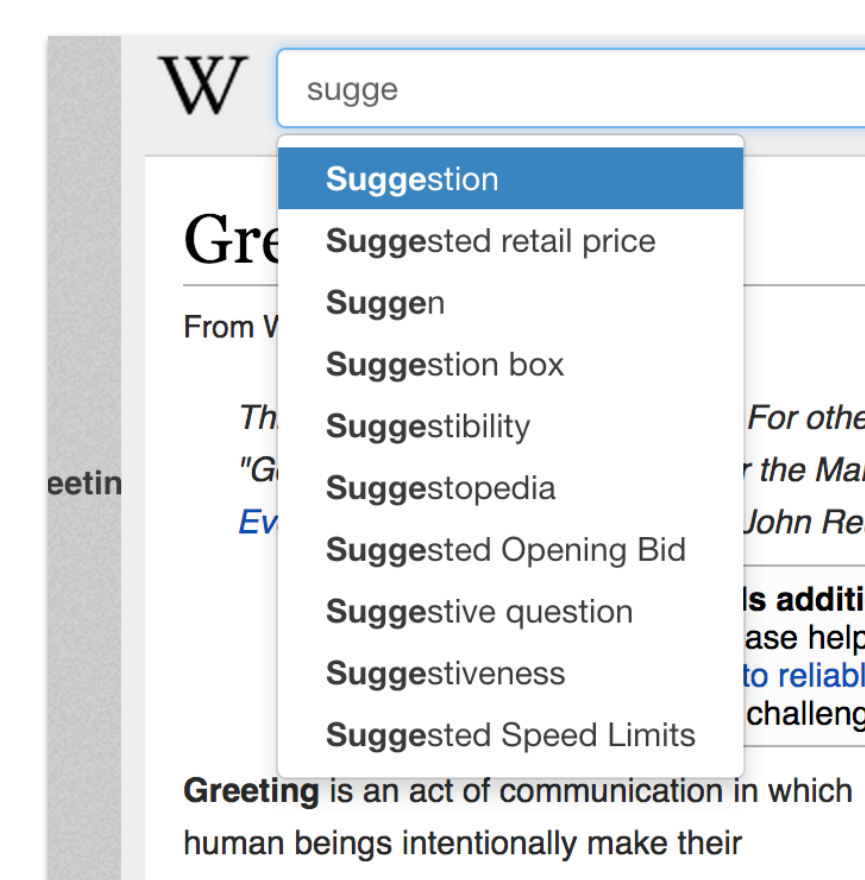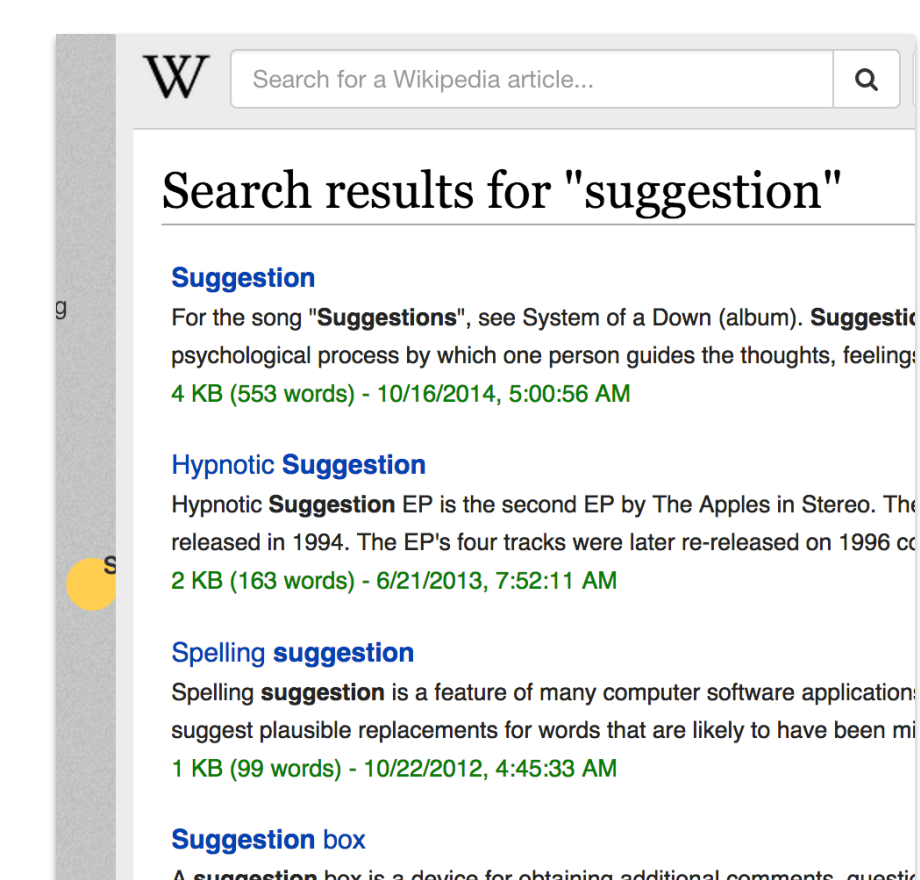Branching

Looping

Mutual linking

Node popover

Link popover

Saved sessions

Title suggestions

Full search results