Interactive Poster: Resource Systems Reference Database

David Lu [*]
Futurefarmers

Lauren Dietrich [**]
Stanford University

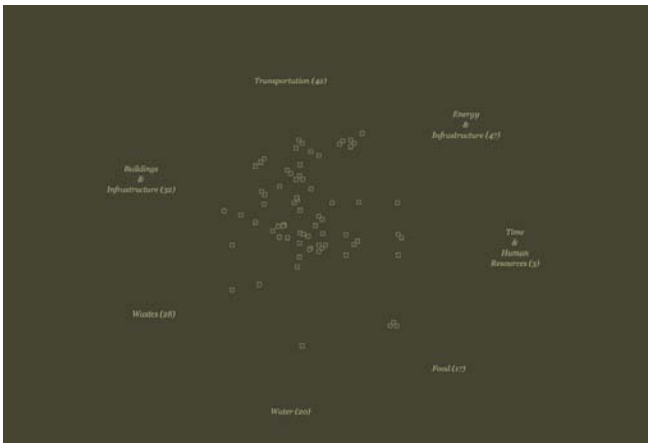

Figure A.

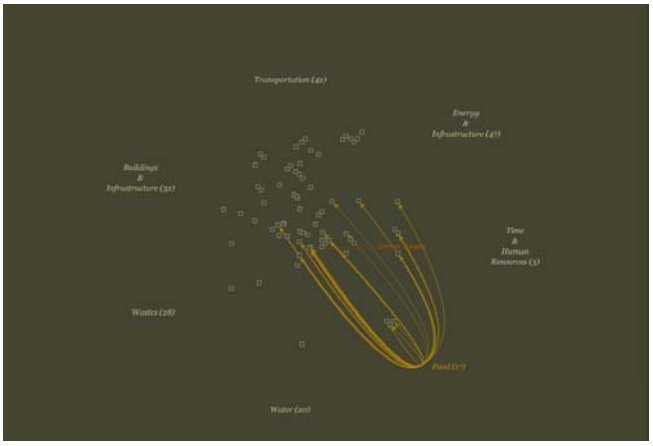

Figure B.

ABSTRACT

This interactive poster proposes a novel, explorative way to browse a database containing links to resource systems-related information online. Our approach is an illustrative one, and draws on our combined backgrounds in computer science, graphic and interaction design, sustainability, community organization, and urban design. The data visualized in our prototype was collected by students in the course *Sustainable Habits*, which Lauren Dietrich taught at Stanford University during Winter 2004.

CR Categories: H.4.3 [Information Browsers], H.5.2 [Graphical User Interfaces (GUI), Interaction Styles, Screen Design]

Keywords: sustainability

1 INTRODUCTION

The course *Sustainable Habits*, recently taught [1] at Stanford University by co-author Lauren Dietrich, strove to encourage a questioning of provisions, to inform the community about resources we are dependent upon, and promote a systems understanding of individuals as members of resource cycles. Course participants looked in depth at the operational systems providing basic need services to Stanford campus. Assessing the sustainability of both the resource systems and our impacts within these systems, students considered their own habits. Synthesizing learning from lectures, readings, and personal research, students worked with University staff to assess both efficiency of existing systems and student awareness of resource consumption, and provided suggestions for enhanced sustainability in systems management.

[*] email: dahveed@david-lu.net
[**] email: lifegame@stanford.edu

Students, in their research and reading, contributed 70+ pieces of resource system and sustainability-related literature to a shared reference collection. The goals of this visualization project were to:

1. develop a visual language for expressing individual references and their relationships to resource system categories;
2. design a malleable, explorative interface for browsing the reference collection;
3. encourage reflection about sustainability.

2 DATA

Each reference in the reference collection possessed attributes such as *Title, Author, Publication Date,* and *Locator (URL)*. It also possessed number values, ranging from 0 to 3, indicating a level of relevance to each of 8 categories of resource systems: *food, water, buildings, time, energy, organization, wastes,* and *transportation.* A value of 3 indicated a strong relationship. A value of 0 indicated a nonexistent one. In addition, the reviewer of the reference was allowed to annotate the reference with comments. A snapshot of the data used for the project is available for download as an XML file [2].

3 VISUAL LANGUAGE & INTERACTION

The visualization presented in this poster evolved from hand-drawn idea sketches to a refined, screen-based software prototype [3] implemented in Macromedia Flash and ActionScript. This prototype can be viewed in any browser equipped with version 7 or higher of the Flash plug-in.

Research references contributed by students at Stanford University together create an emergent visual composition [Figure A]. Each reference, represented by a square, is connected to one or more resource systems. Clicking a resource system text label reveals references to which it is connected.

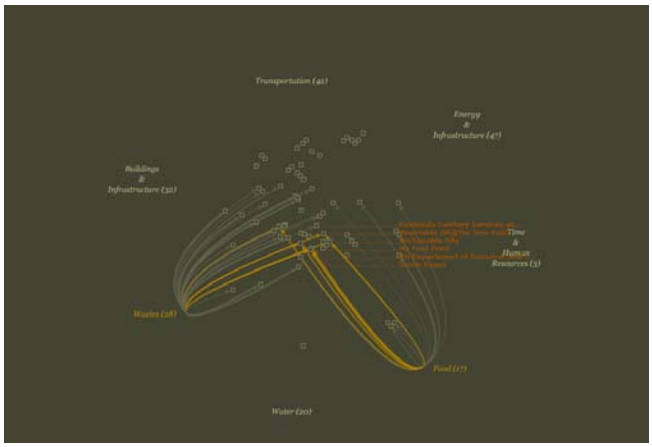

Figure C.

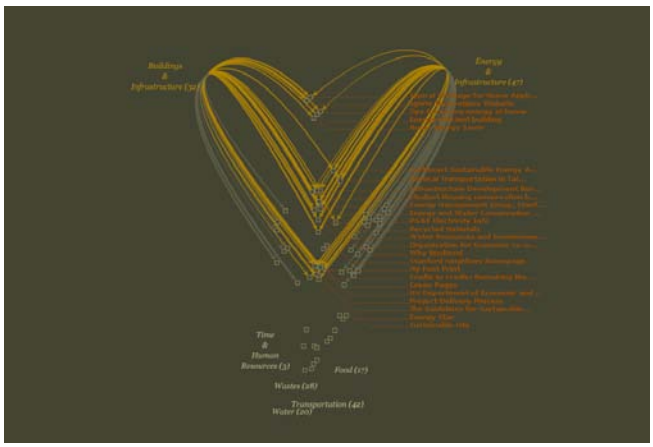

Figure D.

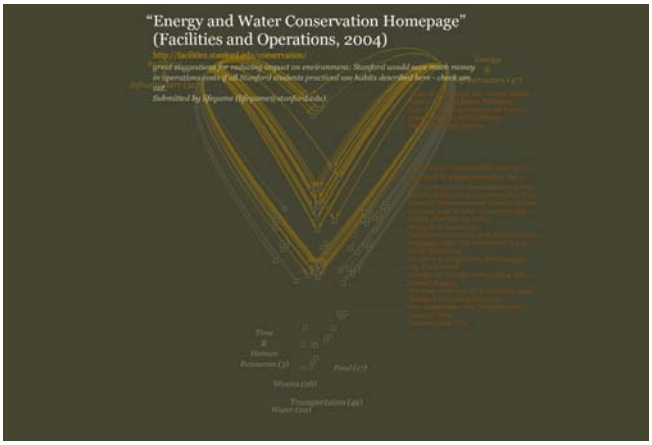

Figure E.

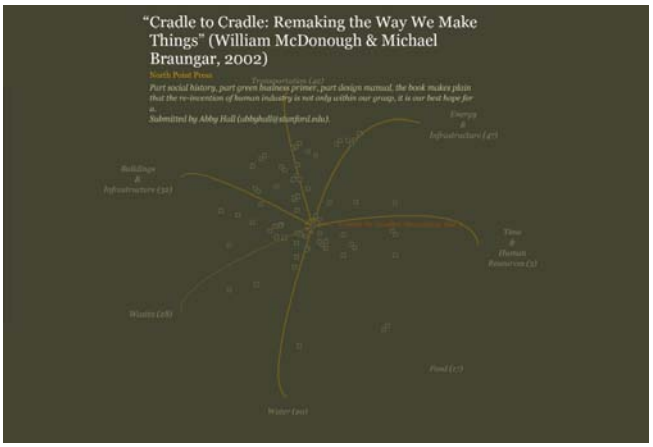

Figure F.

Line weight conveys strength of relationship [Figure B]. A heavy line indicates that a reference *features* a system. A medium weight line indicates that a reference *includes* a system. Finally, a thin line indicates that a reference merely *mentions* its connected resource system. References that feature a system are additionally treated with overlay text in orange.

When lines have been turned on for multiple systems, references belonging to the intersection of sets are highlighted [Figure C]. Here, references that belong to both the food and water systems are highlighted, and marked with overlay text.

Resource system labels can be dragged, allowing for a malleable composition [Figure D]. Here, the categories *Buildings & Infrastructure* and *Energy & Infrastructure* are isolated in relation to the other systems.

Hovering [Figure E] over any orange overlay text will reveal meta information (*Title, URL, Author, Publication date, Reviewer, Reviewer Comments*) about the active reference. Clicking will open the reference in a new browser window.

Similarly, hovering over any square will reveal the same details, and will display connections to related resource cycles [Figure F].

4 CONCLUSION

It is our hope that this visualization be the first in a series of interpretations of interconnected systems data. We see this initial sketch as a learning exercise, in which we have developed a compelling visual vocabulary for expressing patterns and relationships.

We also intend this to be a starting point for viewers to explore their connections to myriad systems through commonplace activity and life-sustaining daily habits. It is our hope that systems visualizations may provide tenable access to complex information; by highlighting patterns of mutual influence and accurately connecting actions to effects we hope such visualizations bring about social change in an emergent way.

To view the software prototype, please visit [3].

REFERENCES

[1] http://sustainability.stanford.edu/cee57si.html
[2] http://tenableinfo.net/resource_systems/database.xml
[3] http://tenableinfo.net/resource_systems/