Visualization of ocean ship logbooks between 1750 and 1850

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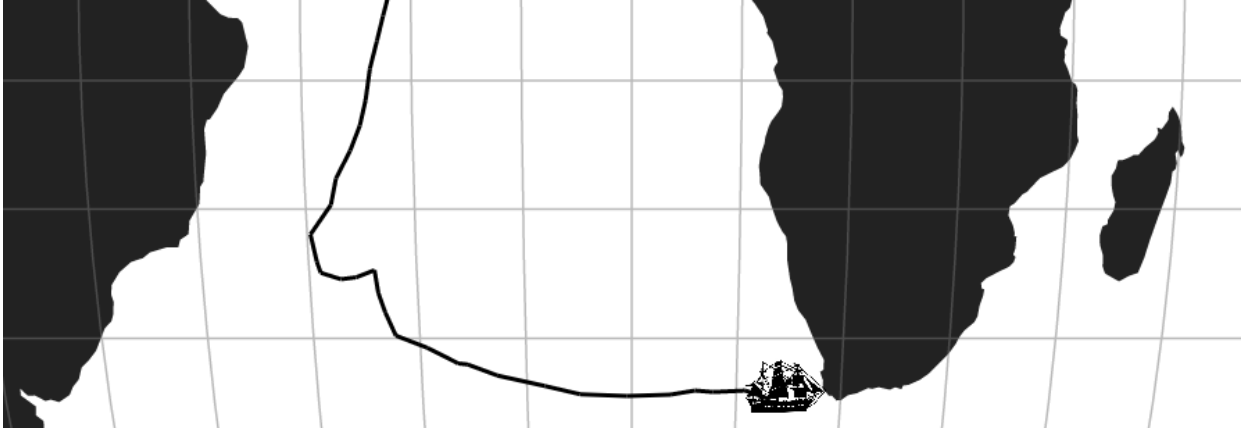Department of computer science

Figure 1: End of the *Die Gebruder*'s journey

ABSTRACT

The objective of this work is to provide a historical visualization of the ship traveling through the oceans between the $XVIII^{th}$ and the XIXth centuries. To aesthetically display their journeys and position, in order to provide dynamic representation of the biggest travels of this times.

This work is the result of a student project from the data visualization course of the artificial intelligence master's degree, for the University of Lyon 1.

This is a prototype to open the way of highly user-configurable historical visualization: how to render historical information in a graphical way the user can manipulate in order to see precise or global way, with different aesthetic permitting him to get the need information, or just enjoy the view of a past century.

Index Terms: Visualization—Data visualization—Historical visualization—Ship travel

1 INTRODUCTION

This work permit to visualize all data contained in the sailors' logbooks that have been digitized by "CLIWOC" [7], a European project willing to analyze oceanic climates that is frequently reported in the ships' logbooks. This digital documents contain everyday position of hundreds of ships from different European countries between 1750 and 1850.

Our objective was to offer a beautifully display of an historical phenomenon that has rarely been represented. Historical graphical representation are full of country, culture or religious maps, a lot of past and present art permit to visualize historical information and facts. But boat's movement has rarely been display in a dynamic way, and never in a way the spectator can directly manipulate.

Since the dataset is highly sparse and incomplete, our objective isn't to reveal information and concepts by the visualization, since it would be biased by the lack of data. That why we focus more on an aesthetic display in which the spectator would be more likely to switch from one view to the other to satisfy his curriosity.

2 RELATED WORKS

Our first motivations come from the other historical visualizations that try to offer some aesthetic visualizations through time, such as [1] that unify a lot of historical data around several millenniums in a manipulable visualization.

The CLIWOC's dataset is a unique resource: a such big and precise testimony of the past in a computer readable format was an opportunity we had to take. Since it is an open access dataset, there are other people that have already done visualizations of some travels, such as [4] showing the first travel of Captain James Cook, or [3] visualizing the coast and the ocean roads just by printing the places of the different logs. But none of them offer a dynamic interface, letting the user focus and manipulate the data or its display.

About out to display 2D-maps, a lot of work has been done to implement different projections, and to vary the focus center of the created map, such as [6] that display a lot different earth projections in the D3 javascript library, or [5] that focus on a more original projection.
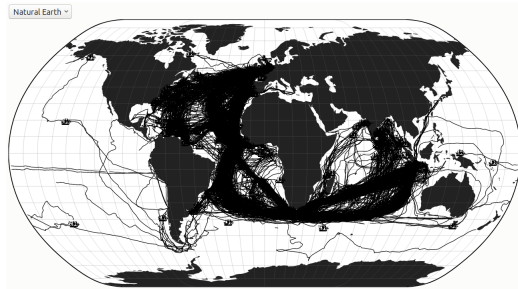
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3 PROJECT DESCRIPTION

3.1 The visualization

The first view offered to the user, is a complete display of all the registered ships, permitting to visualize the most used ways, but not to analyze the path of a given boat.

User can manipulate several drop-down menus, permitting him to modify some display parameters:

- An aesthetic one: the chosen projection, to get a different vision of the earth and the path taken by the ships.
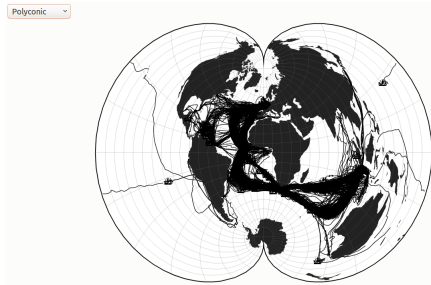
- And to more data-centered ones: one permitting to filter the dataset by nationalities, display only the boats from the French fleet for example, and the other offering to select a single boat in order to visualize it only and to follow its all path on an empty map.
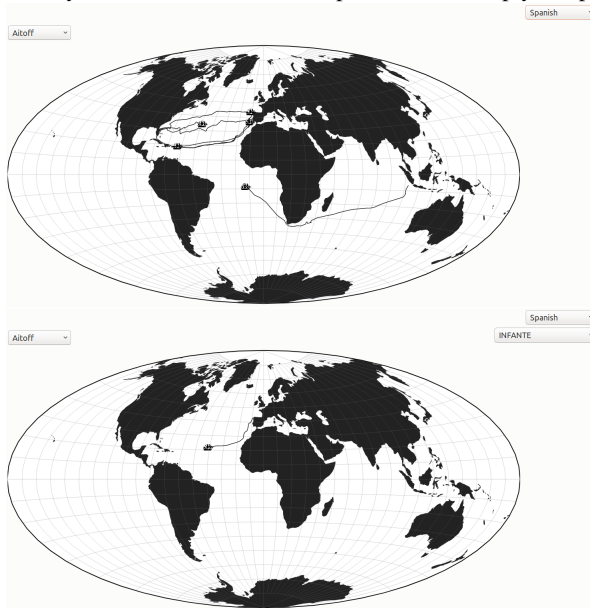
3.2 Implementation

The project is fully implemented in HTML/CSS/JavaScript, making it usable on every computer having a web browser. We used D3js, a library made to visualize data, containing a set of function permitting to display maps and to draw data over it. We also used some jQuery to ease the event management of the menus.

Then is it just a steady use of JavaScript to get all the points from the selected ships, and to put them at the right position depending on the present earth projection.

The project is hosted on `Github`, permitting us to use their `githubpages` [2] service to deploy a front-end web page. Since our project is only using html, css and js, we can use it get a freely hosted web application usable online at any time.

4 DISCUSSION

If the first ideas has been well implemented, this prototype still lack a lot of features and parameters. This still need to permit the user to move the center of the map, to zoom in and out around a given region, and to filter the displayed ship by the Captain name, or a time window.

This is a first step to a more complete visualization. Since we have rendered the data, we just need to add more options to present the data in a other way.

The present visualization is only in black and white, and it would be likeable to add more color, to be more pleasing to the eyes, and to visualize more information at once: for example, color the different path depending of their nationality or the date of the trip.

An other possible bettering is to link tooltip information to all ships, permitting to spectator to get some precision about a given boat (dataset contains different information depending on who writes the logbook: name of the ship, name of the Captain, origin harbor, targeted destination, and multiple observations). Without this added information, using this visualization can quickly become boring, it could be interesting as a tool for a museum briefly for a teacher, using this display to present some phenomenon or to show travels as a support for wider explanations.

5 CONCLUSION

In this article, we presented the visualization of the CLIWOC's dataset, showing that despite of the incompleteness of the product, we already can display some information that could interest some users.

Despite of using data visualization to present data to study, and to help knowledge information, we here just used it for an aesthetic purpose, offering a display that simply wants to be pleasing to watch.

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