

Study of ocean ship logbooks between 1750 and 1850

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1 INTRODUCTION

The objective of this work is to provide a historical visualization of the ship traveling through the oceans between the XVIIIth 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 possible since European Union's project "Cliwoc" [9] digitized 280280 logbook entries, directly archived from maritime officers' logbooks ([2]). The main objective of Cliwoc's project is to use this datasets for its meteorological records, but we decided to focus on the geographical coordinates to provide more pleasant visualizations.

The sparsity of the data may force us to filter the dataset and abandon some visualizations, since they would not be relevant enough.

Also, still caused by the sparsity of the data, we may focus more on aesthetic objectives rather than analytic and phenomenon representations.

2 RELATED WORK

- First we will base our representations on the multiple earth representation already developed in D3JS:

- A lot of planar projections can be used to represent travels at global scale: some of the maps we can find in [7] may be used, since they are Europe centered (most of the ships are travelling from or to European coasts), easily understandable by a wide majority of people and representing all the oceans on a unique frame.
 - Some "3D" representations of the earth, showing only one hemisphere. For example, [6] can be easily modified to be centered on a particular ship, or moved directly by the user. This kind of map may be used to represent locally the activities of a ship and its neighbours, or to look at the movements in a given region.
 - In order to combine local and global representations, some highly twisted projection may be used. For example, [1] centers the attention on a given point, give a good representation of its neighbourhood, and display a strongly modified geography or more distant parts of the earth. This kind of view may be used with precautions, and only in very peculiar situations, since some may find it hard to read, and apply too much distortion on distant places.
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- Then we can inspire ourselves with some travel visualizations, for example, some have been already created in R or python using the same dataset:
 - Focusing on a single ship travel, we can cite the representations of Captain James Cook first travel through time:
 - * [4] A global one on a equirectangular map.

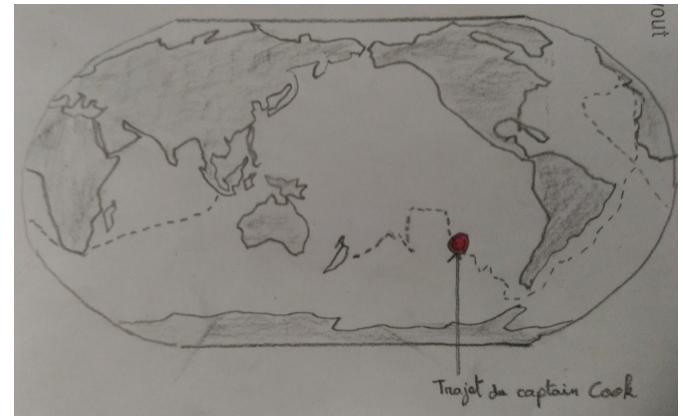


Figure 1: View on a single travel, display the whole path of the ship, and specifying its present place.

- * [5] A "3D" one, giving a better representation of the ship's locality.
- [8] is travelling through time in order to see all the ships for the dataset evolving on the surface of the Earth. (This is a good example of why we should focus on aesthetic rather than analytic: the sparsity leads to a display with amount of ships varying through time and nationalities, without any link to the real proportion of travels in history.)
- [3] shows a beautifully density of travels on the global map, "revealing" the European centered organization.

3 PLANNED VIEWS

The objective is to provide some beautifully displays (cf. fig. 1, 2) depending on the user's parameters. The user can modify the data he wants to visualize or the way it is displayed by selecting different parameters 3.

Projection:

The user should be able to select the way Earth is represented: "3D" spherical, projected in different ways

Point of interest:

Sometimes, it may be interesting to focus on a specified area, so allowing user to zoom somewhere or to choose a bigger scale should be an adjustable parameter.

Ship displayed:

The user may want to look at the whole dataset, displaying all the ships, or focusing only on one boat, one travel, one captain, or maybe only the ships coming from a specific country.

Path:

Some may be interested only by the present position of the ship, others would like to see all the past, or even future path taken by the ship. This should be a selectable parameter.

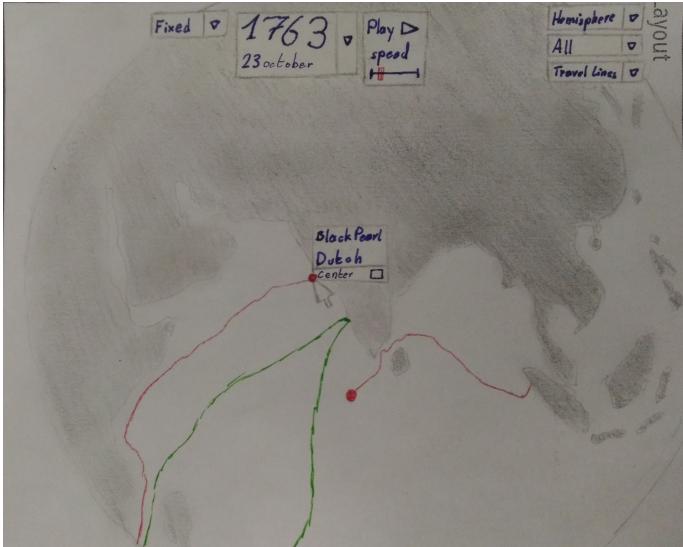


Figure 2: View of multiple travels, from different countries (color), showing the ship's tooltip, on user's click. Displayed on a "3D" representation of the Earth.

Time:

Visualizations can be focused on a given date, to see the positions of boats at a moment, others can represent the whole hundred of years, or just a window contained into a lower and an upper border, lastly, it is possible to make some animated view, moving forward in time frame after frame.

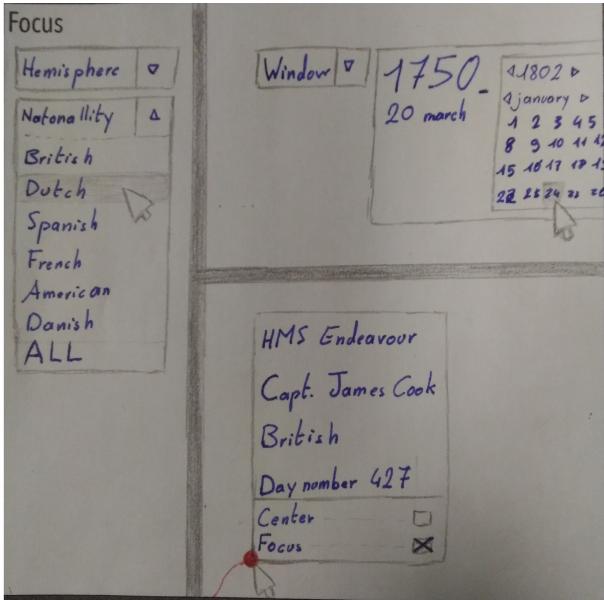


Figure 3: View of the drop-down menus and tooltip, permitting the user to customize the views.

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