‘. . . A mountain hid under water’: Deep Charting, GIS and Cartesian Perceptions of North-West Atlantic Fisheries ca 1504-ca 1786

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The historical geographer must therefore be a regional specialist, for he must not only know the region as it appears today; he must know its lineaments so well that he can find in it the traces of the past, and he must know its qualities so well that he can see it as it was under past situations.

One might say that he needs the ability to see the land with the eyes of its former occupants, from the standpoint of their needs and capacities.

This is about the most difficult task in all human geography, to evaluate site and situation, not from the standpoint of an educated American of to-day, but to place one's self in the position of a member of the cultural group and time being studied (10)
The Poetic and the Positivistic

... initially ‘the geographer’s science and storyteller’s art’ [. . .] could not be fully detached from each other [. . .] an academic controversy was waged over the reliability of geographical data in Homer’s *Odyssey*.

Strabo, who believed the *Odyssey* to be authentic and reliable [. . .] leveled criticism against Eratosthenes for holding that Homer should be read as a poet and not as a scientific authority.

Seventeenth century historical philosopher Giambattista Vico coined the term *poetic geography* to describe mapping practices engaged by the ancient Greeks, that continued to the medieval ages. Map-makers would plot their culture’s belief systems, myths and aspirations upon the charts and tapestries of the seascapes and landscapes they depicted.

Poetic Cartography: Medieval Atlantic Maps

J.K. Wright (1965) “filled by the imaginations of the coast-dwelling peoples of the Old World with fabulous and fantastic isles.”
Collision of the poetic, the portolan, and positivistic. Section from Gerard Mercator (1569) *Nova et aucta orbis terrae descriptio ad usum navigantium emendate accommodata*. Both portolan and meridian / parallel charting techniques are featured. (wikicommmons)
The North Atlantic Fish Revolution
An Environmental History of the North Atlantic 1400-1700 (NorFish)

Professor Poul Holm (P.I.)

European Research Council Advanced Grant (2016-2020), NorFish, ERC-2014-ADG

In 1497, John Cabot returned to Bristol from a voyage across the North Atlantic. He told of waters so thick with fish that they could be lifted straight on board in baskets. Within a few years of this journey fishermen from all over Western Europe made the journey across. This was the beginning of the Fish Revolution of the early-modern world.
North Atlantic Maritime Settlements
C.A. 500 BC to Present

Fish Ports 1497-1774
- France
- England

Newfoundland Settlements

Map of North Pole, Willem Barentsz (1598) Netherlands
Deep Mapping & Charting GIS

William Least Heat Moon
*PrairyErth: A Deep Map* (1991)

- **Deep Mapping**: quantitative and qualitative data / methodologies.
  - Focus on topics that cross borders links texts and images in different locations—at times in different languages, and at times reflecting conflicting interpretations of the material involved.
  - Integrating multiple forms of knowledge.
  - Dynamic visualization of agency, networks, flows and time.
  - Proprietary GIS (Esri ArcGIS)/ Opensource (Google Earth, QGIS, etc.)

- **Deep Charting**:
  - “form of counter-mapping or reclaiming the map itself,”
  - by utilizing “new geospatial technologies”
  - to “weave together multiple narratives in an attempt to capture experimental, emotional, sensual, acoustic, spiritual and metaphorical space, as well as more quantifiable signatures of a specific region.” (Eleanor Hayman, et. al., 2017, 236)
Towards a Deep Chart

- Landing records
- Price data
- Consumption patterns
- Urban and rural fishing settlements
- Investments and political behavior
- International trade
- Abiotic and biotic conditions during the period
- Digitized historical terrestrial & nautical cartography
- Ship log data, etc.

Adapted from: MacDonald and Black 2000, 510. (From Ian Gregory: A Place in History: A Guide to Using GIS in Historical Research (2002); Ude Shankar: 2008.)
Sources & Models for the *NorFish Deep Charting*

- Trading Consequences database which enables historically traded volumes of commodities to be filtered by geographical location.
- Richard Hakluyt’s ‘Principal Navigations’ and the Hakluyt Society’s Online Collections.
- Sound Toll Records.
- Medieval and Early Modern Data Bank.
- The Trans-Atlantic Slave Trade Database.
- A Deep Map of the English Lakes District.
- The Atlas of Maritime Buddhism.
- The Downe Survey Project (TCD).
Qualitative & Quantitative GIS Methodologies

- CAQDA (computer aided qualitative data analysis) and GIS visualization greatly facilitates the task of identifying and interpreting the attitudes, events, and narrative patterns contained in archival documents.
  1. Text recognition (transforming documents into searchable formats)
  2. Units of Evidence: ports, witnesses, records, archeological data, etc.
  3. Word frequencies / Key words; and,
  4. Text codes / Geocodes.

(Schwartz, 2015)
The Fish Revolution 1400-1700

Fish transformed from a limited, high-priced resource to an abundant, low-priced commodity:

- This was contrary to the sharp price inflation of other foodstuffs in the early modern period.
- Marked by a North West Atlantic boom and North East Atlantic bust.

Poul Holm
Advanced ERC Grant (2015-2020)
England, France and the Netherlands, produced the most number of charts representing the Grand Banks between 1500 and 1800.

Newfoundland Grand Banks Charting 1500-1800
- 111 Maps examined 1504 to 1794.
- 51 Maps grand banks and fishery data harvested and geo-rectified.
Distant Readings: Quantifying Representation

1504-1787 Map Year / Size of Newfoundland Fishing Banks
GIS Methods

• Prosopography (Cartography)
• Distant Reading (Quantifying Representation)
• Close Readings (Qualifying Perception)
Typically, Atlantic surveys are represented by a “a territorialized map of the continents that border the ocean rather than a chart of the ocean itself. This is rarely maritime history, or an historical geography of the sea.”

Grand Banks map area, 1500-1800 CE, and Newfoundland cod catch, 1698-1827 CE. Blue and red lines are exponential trend lines for Grand Banks area and catch volume, respectively.

- Portuguese chart-maker Pedro Reinel’s 1504 *Kunstmann I, Atlantic* Chart was the earliest chart from which fishery data was extracted.

- Benjamin Franklin’s 1787 map *Remarks upon the Navigation from Newfoundland to New York In order to avoid the Gulf Stream* provides the closest approximation of the Grand Banks area in contemporary maps and charts
What is called the great bank of Newfoundland, is properly a mountain, hid under water . . . you find on it a prodigious quantity of shell-fish, with several other sorts of fishes of all sizes, most part of which serve for the common nourishment of the cod, the number of which seems to equal that of the grains of sand which cover this bank.

Pierre de Charlevoix 1719
Rendering of the ‘Grand Banks’ submarine topography was a fresh innovation compared to representing high terrain on land.

As knowledge and technical acumen grew, representing the Banks evolved from the simplistic to the more detailed.
Sable Island, a narrow sand ridge some 180 miles east of Nova Scotia has been known to European sailors since 1497 when it was sighted by John Cabot. Over the centuries it has acquired such an evil reputation as a navigational hazard that it has become known as the “Graveyard of the Atlantic.” There have been 204 recorded shipwrecks on the island, and probably as many unrecorded disasters.

Plot of Champlain 1641 March to May Voyage with Fishery Data from 1612 Map
*Carte géographique de la Nouvelle Franse*

**II Champlain (French Hydrography)**

*Themes*
- Ice floes, Climate Change.
- Collecting Indigenous Geographical Data.
- French Newfoundland.
- Voyage of 1641 Navigation.
Fisheries 1613-1700
The transition to a planter fishery from a migratory fishery in Newfoundland (c. 1700s)

- What led to the situation?
- Settlement patterns.
- Economy.
- Activities.
- Where did their product go?
- Boat technology.
- Prices.
**Commerce, Colonialism, and the State**

The overarching political and colonial contexts as rivalries and commercial interests intensified.

Augustine Fitzhughe 1693 Map” *A chart of the coasts of Newfoundland, with the fishing districts marked; “by Augustine Fitzhughe, living next doare to the Shipp in Virgine Street, anno 1693”* (Thames School of Cartography)

**III Augustine Fitzhughe: Nautical Cartography and the Thames School**

- Influence of Dutch Nautical Cartography.
- Consolidation of English Fishery.
- Plantation.
- Anglo-Franco Conflict in Newfoundland.
1675-1698 Catch per Newfoundland Port (Peter Pope) with fishery data from Augustine Fitzhughe 1693 Map. A chart of the coasts of Newfoundland, with the fishing districts marked; “by Augustine Fitzhughe, living next doare to the Shipp in Virgine Street, anno 1693” (Thames School of Cartography) English Boats (Blue) and French Boats (Red).
Systems 1708-1787
REMARKS Upon the Navigation from NEWFOUNDLAND to NEW-YORK In order to avoid the GULPH STREAM
On one hand, and on the other the SHOALS that lie to the Southward of Nantucket and of St, George’s Banks (1786)

Benjamin Franklin 1706-1790
IV Benjamin Franklin, *The Gulf Stream*

- Thermometrical Mapping.
- Ship Voyage Times.
- Effect of American Revolution on Newfoundland Fisheries.
Newfoundland Fishery Map Size and Cod Catch 1708-1786

A Chart of the Gulf Stream (1787)

Grand Bank Maps, and Cod Catch 1708-1786 (Nautical Miles & Aggregated Tons)
Fishing Zones

1504 - 1787

2016