



Rethinking the Role of the Cartographer in the Age of Democratized Cartography:
Education of Mapping Principles through the Map Brewer

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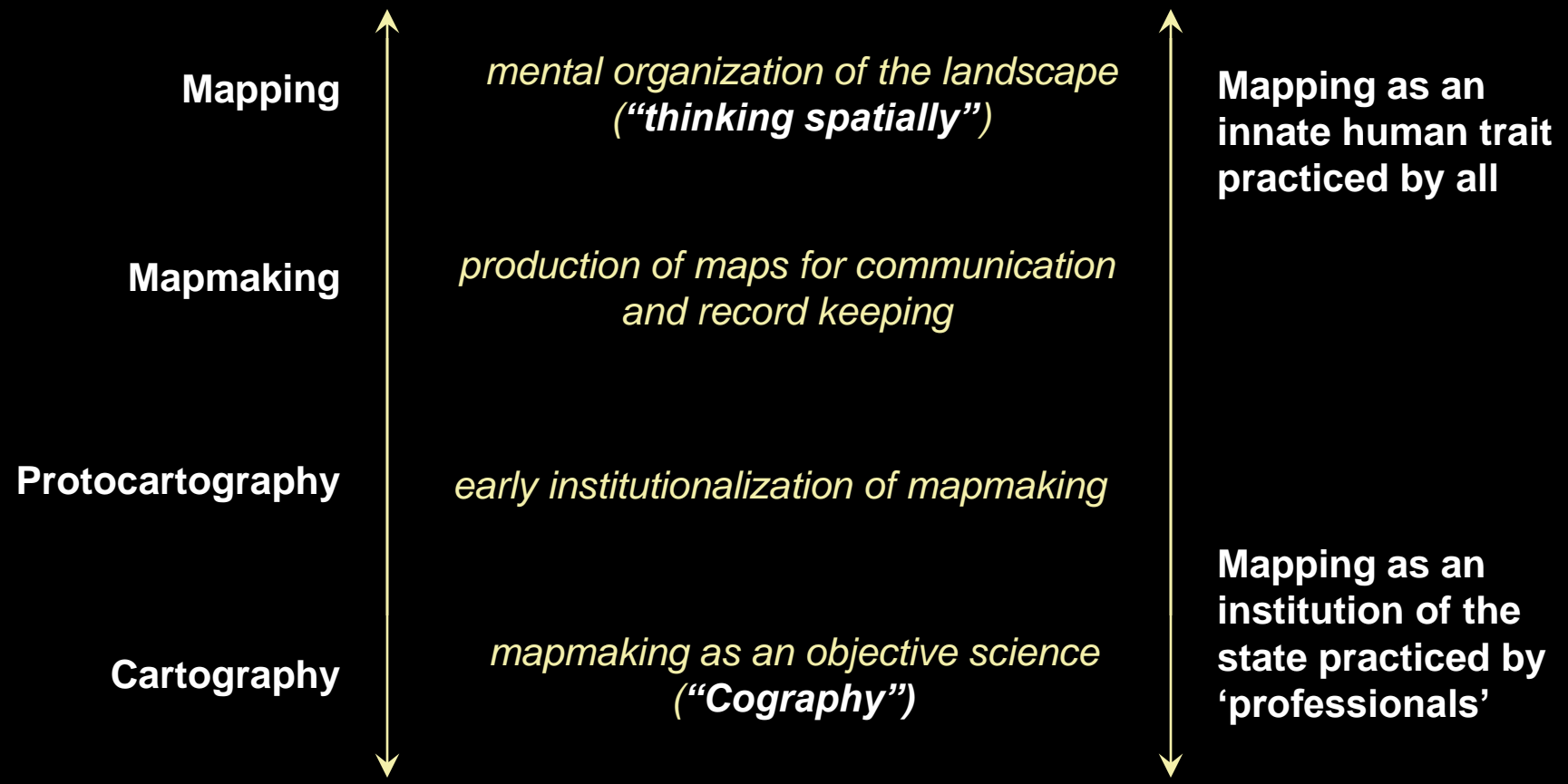
Overview:

- i) larger context **Democratization of Cartography**
- ii) the problem **The Misuse of Mapping Tools**
- iii) the proposed solution **The Brewer**
- iv) the specific problem **Isarithmic Mapping**
- v) the specific solution **IsolineEngine**

I. Larger Context: Democratization of Cartography:

***Definition:** the transition of the practice of mapmaking and the availability of mapping tools from the trained professional to the general public

***Disabling Professionalism:** the critique on professionalism that it is a mechanism for exclusion (Illich et al. 1977)



*Wood's historical development of maps ([The Power of Maps 1992](#))



KML files

Satellite Imagery

Google Maps API

MapQuest

GoogleEarth

MSN Virtual Earth

Mash-Ups

NASA Whirlwind

GeoCollaboration

SDSS

Yahoo! Maps Web Services

Public Participatory GIS

ColorBrewer

SHP files

ArcView

PGIS

MapServer

Idrisi

ESRI ArcGIS

MapInfo

Open Source GIS

ArcExplorer

Surfer

GRASS

ArcIMS



II. The Problem: The Misuse of Mapping Tools

***The Problem:** most tools are designed by **Experts for Experts**

***Harrower:** “like handing over the keys to an F16 fighter jet”

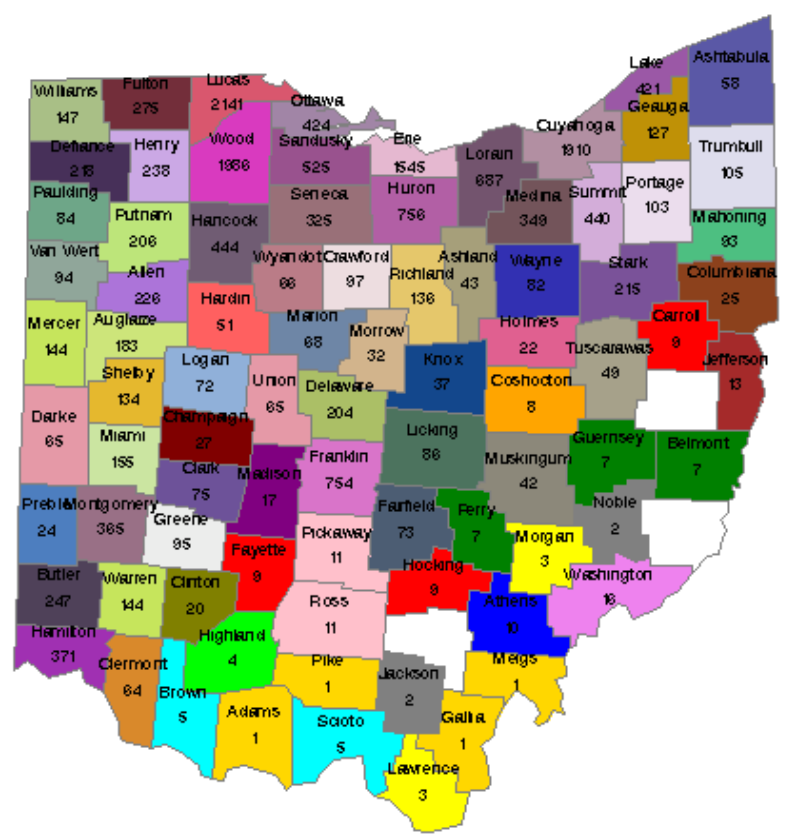
- most of the previously listed software packages or web services offer thousands of options, with little advice on using them

ISOLINE ENGINE

Help for making isarithmic maps



HEADCOUNT ENROLLMENT BY OHIO COUNTY



Fall 2006



*is this what democratized cartography looks like?



Powerful Tools + Little Guidance = Potential Trouble



*This is not a **Straw Man Argument** against the current available mapping tools

Powerful Tools + Little Guidance = Potential Trouble



*The responsibility of the software or web service developer



*The responsibility of the academic cartographer



*The end product is a reflection upon both



*Because of such, we need to now rethink the role of the cartographer, especially the academic cartographer

"What would be helpful would be to offer professional assistance..."
(Wood 2003)



*Software in other domains has already provided several models of offering assistance:

- **Tutorials:** step-by-step procedural instructions on how to use a feature of the software or web service
- **FAQs:** responses by the developers to the most common difficulties that users have reported about the application
- **Wizards:** a series of screens/windows to help the user complete a task (i.e. a tutorial that completes the task as you learn about it)
- **Expert Systems:** a series of screens/windows, that incorporate domain knowledge, to help direct the user to a single solution

III. The Solution: The Brewer

***Definition:**

“Named for researcher and cartographer Cynthia Brewer, the map brewer is a new kind of mapping support system, focused on helping map makers with one particular aspect of the map design process . . . Brewers are different from other forms of online help such as wizards, tutorials, forums, agents, and documentation because **they do not steer the user to a single solution, nor do they try to do the work for the user.**”



*Key Characteristics:

- *Focus on a specific cartographic design challenge (i.e., not a general lesson)
- *Organize design choices around a set of established mapping principles
- *Offer only suitable choices (i.e., nothing too extreme or irrelevant)
- *Encourage learning about design choices
- *Not be software-specific
- *Only require basic skills with mapping software
- *Offer tips on the suitability of choices
- *Encourage users to be critical of their choices through an interactive, graphical display

ColorBrewer
www.colorbrewer.org

The screenshot shows the ColorBrewer web application interface. At the top left, it says "number of classes" with a dropdown menu set to "5". Below this is a "legend type" section with options for "sequential", "diverging", and "qualitative". The "sequential" option is selected. To the right of the legend type is a "mini legends" section showing various color palette options. Below that are color selection options for "cmyk", "rgb", "hex", "Lab", and "AV3". The "hex" option is selected, and a color swatch is shown. At the bottom left, there are icons for "hexadecimal" and "print".

The main area of the interface is titled "ColorBrewer" and "5-class sequential YlGnBu". It features a map of the United States colored according to the selected palette. The map is divided into small regions, each colored in one of five shades: light yellow, light green, light blue, medium blue, and dark blue. The map is zoomed in on the eastern United States.

At the bottom right, there are several controls: "map zoom" with a plus sign, "map borders" (off), "city symbols" (off), "road network" (off), "background color" (white, black), "border color" (white, black), and "road network color" (white, black, red, green, yellow). There are also links for "how to use", "updates", "credits", "about map", and "reset view".

ISOLINE ENGINE

Help for making isarithmic maps

2 EXPLORE [Learn More >>](#)

Restart [Reload](#)

CONTEMPORARY | Slate

4 COMPARE

Your Fonts Font Alternatives Font Info

Type Families: Glypha / Univers

Size Density Tracking

Terrain Highlight Text Only

3 GET SPECS [Learn More >>](#)

Map for: Screen Print

Labels Other Text

Countries
Font: Glypha 55 Roman
Size(pt): 12 - 26 Track: 0

Capital Cities
Font: Univers 57 Condensed
Size(pt): 16 Track: 0

Cities
Font: Univers 45 Light
Size(pt): 14 Track: 0

Mountains
Font: Univers 45 Light Obl
Size(pt): 14 - 28 Track: 25 - 750

Oceans
Font: Glypha 55 Obl
Size(pt): 14 - 21 Track: 25 - 50

Rivers
Font: Glypha 55 Obl
Size(pt): 14 Track: 0

Islands
Font: Glypha 55 Obl
Size(pt): 16 Track: 0

HELP

TypeBrewER

Major Places and Natural Features

0 150 300 miles

LAMBERT CONFORMAL CONIC PROJECTION

Info on Corsica and Sardinia: <http://en.wikipedia.org>
Places and Natural Features: CIA World Fact Book; <http://www.cia.gov/cia/publications/factbook/> Joe Cartographer

Recommended for >> SCREEN | PRINT

EXPORT Download the Template Print Spec Sheet

TypeBrewer
www.typebrewer.org



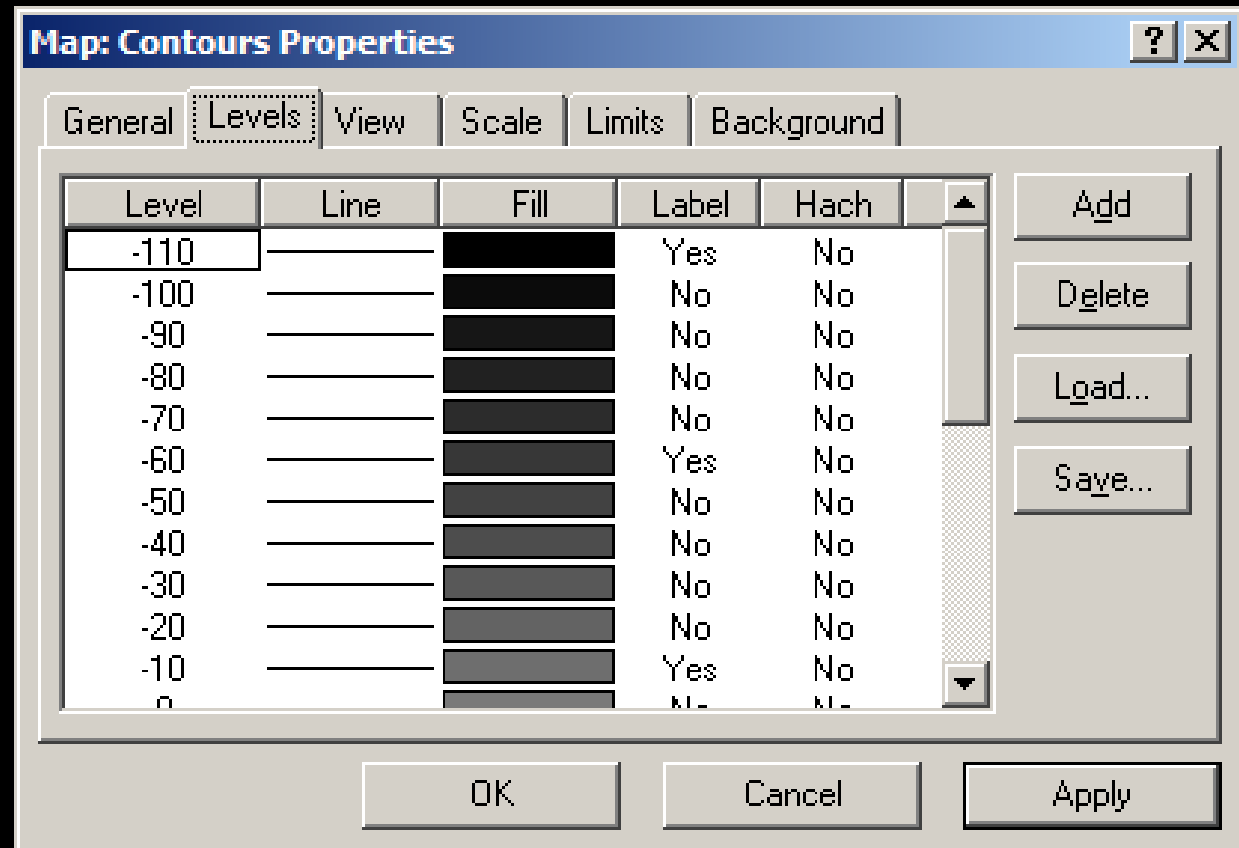
IV. Specific Problem: Isarithmic Mapping

- *there are literally hundreds of packages for **Isarithmic Mapping**
- *many domain specific in such fields as **Geology, Hydrology, Meteorology, etc.**
- *several commonly used GIS softwares with isarithmic capability such as **ArcGIS and Surfer**



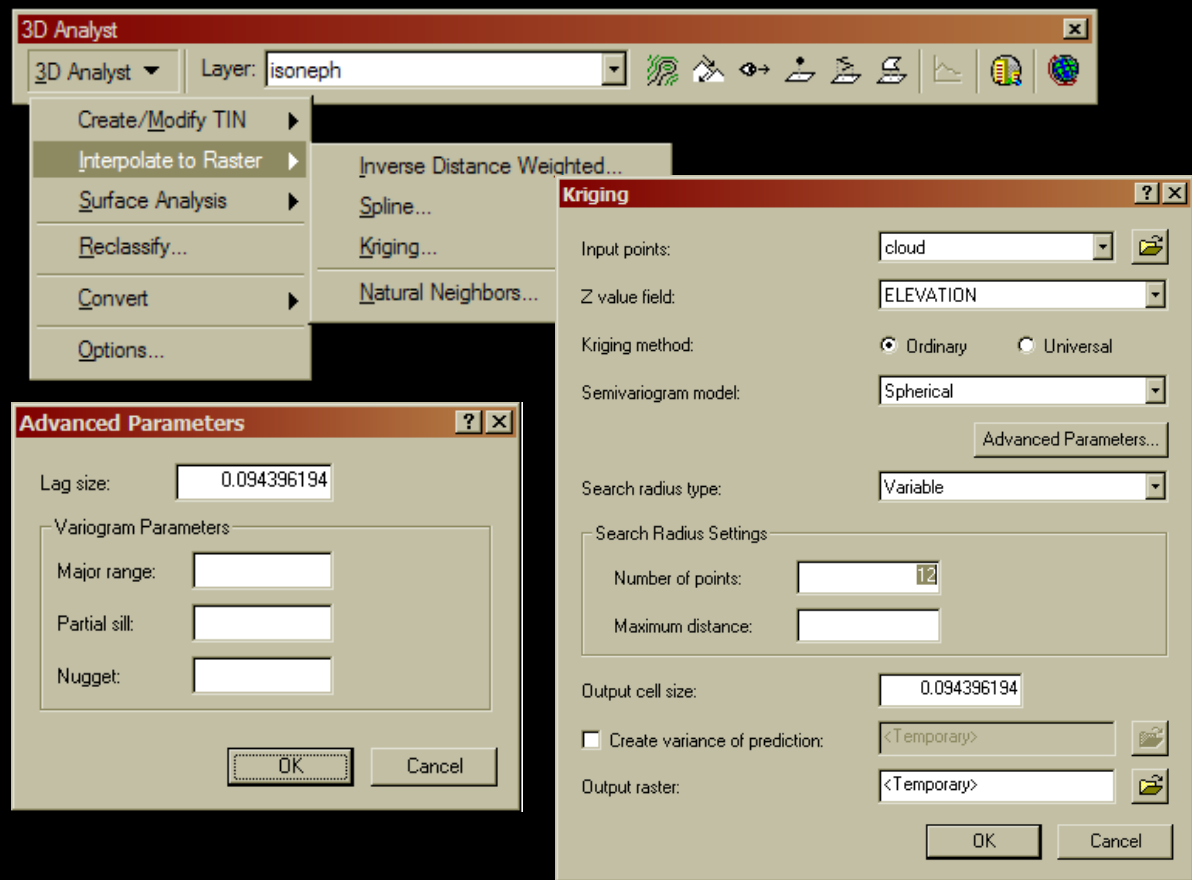
*but this software is difficult for novice users because:

1) there is an insane amount of parameters



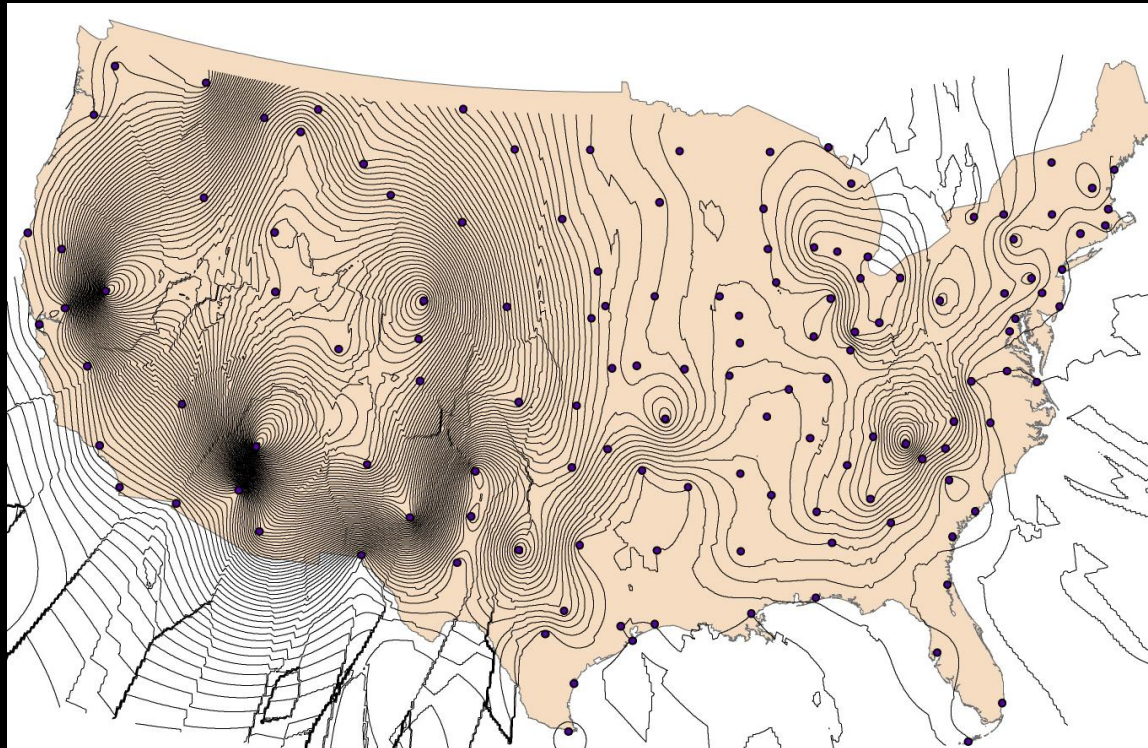


*but this software is difficult for novice users because:



2) the **deeply nested structure** of these parameters

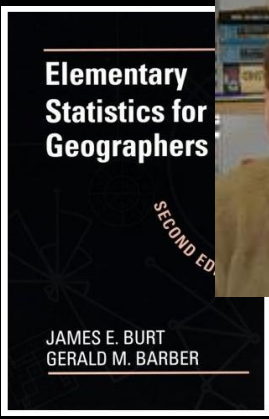
*but this software is difficult for novice users because:



3) the lack of **immediate visual feedback** of parameter changes



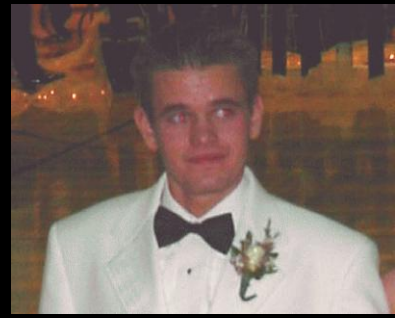
V. Specific Problem: Isoline Engine



Mark: principles of representation and map design



Jim: statistical background for spatial interpolation



Rob: slave labor and yes man

Feature Set:

lesson Interpolation Parameter:

- interpolation method, sample size and distribution, interval value

lesson Display Settings:

- line coloring, hypsometric tinting, labeling, index lines, smoothing

lesson Data Focusing:

- fulcrum value, maximum/minimum value

smart Help System:

- term definitions, warnings, data suggestions, links to in depth explanations

ISOLINE ENGINE

Help for making isarithmic maps



IsolineEngine

ISOLINE ENGINE

help for making Isarithmic Maps

current view: nearest neighbor with no tinting

advanced Topics
▶ Animate Me
▶ Smooth Me

lesson Interpolation Parameters

Interval: 5°F

Interpolation Method: Nearest Neighbor

Control Points: 100

Compare Lines
 Identify Isoline

lesson Display Settings

Tinting Method: No tinting

Color Lines

Show Point Distribution
 Show Lines
 Show Basemap

lesson Data Focusing

-23°F min | 30°F fulcrum | 84°F max

term Defintions

How to use this map

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

? how to Use This Map
learn more About This Topic

▶ Credits
▶ Print View
▶ Full Topic Index



***discussion Questions and Suggestions?**

Powerful [Isarithmic] Tools + [Isoline Engine's] Guidance = Success¹

¹ Hopefully

~thanks!

Rob