



# Democratization of (and by) Earth Observation



Presented by  
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to

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# Democratization of (and by) Earth Observation

**What this presentation is not:**

**A statement that what works for one nation ought to be used by all nations.**

**What this presentation is:**

**Information about an historical precedent relevant to 21st Century Earth Observations**

**Because:**

**How far you can see into the future depends on how far back you look.**

**--Winston Churchill**

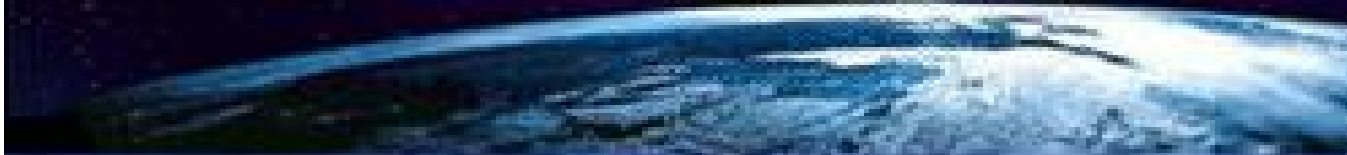
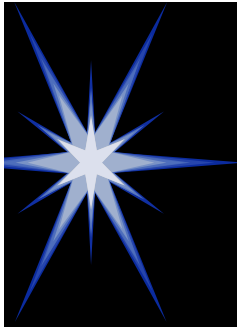


# Democratization of (and by) Earth Observation

## The American Experiment



- As data and information about the continent became known, the need to organize emerged
  - States needed to unify before westward expansion to avoid historical, European-type conflicts
- The logic of geography was a driver
  - The “Continental Congress”
- Literally applied scientific principles to political decisions
  - Newtonian physics and whole systems
    - The “American Experiment”
    - The “Science of Constitutions”

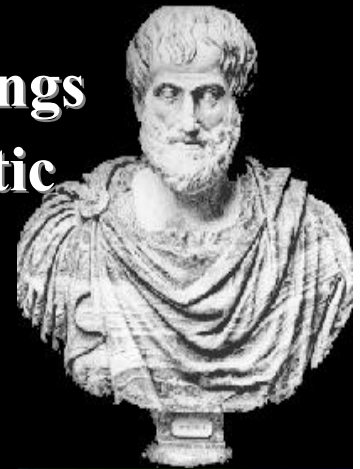


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## The Political Problem



- The argument since Aristotle
  - Can't have a republic over a large geographic area
  - A democracy must be limited to small, geographic areas
- “democracy” is direct government by the people
  - Good news: inclusive of all
  - Bad news: can become mob rule, takes a lot of time
- “republic” is government by agent
  - Good news: efficient, allows citizens to do other things
  - Bad news: can become distant from citizens, despotic
- The solution: use both



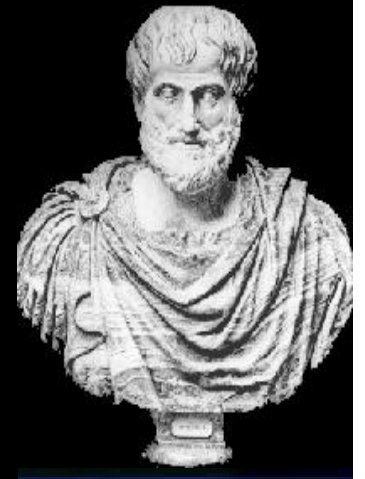


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## The American Experiment Defined

Apply scientific principles to political problems by  
using data derived from actual geography.





# **Democratization of (and by) Earth Observation**

## **A Democracy Defined in Geographic Terms**



**“...the natural limit of a democracy is that distance from the central point which will just permit the most remote citizens to assemble as often as their public functions demand...”**

**Federalist Paper 14**

**Friday, November 30, 1787**

**James Madison**

**Objections to the Proposed Constitution From Extent of Territory Answered**





# **Democratization of (and by) Earth Observation**

## **A Republic Defined in Geographic Terms**



**“...the natural limit of a republic is that distance from the centre which will barely allow the representatives to meet as often as may be necessary for the administration of public affairs...”**

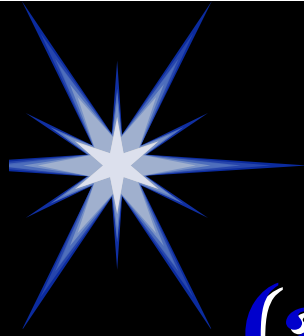
**Federalist Paper 14**

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## The Problem in Geographic Terms

**“Can it be said that the limits of the United States exceed  
this distance?”**

**Federalist Paper 14**

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**The Solution: Use the Data!**

**“That we may form a juster estimate...let us resort  
to the actual dimensions of the Union.”**

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## The Data

**“The limits are: on the east the Atlantic, on the south the latitude of 31°, on the west the Mississippi, and on the north an irregular line running in some instances beyond the 45th°, in others falling as low as the 42nd°. The southern shore of Lake Erie lies below that latitude.”**

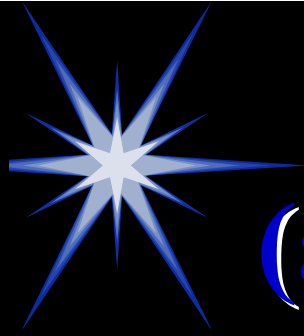
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## **The Information Derived from the Data**

**“Computing the distance between the 31st and the 45th degrees, it amounts to 973 common miles; computing it from 31° to 42°, to 764 1/2 miles; taking the mean for the distance, the amount will be 868 3/4 miles. The mean distance from the Atlantic to the Mississippi does not probably exceed 750 miles.”**

**Federalist Paper 14**

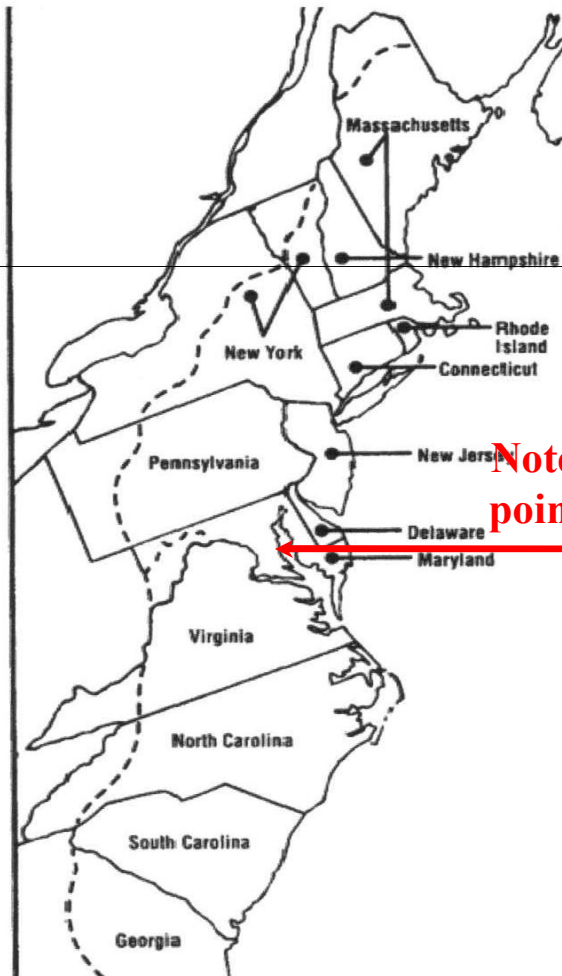
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Map of the original Thirteen Colonies



Note the geographic central point chosen for the Capitol



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**Applying the Results to the Problem**



**“On a comparison of this extent with that of several countries in Europe, the practicability of rendering our system commensurate to it appears to be demonstrable.”**

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## **Applying the Results to the Problem**

**“It is not a great deal larger than Germany, where a diet representing the whole empire is continually assembled; or than Poland...where another national diet was the depository of the supreme power...We find that in Great Britain, inferior as it may be in size, the representatives of the northern extremity of the island have as far to travel to the national council as will be required of those of the most remote parts of the Union.”**

**Federalist Paper 14**

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## Whole Systems

“The adversaries of the Constitution ought to **prove not** merely that **particular provisions** in it are not the best which might have been imagined, **but** that **the plan upon the whole** is bad and pernicious.”

Federalist Paper No. 65

Friday, March 7, 1788

Alexander Hamilton

The Powers of the Senate Continued From the New York Packet



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Science and Governance Systems

Newtonian Physics and the Constitution



E.g., Checks and Balances = Newton's Third Law





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## The First Data Policy?



**Thomas Jefferson, along with John Adams, refused to include books in the Revolutionary War trade embargo.**





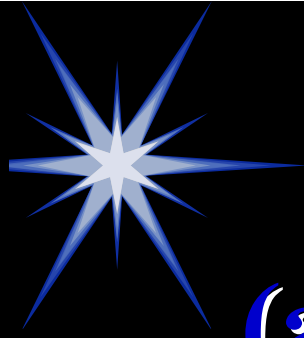
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## **Lessons Learned**

- **Geographic logic transcends political boundaries**
  - **Basis of federal form of government**
    - **Whole rather than parts**
    - **Federal versus local/state**
- **Demarcations based on geography less likely to lead to conflict**
- **Continental observations justified a political structure, specifically, a democratic republic**
- **Used what is today recognized as geospatial data and whole systems**
- **Recognized importance of speed of information**





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## **The Bottom Line**

**Data is the raw material of information  
and information is the raw material of democracy.**





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**The Analogy for Today**

**Frontier : Continent :: Space : Planet**

**Place of Observation : Object observed :: Place of Observation : Object observed**



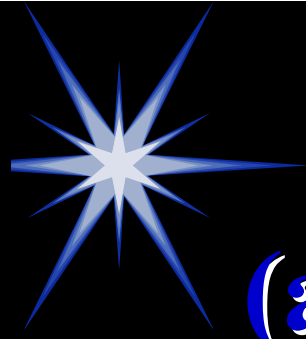


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## **Looking Forward: Things to Do Differently**

- **Use broader concept of inclusion**
  - Strive for the widest, most open data access policies possible
- **Respect and engage local people and communities**
- **Appreciate and address historical concerns and fears**
  - Reasons for geospatial information being state secrets, e.g.
- **Integrate networks with hierarchies and orthogonal structures**
- **Scale to 21st Century speed of information**
- **Utilize legal concepts and norms developed since 18th Century**



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## Looking Forward: Contemporary Possibilities

- Organize transborder progress by building on voluntary agreements
  - Disasters Charter
  - CEOS
  - GEO/GEOS
  - Subscription based monitoring
- Identify geographic features that allow logical transborder progress
  - Watersheds, e.g.



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