

# Freedom in Geographical Information Systems

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Trying to be an Independent Researcher, Hacker & Activist

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January 2, 2017

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# Overview

## Inspiration

What is GIS ?

## Cartography & Maps

Carto-Cube

## Projection & Truth

Shape

Projection

Problem is ...

## Organized Diversity

Modality

Remixxxx... & Disruption

## Flow of Information

Conventional Way

Commons Collaborative Way

Grass-root Emergent Way

## Arming the Commons'

What are the general needs ?

Access Portals



whaaaazzz up human ?

Good or Bad or Neutral ?

**technology**  
is

neither *Good*  
nor *Bad*  
not even *Neutral*

*Melvin Kranzberg*

# people inspire people



these *dudes* somehow inspired me to learn & do Geo(G/IS)

locally these folks continues to inspire me by their silent actions... :)



+ all Open Mappers' & GIS'ers out there !

?

**what is gis anyway**

one of the interesting ways

**"to look"**

at things happening in

Earth

*(present World)*

# **GIS = Geo Systems + Information Systems**

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which is a *psychedelic* mix of :

- ▶ theories
- ▶ tools
- ▶ information
- ▶ methods
- ▶ strategies

from both the domains

a collaborative scientific process associated with geographical systems to  
collect data, analyze, disseminate, share, distribute information  
adhering to open standards

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gis proliferates and promulgates a democratic and romantic relationship  
between man, machine, and earth to reach a positive emergence

# So What ?

well !... we have limitations

- ▶ senses
- ▶ perception
- ▶ reliable data collection
- ▶ repetitive & concurrent analysis
- ▶ modeling & repetitive reporting

# Mapsssss !

# What are Maps ?

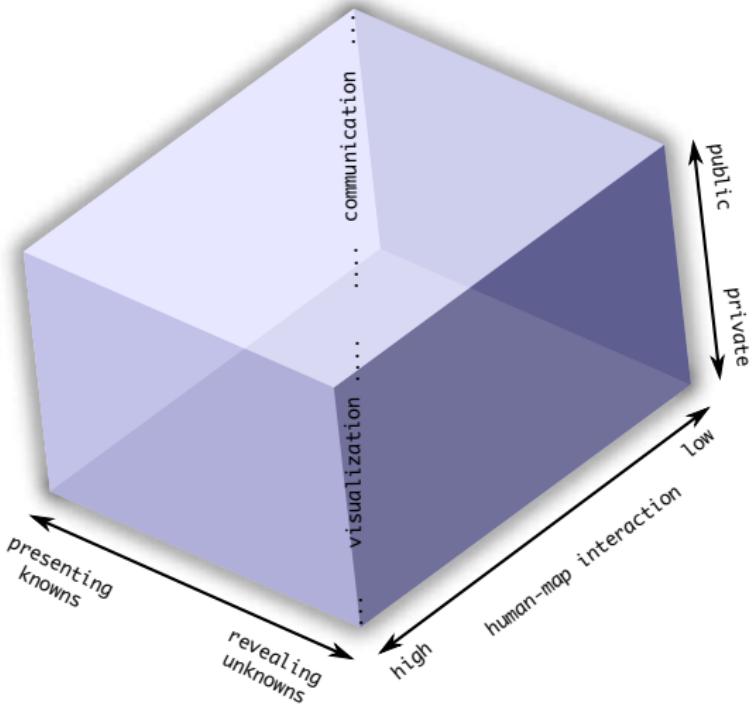
the **medium** through which geographically representable information is  
shared and disseminated

# What is Cartography ?

the art & way of designing maps effectively

= science + aesthetics + technique

# Carto-Cube



Reference : cartography cube

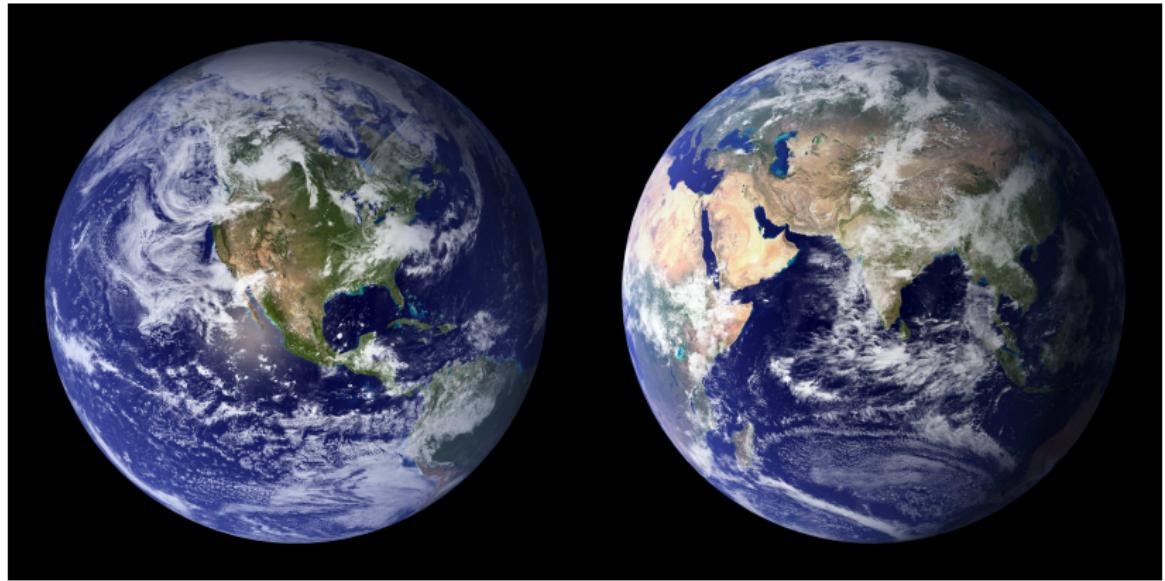
# **Projected Representation**

What is True,

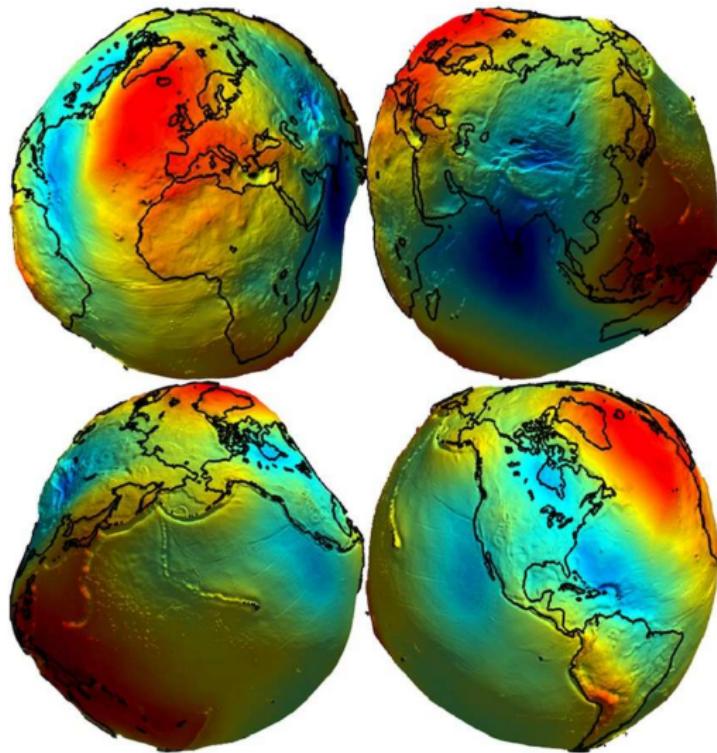
What is False,

Or .. Something in between ?

is it a spheroid ?



is it a geoid ?



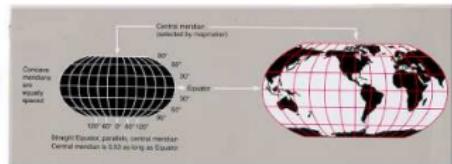
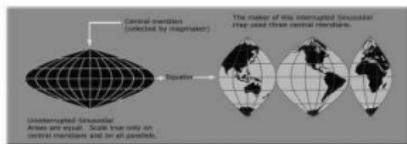
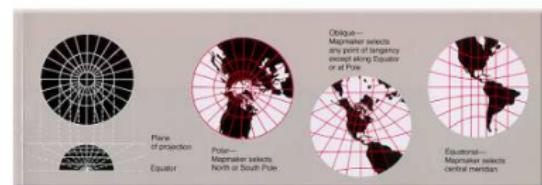
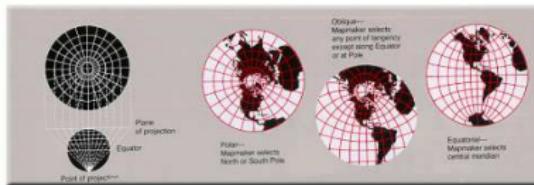
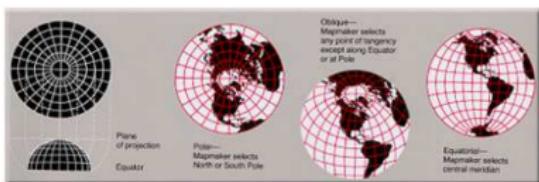
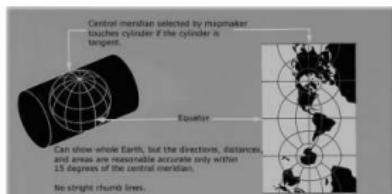
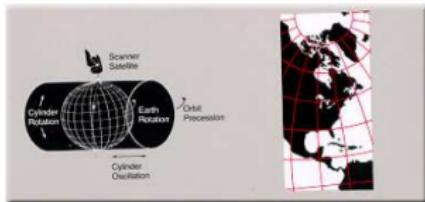
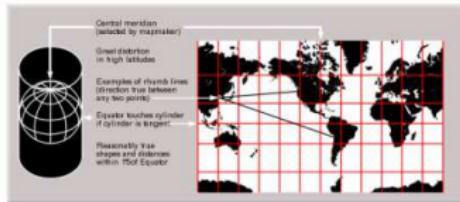
## Projection

Metric Properties =  $f$  (area, shape, direction, distance)

models always results in some form of distortion

**well, – Essentially, all models are wrong, but some are useful.**

*George E.P. Box*



Reference: GIS wiki - Map Projections

# The True Size of Africa

A small contribution in the fight against rampant *immapancy*; by Kai Krause

Graphic layout for visualization only (some countries are cut and rotated)  
But the conclusions are very accurate: refer to table below for exact data

COUNTRY	AREA x 1000 km <sup>2</sup>
China	9.597
USA	9.629
India	3.287
Mexico	1.964
Peru	1.285
France	633
Spain	506
Papua New Guinea	462
Sweden	441
Japan	378
Germany	357
Norway	324
Italy	301
New Zealand	270
United Kingdom	243
Nepal	147
Bangladesh	144
Greece	132
<b>TOTAL</b>	<b>30.102</b>
<b>AFRICA</b>	<b>30.221</b>

In addition to the well known social issues of illiteracy and innumeracy, there also should be such a concept as "*immapancy*", meaning insufficient geographical knowledge.

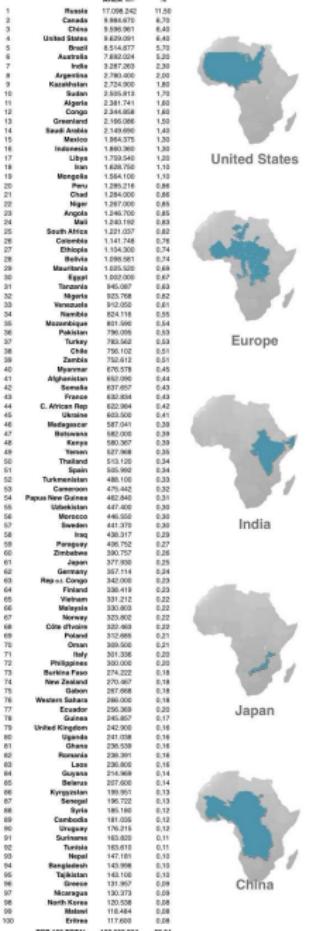
A survey with random American schoolkids let them guess the population and land area of their country. Not entirely unexpected, but still rather unsettling, the majority chose "1-2 billion" and "largest in the world", respectively.

Even with Asian and European college students, geographical estimates were often off by factors of 2-3. This is partly due to the highly distorted nature of the predominantly used mapping projections (such as Mercator).

A particularly extreme example is the worldwide misjudgement of the true size of Africa. This single image tries to embody the massive scale, which is larger than the USA, China, India, Japan and all of Europe.....combined!

## Top 100 Countries

Area in square kilometers, Percentage of World Total  
Sources: Britannica, Wikipedia, Almanac, 2010



well, –

**Essentially, all models are wrong, but some are useful.**

*George E.P. Box*

# Diversity :)

# Organized Diversity

ontological, theoretical



knowledge organization



**modalities**

measurement & data collection



processing, analysis



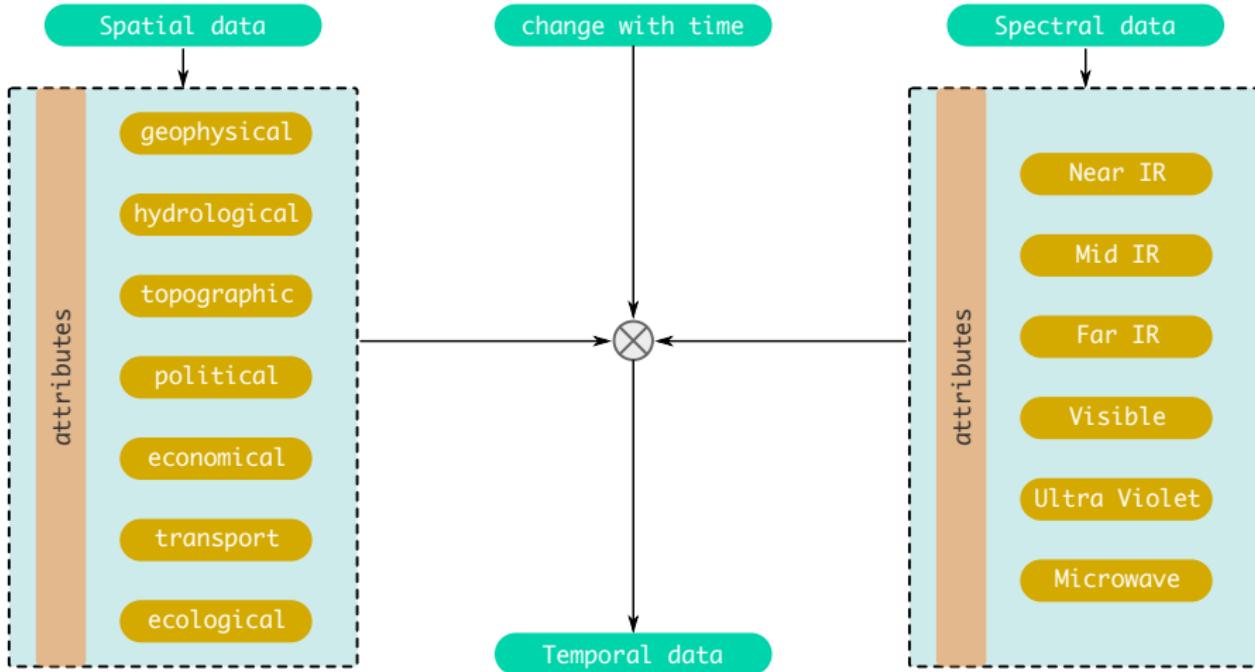
**attributes**

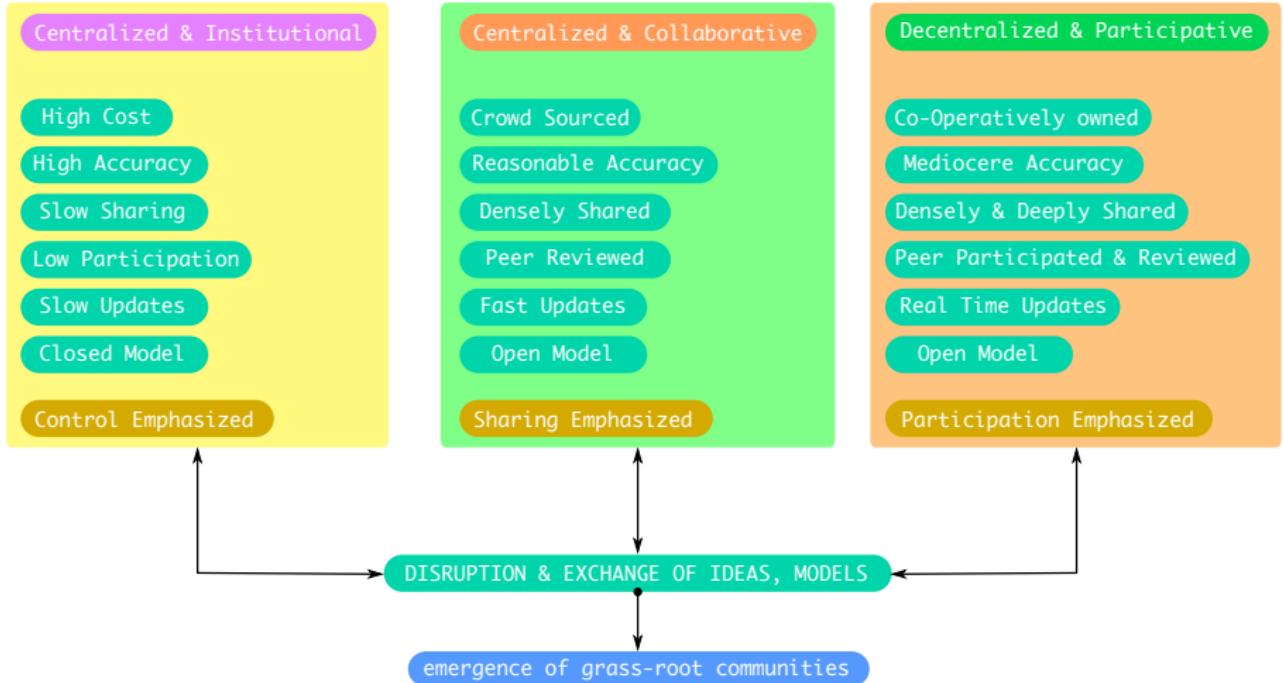


dimensions



visualization





# How does Info. Flow ?

Once upon a time ...

THE  
PICTORIAL  
MISSIONARY MAP  
OF THE  
WORLD



*REVIEWING COPY FOR READER*  
REVIEWED BY JOHN ELLIOTT  
RECEIVED 1950  
SCHOOL LIBRARY BOARD OF TORONTO

London: JACKSON WILSON LTD & CO., 11, Strand Street.—Print for Burrey & Co. per 10s. Plate, Tropical, or like per 10s. Unbound

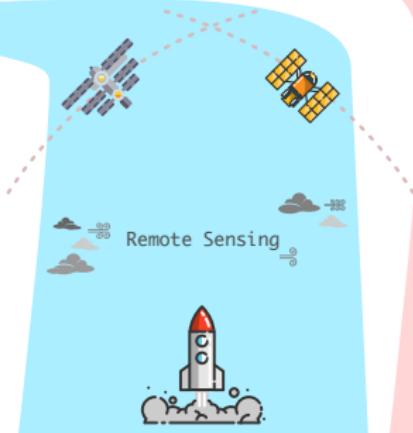
the conventional way ...

Establishments

Institutions



Surveying



Remote Sensing



Dissemination



it is centralized too !

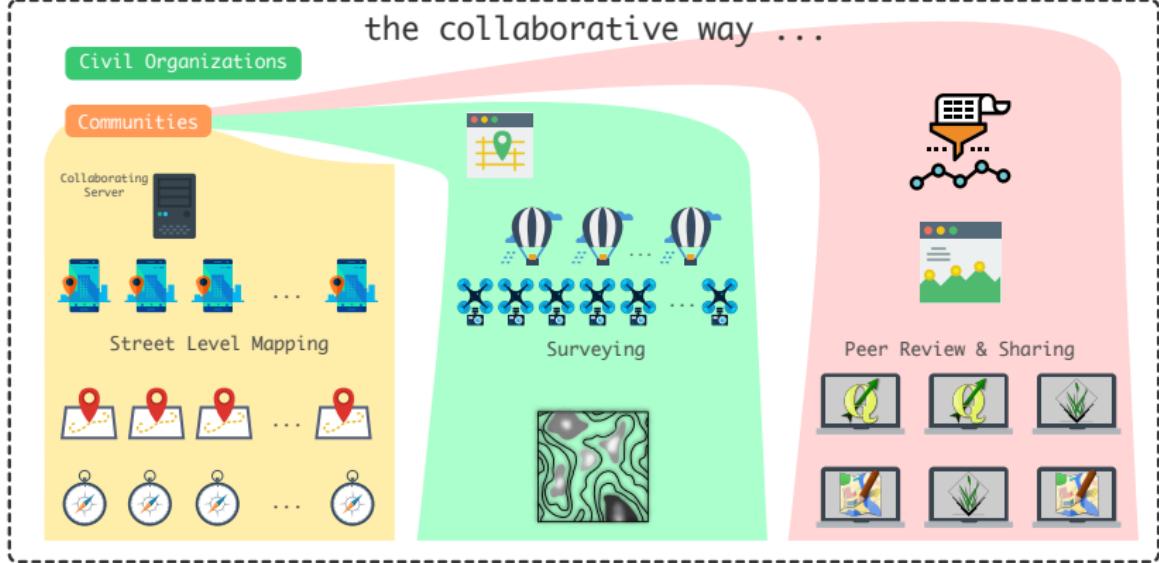
resulted in maps like these..... !



meanwhile, rise in ...

education, science, technology & creative commons ...

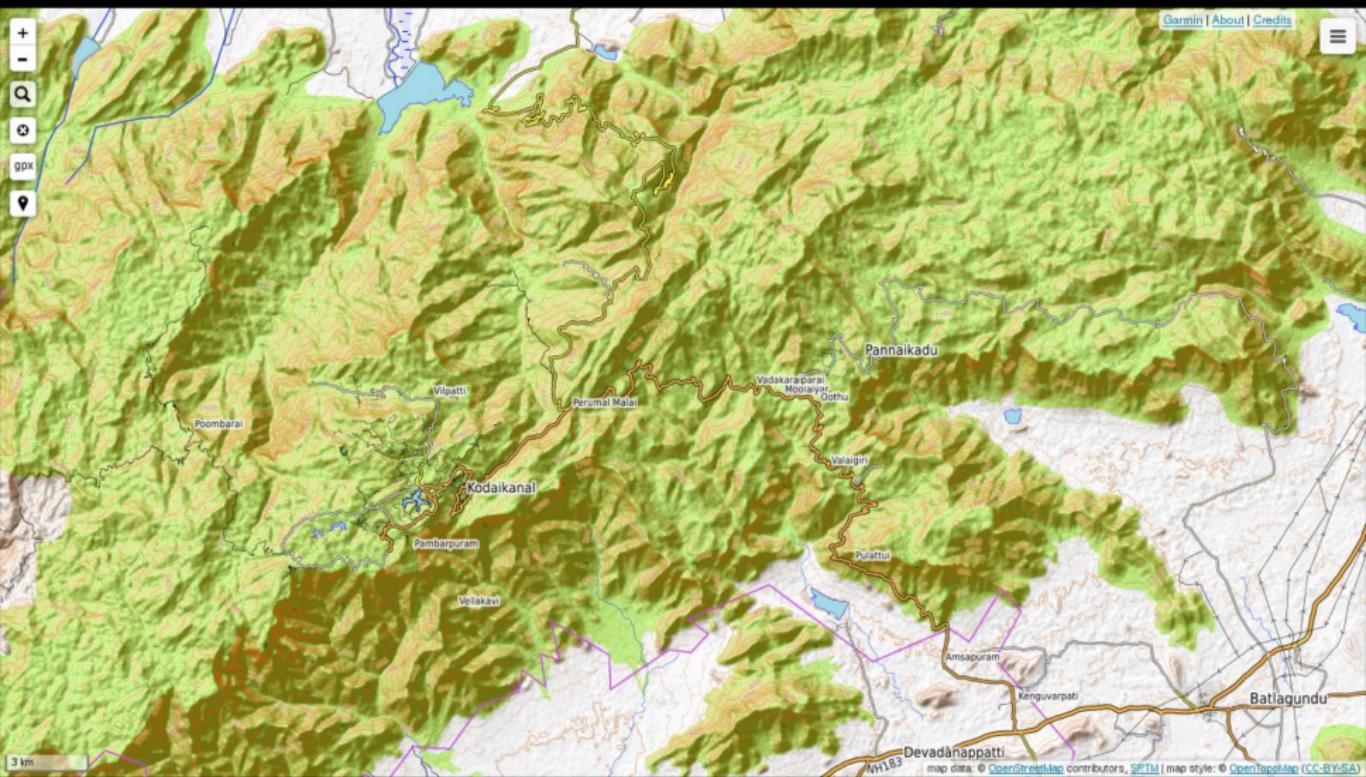
the collaborative way ...



partially centralized but collaborative (decentralized):

existing infrastructure + creative commons + opendata + internet

resulted in maps like these..... !



with emergent grass root infrastructure

&

commons based peer production ...

## the grassroots way ...

Emergent Communities

Networks

grassroots  
mesh network



Street Level Mapping



...



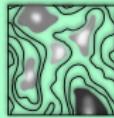
...



...



Surveying



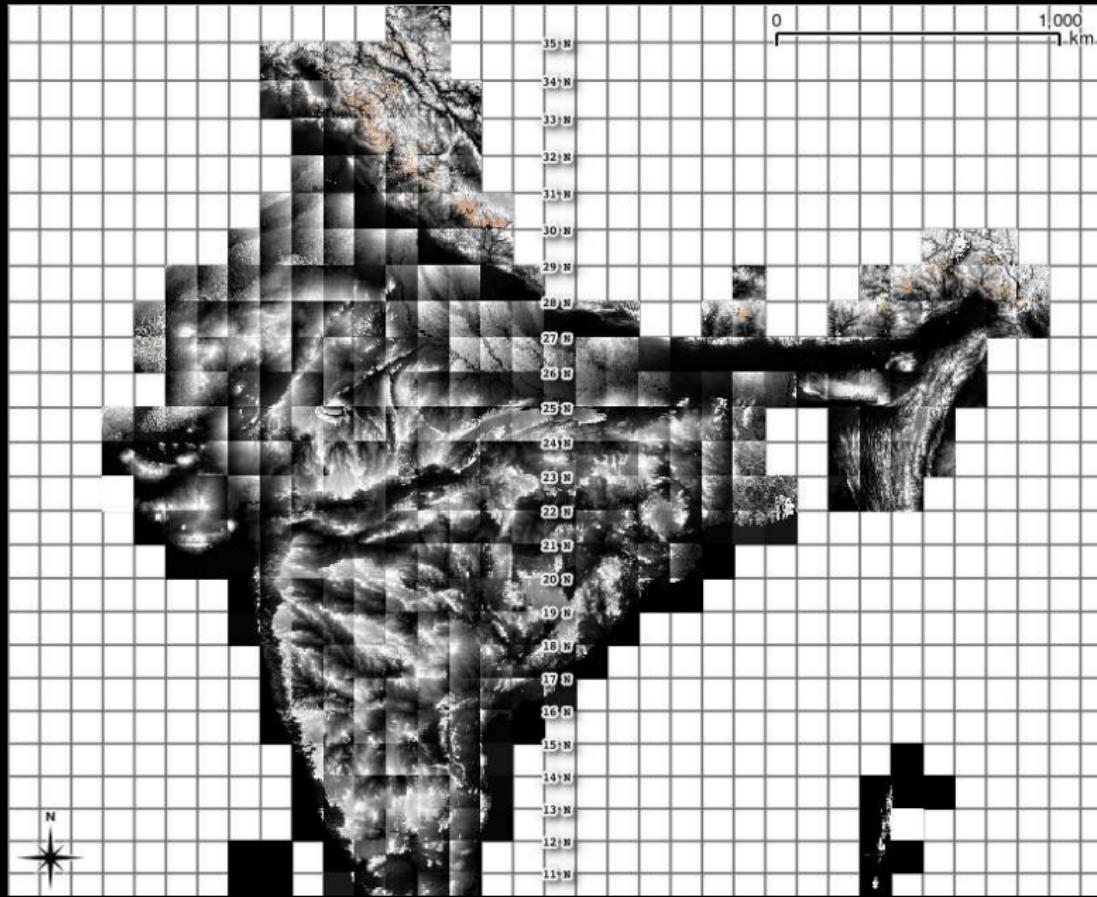
Peer Review & Sharing

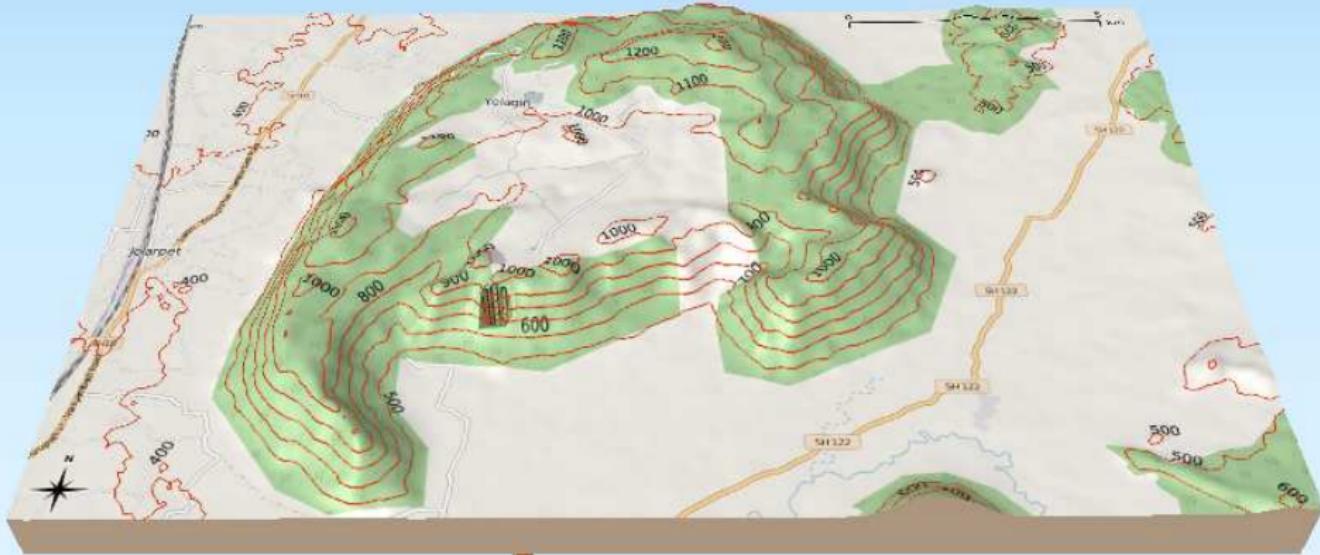


meshed grassroots :

existing infrastructure + creative commons + opendata + grass-roots emerged internet

will create more than these..... !





**Enoughhhh...**  
**Let us Know the Needs**

## general needs :



Open Community

Collaboration, Cooperation, Peer Review

Open Licenses

Free to Use, Edit, Share, Distribute

Open Standards

Version Controlled, Scientific alignment

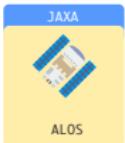
Open Tools

Transparency, Freedom to Share & Create

Open Data

## what are accessible public data sources ?

### Public Research Institutions



ALOS



IRS\*



SENTINEL



SRTM



LANDSAT



MODIS

...



ASTER

### Public - Data Access Portals

USGS Earth Explorer

USGS Eros Center

NASA EOSDIS

ESA Sentinel Scientific Data Hub

ESA Earth Online

JAXA EORC

⋮

ISRO - NRSC Bhuvan

institutional + crowd-collaborative public data sources ...

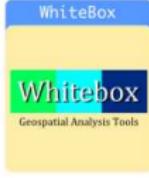
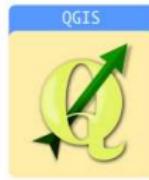


...



+ remixes

## Free & Open Technologies/Tools :



there's lot more  
&  
still innovating ... :)



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think !