

Freedom in Geographical Information Systems

Ganesh

Trying to be an Independent Researcher, Hacker & Activist

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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

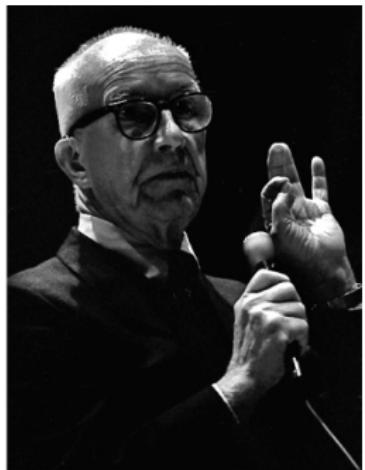
neither *Good*

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

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

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

Mapssssss !

What are Maps ?

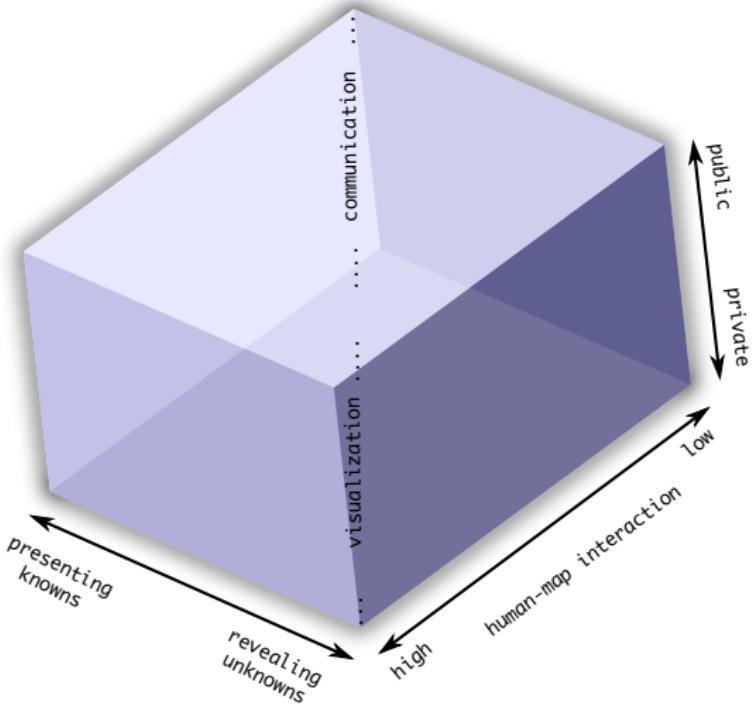
the **medium** through which geographically representable information is
shared and disseminated

What is Cartography ?

the art & way of designing maps effectively

= science + aesthetics + technique

Carto-Cube



Reference : cartography cube

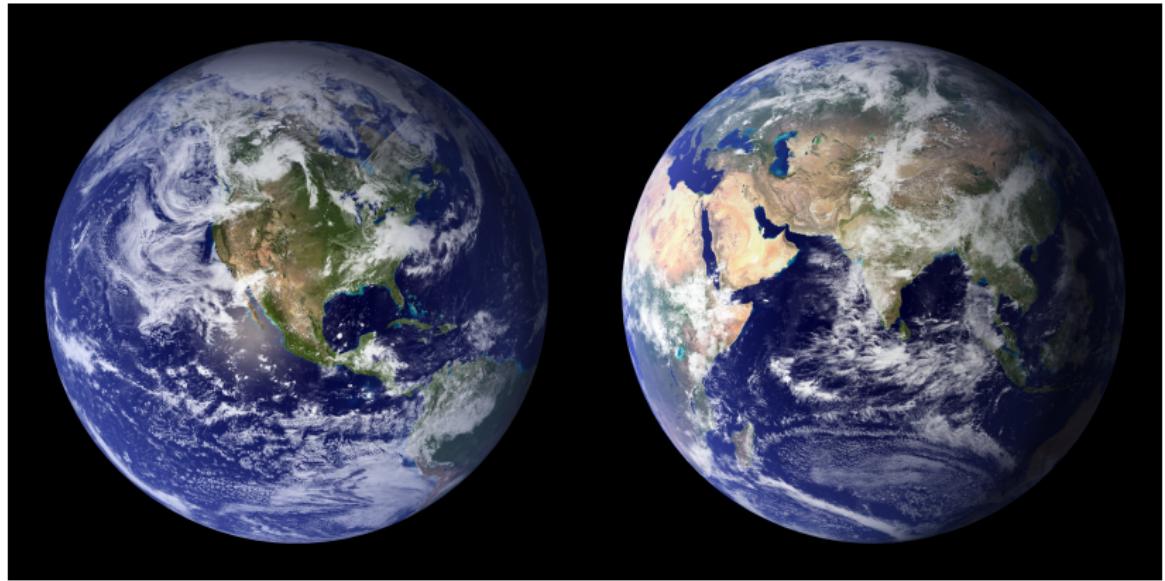
Projected Representation

What is True,

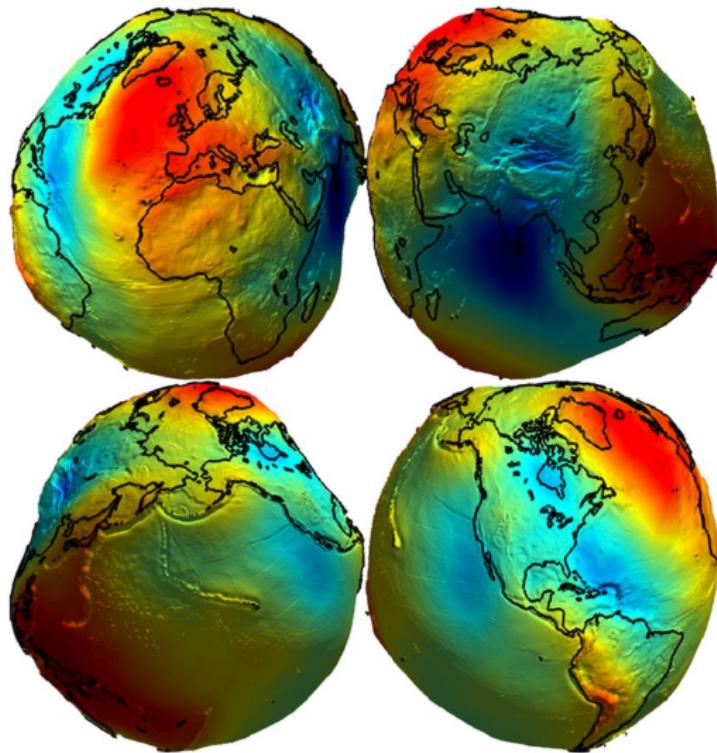
What is False,

Or .. Something in between ?

is it a spheroid ?



is it a geoid ?



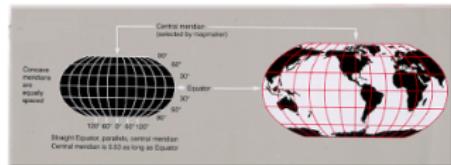
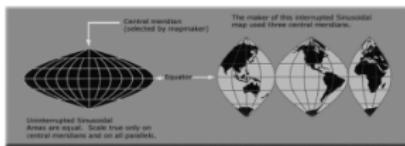
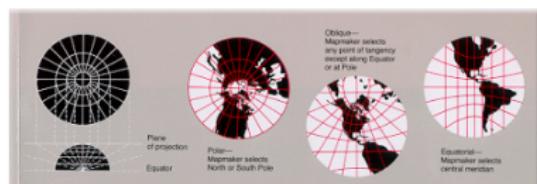
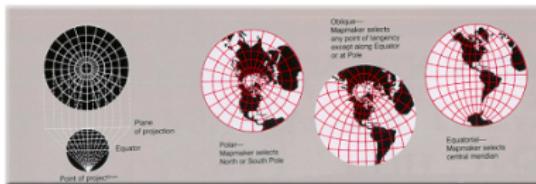
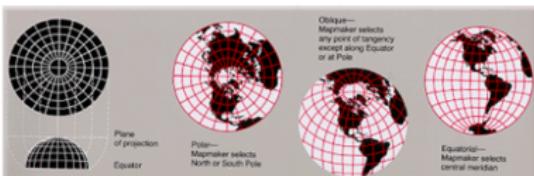
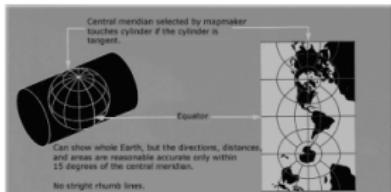
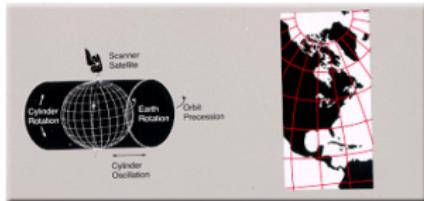
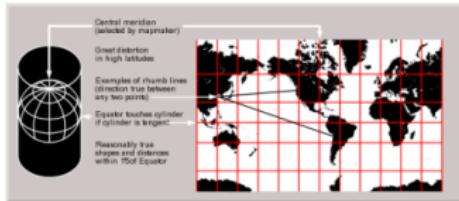
Projection

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 *Immappancy*; 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 ² |
|------------------|--------------------------------|
| 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 |
| TOTAL | 30.102 |
| AFRICA | 30.221 |



Top 100 Countries

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

| Rank | Country | Area, km ² | % |
|------|----------------------|-----------------------|------|
| 1 | Russia | 17,098,342 | 9.15 |
| 2 | Canada | 9,985,614 | 4.76 |
| 3 | China | 9,596,961 | 4.62 |
| 4 | United States | 9,429,091 | 4.45 |
| 5 | Brazil | 8,515,750 | 3.75 |
| 6 | Australia | 7,692,024 | 3.52 |
| 7 | United Kingdom | 2,987,363 | 2.35 |
| 8 | Argentina | 2,887,363 | 2.35 |
| 9 | Kazakhstan | 2,724,908 | 1.85 |
| 10 | Bolivia | 2,659,413 | 1.79 |
| 11 | Algeria | 2,636,730 | 1.65 |
| 12 | Congo | 2,344,968 | 1.60 |
| 13 | Greenland | 2,190,006 | 1.55 |
| 14 | Uganda | 2,180,000 | 1.47 |
| 15 | Mexico | 1,964,375 | 1.38 |
| 16 | Indonesia | 1,954,204 | 1.38 |
| 17 | Syria | 1,939,240 | 1.36 |
| 18 | Iran | 1,628,756 | 1.13 |
| 19 | Mongolia | 1,584,700 | 1.12 |
| 20 | Malta | 1,582,000 | 1.08 |
| 21 | Chad | 1,284,000 | 0.86 |
| 22 | Hungary | 1,287,000 | 0.85 |
| 23 | Armenia | 1,281,000 | 0.85 |
| 24 | Malta | 1,281,000 | 0.83 |
| 25 | South Africa | 1,231,000 | 0.82 |
| 26 | Eritrea | 1,141,748 | 0.77 |
| 27 | Ethiopia | 1,134,200 | 0.77 |
| 28 | Mauritania | 1,096,951 | 0.68 |
| 29 | Egypt | 1,082,000 | 0.67 |
| 30 | Uganda | 1,072,000 | 0.67 |
| 31 | Montenegro | 925,798 | 0.52 |
| 32 | Venezuela | 925,059 | 0.61 |
| 33 | Namibia | 857,000 | 0.51 |
| 34 | Mozambique | 856,986 | 0.54 |
| 35 | Pakistan | 856,000 | 0.53 |
| 36 | Tunisia | 876,000 | 0.53 |
| 37 | Lebanon | 792,102 | 0.51 |
| 38 | Zambia | 782,612 | 0.51 |
| 39 | Myanmar | 762,000 | 0.44 |
| 40 | Algeria | 692,096 | 0.44 |
| 41 | Senegal | 637,057 | 0.43 |
| 42 | Peru | 637,000 | 0.43 |
| 43 | C. African Rep. | 622,994 | 0.42 |
| 44 | Ukraine | 603,500 | 0.41 |
| 45 | Montenegro | 597,000 | 0.41 |
| 46 | Brunei | 587,000 | 0.39 |
| 47 | Keeps | 580,367 | 0.38 |
| 48 | Togo | 578,000 | 0.38 |
| 49 | Thailand | 573,120 | 0.34 |
| 50 | Spain | 565,966 | 0.34 |
| 51 | Uganda | 562,000 | 0.33 |
| 52 | Cameroun | 479,442 | 0.32 |
| 53 | Papua New Guinea | 482,844 | 0.31 |
| 54 | Malta | 479,000 | 0.31 |
| 55 | Uzbekistan | 466,558 | 0.31 |
| 56 | Sweden | 441,379 | 0.31 |
| 57 | Switzerland | 434,000 | 0.31 |
| 58 | Paraguay | 499,752 | 0.27 |
| 59 | Zimbabwe | 380,757 | 0.26 |
| 60 | Jordan | 372,000 | 0.26 |
| 61 | Germany | 367,114 | 0.24 |
| 62 | Rep. of Congo | 342,000 | 0.23 |
| 63 | Angola | 339,000 | 0.23 |
| 64 | Vietnam | 331,212 | 0.22 |
| 65 | Malaysia | 330,800 | 0.22 |
| 66 | Uganda | 327,000 | 0.22 |
| 67 | Côte d'Ivoire | 322,963 | 0.22 |
| 68 | Poland | 312,088 | 0.21 |
| 69 | Costa Rica | 312,000 | 0.21 |
| 70 | Italy | 301,338 | 0.21 |
| 71 | Timor-Leste | 299,000 | 0.21 |
| 72 | Philippines | 303,000 | 0.20 |
| 73 | Botswana | 297,000 | 0.20 |
| 74 | New Zealand | 270,467 | 0.19 |
| 75 | Qatar | 287,958 | 0.18 |
| 76 | Weakland | 256,000 | 0.18 |
| 77 | Ecuador | 250,369 | 0.20 |
| 78 | Greece | 245,957 | 0.17 |
| 79 | United Arab Emirates | 243,000 | 0.17 |
| 80 | Uganda | 241,039 | 0.16 |
| 81 | Ghana | 236,539 | 0.16 |
| 82 | Kenya | 234,000 | 0.16 |
| 83 | Lao PDR | 230,800 | 0.16 |
| 84 | Guatemala | 214,968 | 0.14 |
| 85 | Bangladesh | 214,000 | 0.14 |
| 86 | Kyrgyzstan | 199,951 | 0.13 |
| 87 | Senegal | 186,722 | 0.13 |
| 88 | Uganda | 185,000 | 0.13 |
| 89 | Cambodia | 181,038 | 0.12 |
| 90 | Ukraine | 176,316 | 0.11 |
| 91 | Saint Lucia | 175,000 | 0.11 |
| 92 | Turkmenistan | 165,610 | 0.11 |
| 93 | Nepal | 147,161 | 0.11 |
| 94 | Bangladesh | 146,000 | 0.11 |
| 95 | Tajikistan | 143,108 | 0.10 |
| 96 | Greece | 131,967 | 0.09 |
| 97 | Malta | 130,000 | 0.09 |
| 98 | North Korea | 120,538 | 0.08 |
| 99 | Maldives | 116,444 | 0.08 |
| 100 | Yemen | 117,609 | 0.08 |

TOP 100 TOTAL 132,932,234 69.34

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



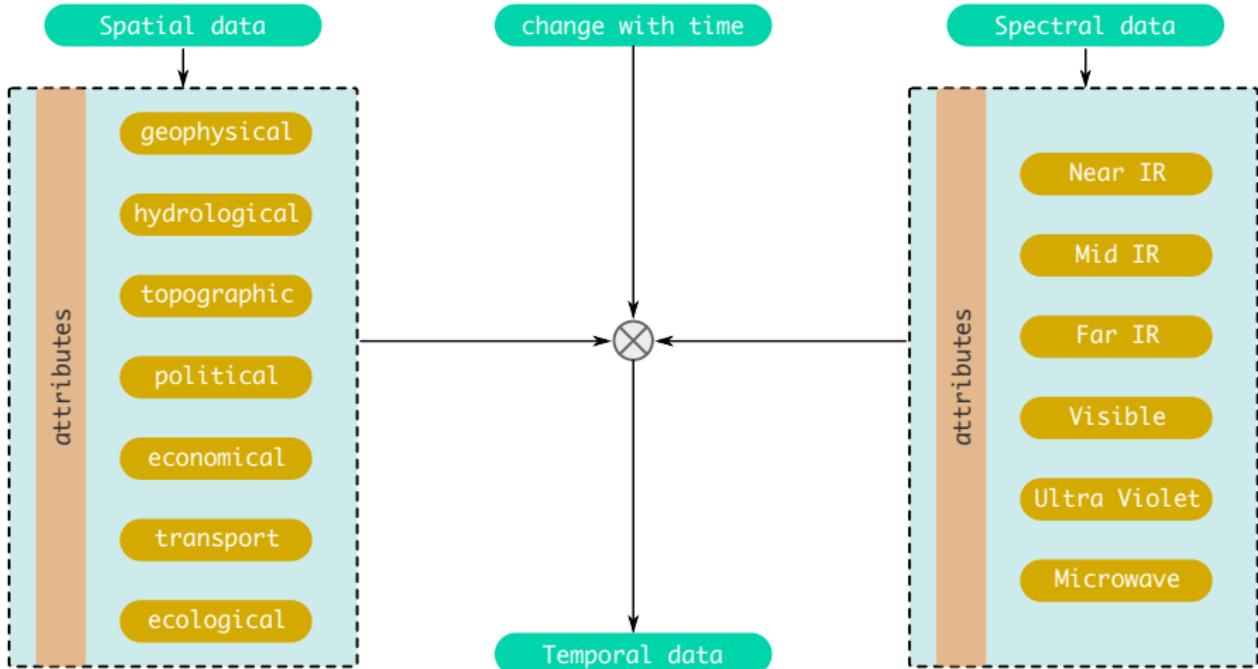
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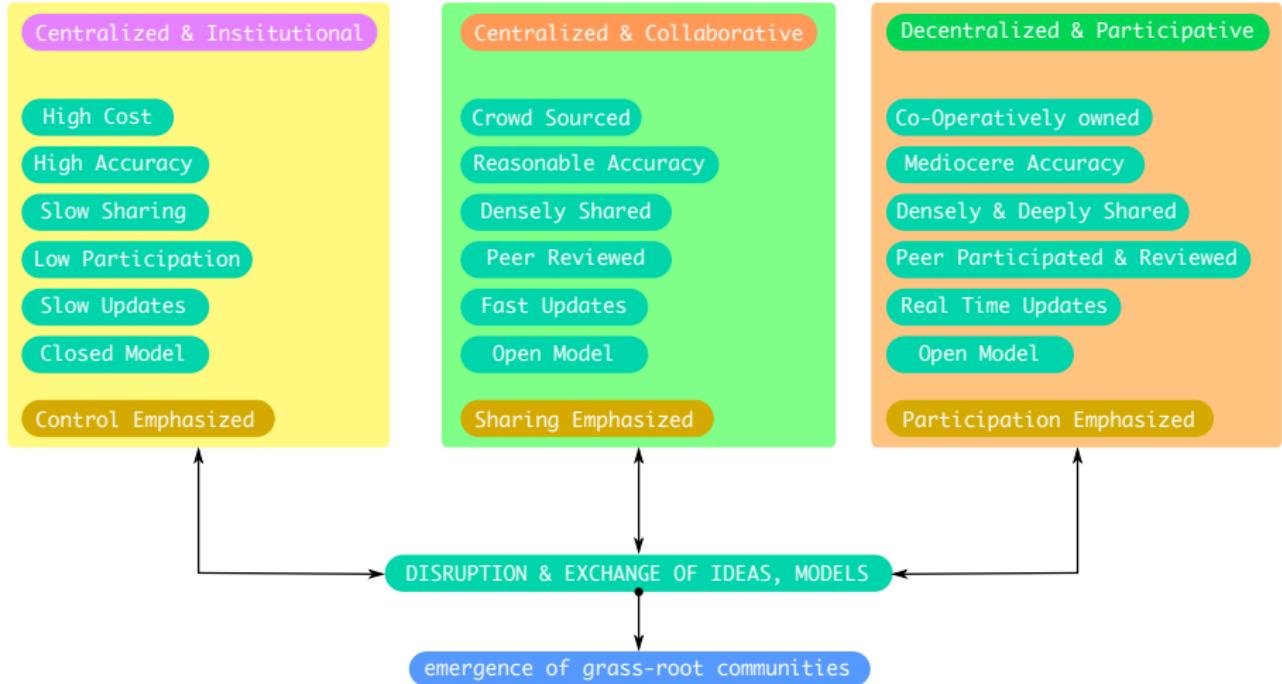


dimensions



visualization





How does Info. Flow ?

Once upon a time ...

THE
PICTORIAL
MISSIONARY MAP
OF THE
WORLD



PRINTED IN U.S.A. BY THE AMERICAN ENCYCLOPEDIA COMPANY.

THE PICTORIAL MISSIONARY MAP OF THE WORLD
BY JOHN BROWN & CO., BOSTON.
1875.

London: JAMES DODSLEY & CO. 1875. Printed for DODSLEY & CO. by W. H. MORRIS, LTD.

London: JAMES DODSLEY & CO.

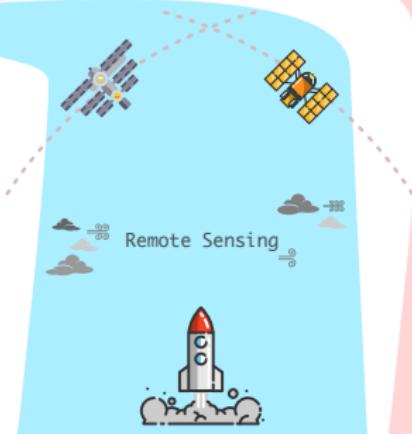
the conventional way ...

Establishments

Institutions



Surveying



Remote Sensing



Dissemination



it is centralized too !

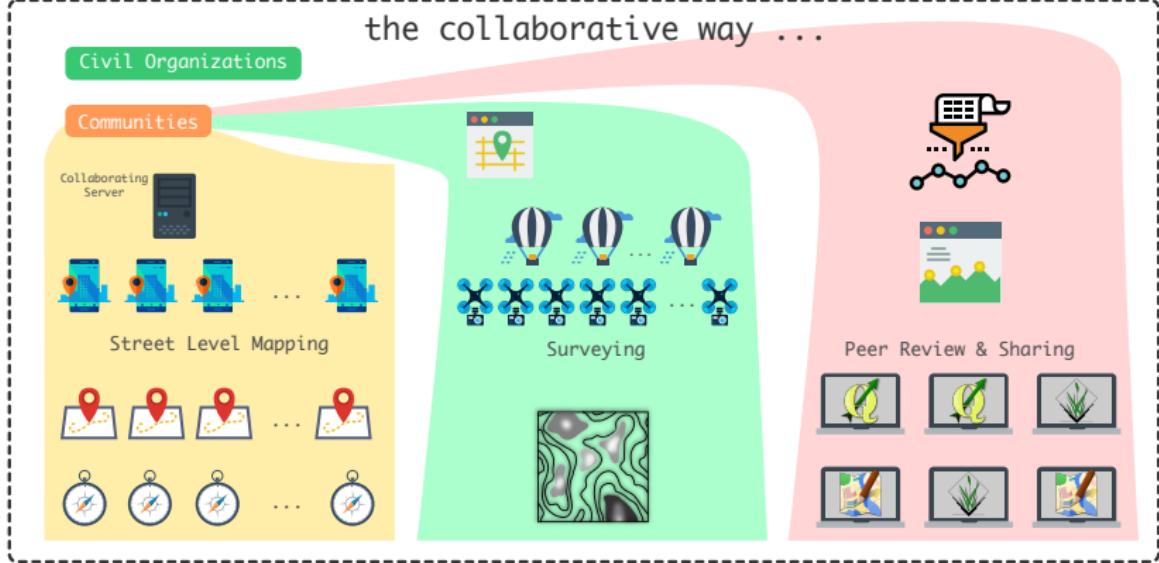
resulted in maps like these..... !



meanwhile, rise in ...

education, science, technology & creative commons ...

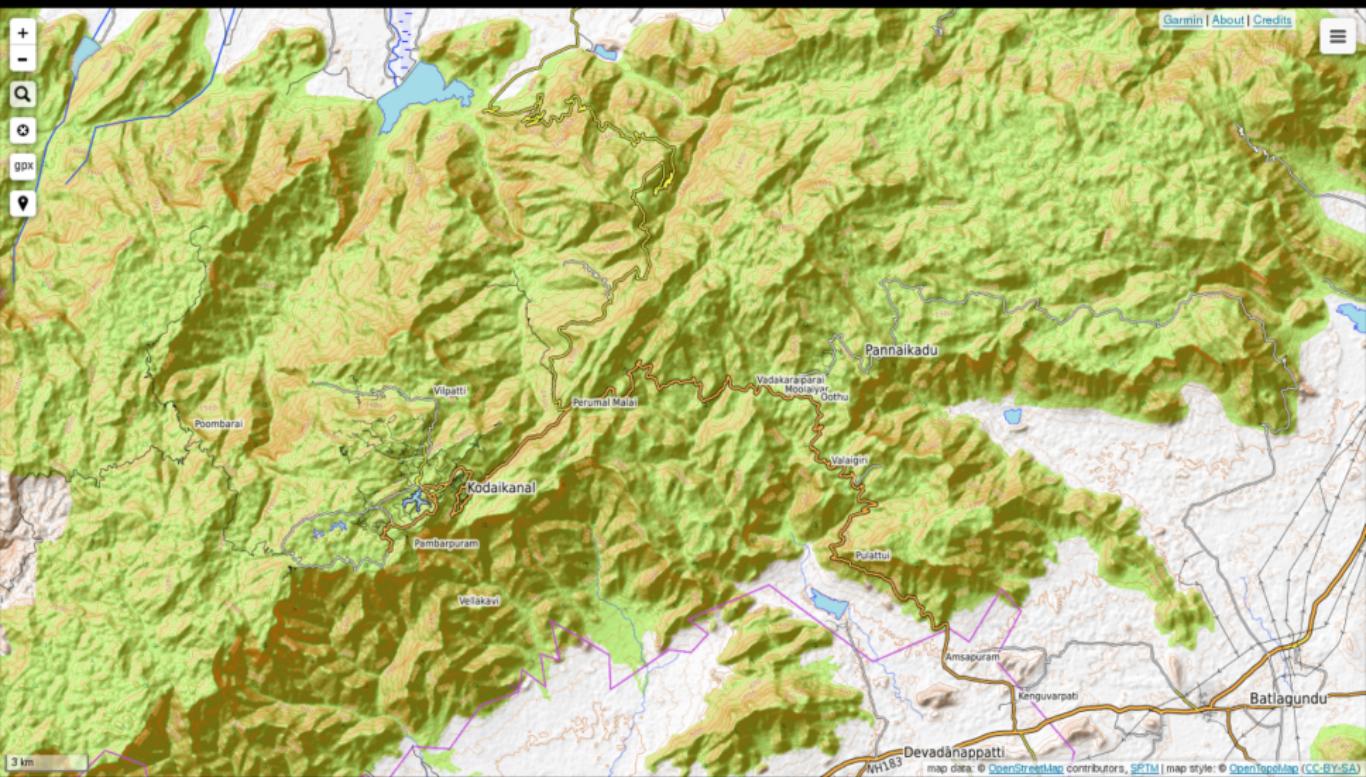
the collaborative way ...



partially centralized but collaborative (decentralized):

existing infrastructure + creative commons + opendata + internet

resulted in maps like these..... !



with emergent grass root infrastructure

&

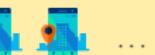
commons based peer production ...

the grassroots way ...

Emergent Communities

Networks

grassroots
mesh network



...



Street Level Mapping



...



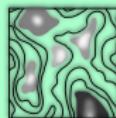
...



...



Surveying



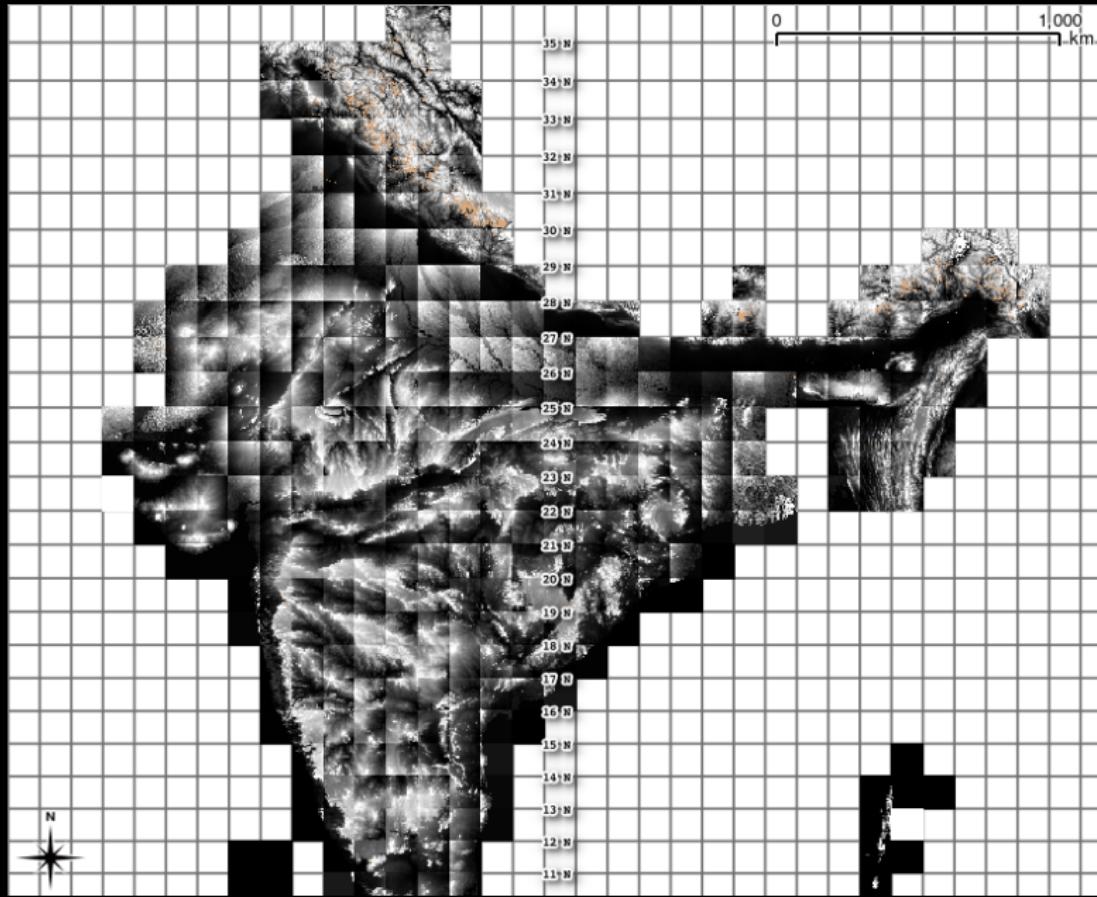
Peer Review & Sharing



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

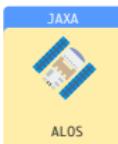
Open Tools

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 ... :)



Credits

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So i am providing the link where it can be from.



think !