

Working with Data

A Workshop on Understanding, Visualising and Mapping Data

Chennai, 3-5 August 2012

Second day

4th August 2012

- | | |
|--|---------------|
| 1. Presentation by Open Knowledge Foundation | [10:30-11:00] |
| 2. What is data visualisation? | [11:15-12:15] |
| 3. Tools for spatial data collection | [13:30-14:15] |
| 4. Introduction to tools | [14:15-14:30] |
| 5. Session on geo/visualisation tools #1 | [14:45-16:00] |
| 6. Session on geo/visualisation tools #2 | [16:15-17:30] |

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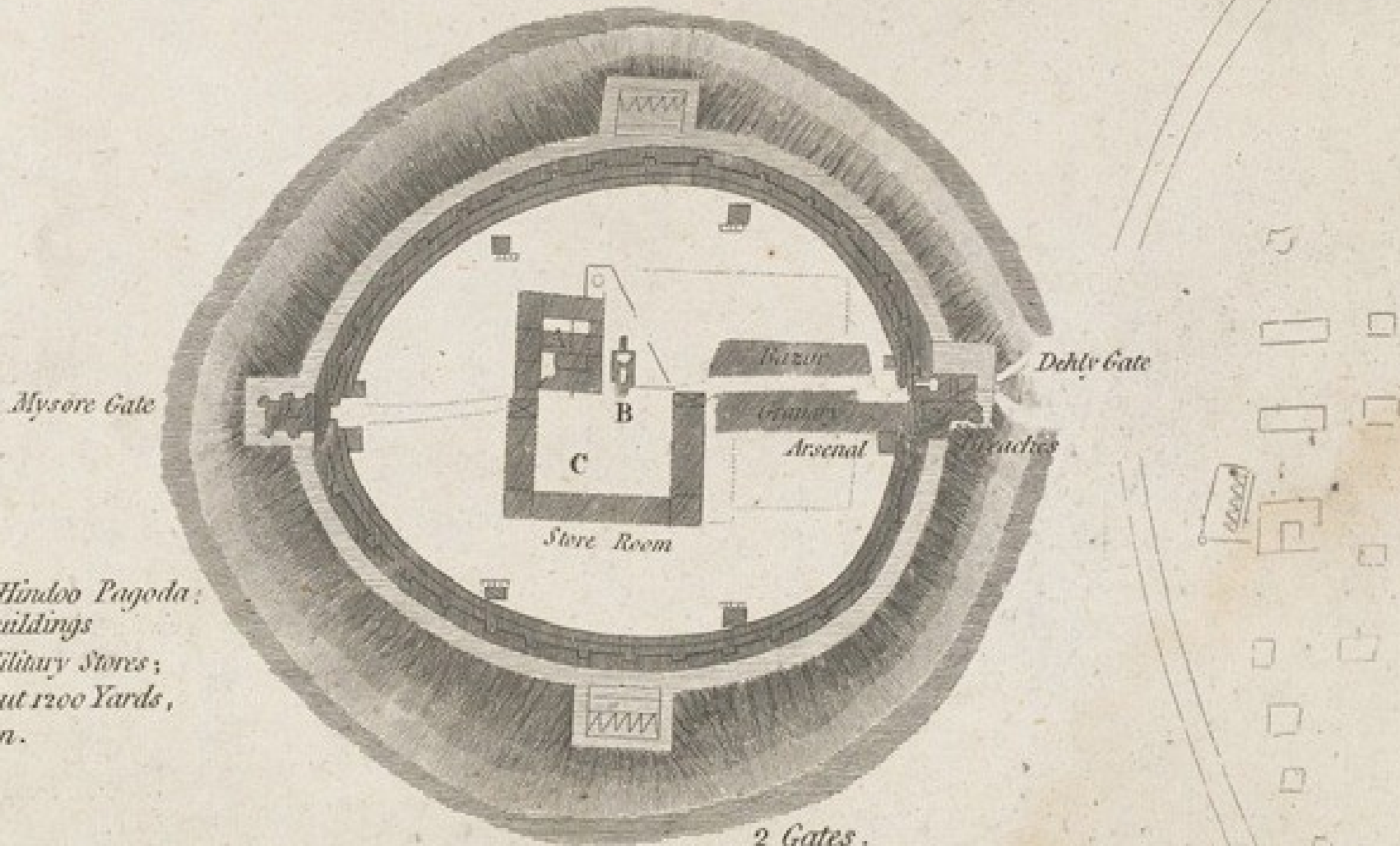
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PLAN of the FORT of BANGALORE from SIGHTS, without Measurement . . .

All the Bastions are small, with 7 Embrasures, Wall about 17 Feet high a double Rampart about 30 Feet broad.

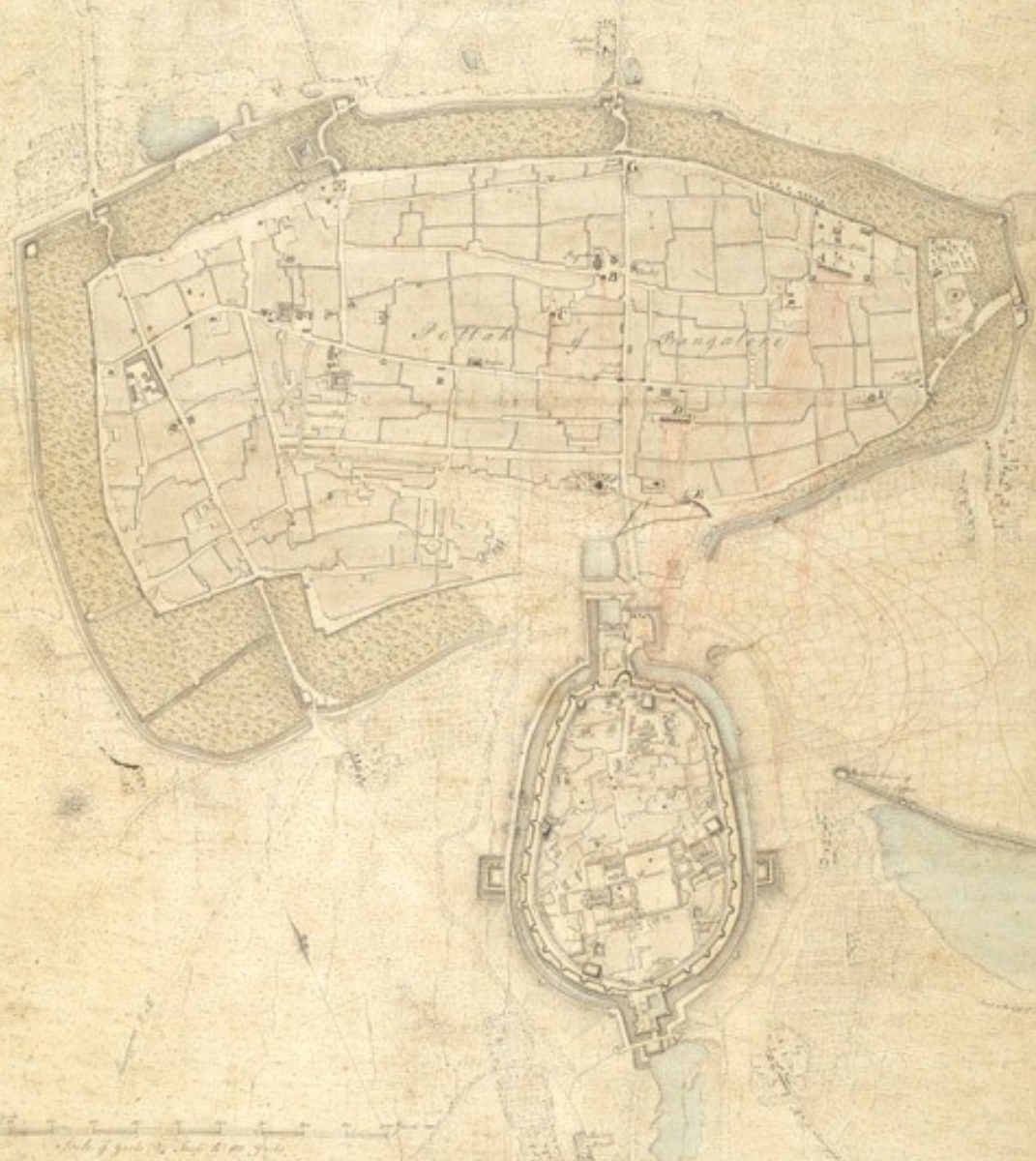


A. Palace of Tippoo.
B. a Column before the Hindoo Pagoda:
C. Large Square with Buildings
all round filled with Military Stores;
the whole Length about 1200 Yards,
Breadth in proportion.

2 Gates .
A Flat of 30 Feet for faussebraye .
Ditch about 30 Feet deep .
Cavaliers in the inner side .
Large Batteries outside .

*Plan of Bangalore (with the Attacks) taken by the English Army —
 under the Command of the R^l Honble Earl Cornwallis K. G. 8th March 1791 —*

- A. Battery of 6 Guns for taking off the defenses.*
- B. C. Enfilading Batteries.*
- D. E. Breaching Batteries.*
- FF. The Approaches.*
- G. The British Gate, Storm'd 7th March 1791.*
- h. h. The Sector Batteries.*





**THE WORLD
ON MERCATOR'S PROJECTION.**

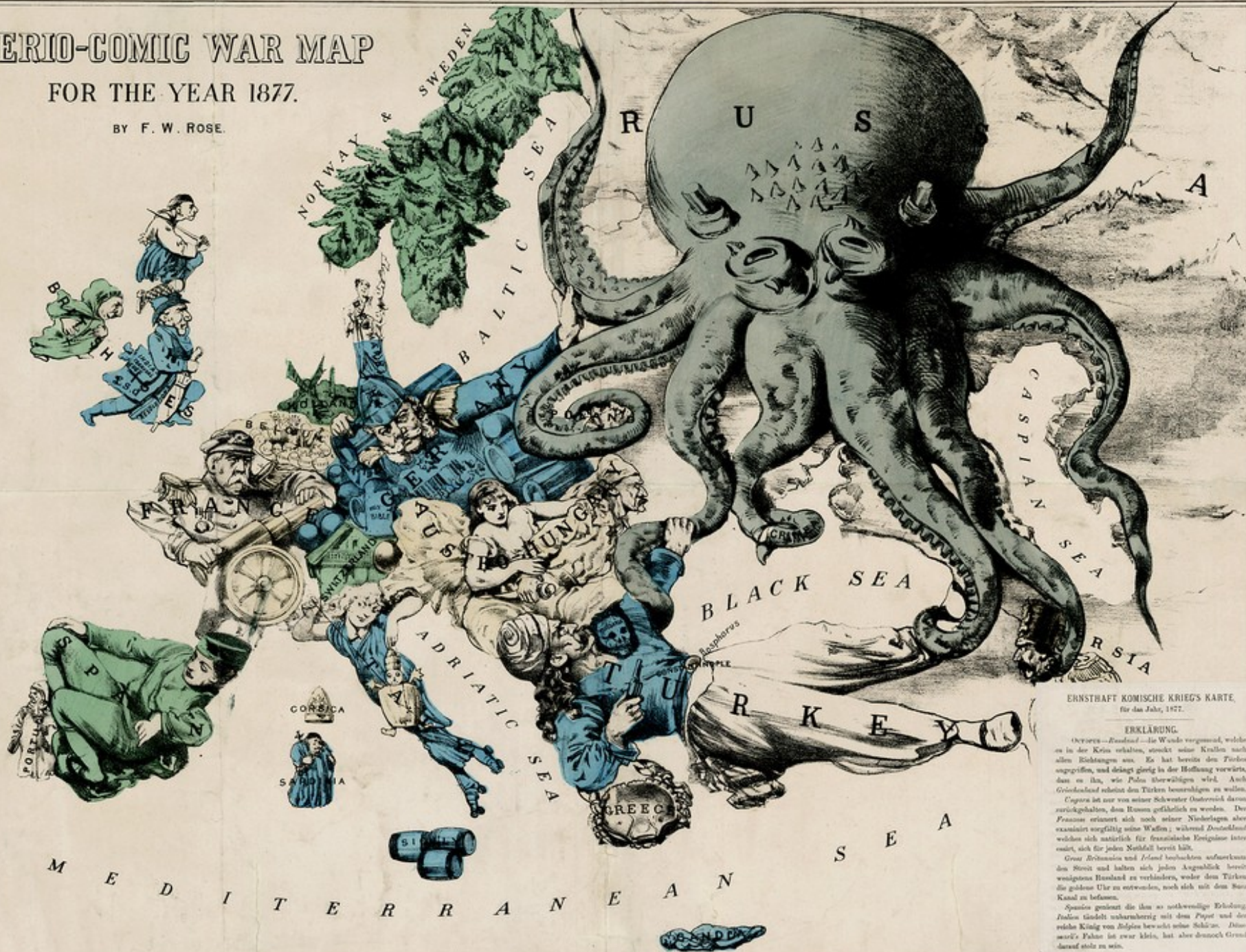
Parts of Europe and Africa on the West side of the Map cut off from the West side required to show the Ocean and Antipodes due to complete the Antipodes and to the Equatorial Circle are in Southern Asia.

Longitude East Longitude West 20 40 60 80 100 120 140 160 180 200 220 240
 20 40 60 80 100 120 140 160 180 200 220 240
 Longitude of 9 Greenwich

SERIO-COMIC WAR MAP

FOR THE YEAR 1877.

BY F. W. ROSE.



ERNSTHAFT KOMISCHE KRIEGS KARTE, für das Jahr, 1877.

ERKLÄRUNG.

RUSSIEN — *Frankreich* — die Wunde vergrößert, welche es in der Krim erhalten, streckt seine Kräfte nach allen Richtungen aus. Es hat bereits den Tiroren angegriffen, und deligt gierig in der Hoffnung vorwärts, dass es ihn, wie Polen überwinden wird. Auch Griechenland schreit den Türken beizuhelfen zu wollen. Caprin ist nur von seiner Schwester Österreich davon zurückgehalten, dem Russen gefährlich zu werden. Der Franzose erinnert sich noch seiner Niederlagen aber examinirt sorgfältig seine Waffen; während Deutschland welches sich natürlich für französische Emigration immer euer, sich für jeden Nothfall bereit hält.

Gross Britannien und Island beobachten aufmerksam den Russen und haben sich jedes Augenblick bereit wenigstens Hundert zu verhieltern, wobei dem Türken die goldene Uhr zu entwenden, noch sich mit dem Russen Kanal zu befehen.

Spanien gönnt die ihm so notwendige Erholung, Italien täuscht unerschütterlich mit dem Papst und der reiche König von Neapel bewacht seine Schätze. Dänemarks Fahne ist zwar klein, hat aber dennoch Grund darauf stolz zu sein.

JOHN BULL AND HIS FRIENDS

A SERIO-COMIC MAP OF EUROPE

BY
FRED W. ROSE

AUTHOR OF "ANGLING IN TROUBLED WATERS" ETC.

1900

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LEGEND

Great Britain: The British Empire, including all the territories under the crown of Great Britain, is represented by the figure of John Bull, who is shown in the center of the map, surrounded by his friends and allies. The British Empire is the largest and most powerful nation in the world, and its influence is felt in every part of the globe.

France: France is represented by the figure of Marianne, who is shown in the lower left corner of the map. She is the patron saint of France and is depicted as a woman in a blue and white dress, holding a lily. France is a major power in Europe and is known for its art, culture, and military strength.

Germany: Germany is represented by the figure of Germania, who is shown in the center of the map. She is the personification of the German nation and is depicted as a woman in a red and white dress, holding a sword and a shield. Germany is a major power in Europe and is known for its industry and military strength.

Austria: Austria is represented by the figure of Maria Theresa, who is shown in the upper right corner of the map. She is the patron saint of Austria and is depicted as a woman in a yellow and red dress, holding a scepter. Austria is a major power in Europe and is known for its art, culture, and military strength.

Russia: Russia is represented by the figure of Nicholas II, who is shown in the upper right corner of the map. He is the last emperor of the Russian Empire and is depicted as a man in a blue and white uniform, holding a sword. Russia is a major power in Europe and is known for its vast territory and military strength.

Italy: Italy is represented by the figure of Victor Emmanuel II, who is shown in the lower right corner of the map. He is the first king of a unified Italy and is depicted as a man in a red and white uniform, holding a sword. Italy is a major power in Europe and is known for its art, culture, and military strength.

Spain: Spain is represented by the figure of Alfonso XIII, who is shown in the lower right corner of the map. He is the last king of the House of Bourbon in Spain and is depicted as a man in a red and white uniform, holding a sword. Spain is a major power in Europe and is known for its art, culture, and military strength.

Portugal: Portugal is represented by the figure of King Carlos I, who is shown in the lower right corner of the map. He is the last king of the House of Braganza in Portugal and is depicted as a man in a red and white uniform, holding a sword. Portugal is a major power in Europe and is known for its art, culture, and military strength.

Belgium: Belgium is represented by the figure of King Leopold II, who is shown in the lower right corner of the map. He is the last king of the House of Saxe-Coburg and Gotha in Belgium and is depicted as a man in a red and white uniform, holding a sword. Belgium is a major power in Europe and is known for its art, culture, and military strength.

Netherlands: The Netherlands is represented by the figure of Queen Wilhelmina, who is shown in the lower right corner of the map. She is the first queen of the Netherlands and is depicted as a woman in a red and white dress, holding a sword. The Netherlands is a major power in Europe and is known for its art, culture, and military strength.

Denmark: Denmark is represented by the figure of King Frederick VIII, who is shown in the lower right corner of the map. He is the last king of the House of Glücksburg in Denmark and is depicted as a man in a red and white uniform, holding a sword. Denmark is a major power in Europe and is known for its art, culture, and military strength.

Sweden: Sweden is represented by the figure of King Gustaf V, who is shown in the lower right corner of the map. He is the last king of the House of Bernadotte in Sweden and is depicted as a man in a red and white uniform, holding a sword. Sweden is a major power in Europe and is known for its art, culture, and military strength.

Finland: Finland is represented by the figure of King Nicholas II, who is shown in the lower right corner of the map. He is the last emperor of the Russian Empire and is depicted as a man in a blue and white uniform, holding a sword. Finland is a major power in Europe and is known for its art, culture, and military strength.

Poland: Poland is represented by the figure of King Stanisław August Poniatowski, who is shown in the lower right corner of the map. He is the last king of the Polish-Lithuanian Commonwealth and is depicted as a man in a red and white uniform, holding a sword. Poland is a major power in Europe and is known for its art, culture, and military strength.

Czech Republic: The Czech Republic is represented by the figure of King Ferdinand I, who is shown in the lower right corner of the map. He is the last emperor of the Austro-Hungarian Empire and is depicted as a man in a red and white uniform, holding a sword. The Czech Republic is a major power in Europe and is known for its art, culture, and military strength.

Slovakia: Slovakia is represented by the figure of King Ferdinand I, who is shown in the lower right corner of the map. He is the last emperor of the Austro-Hungarian Empire and is depicted as a man in a red and white uniform, holding a sword. Slovakia is a major power in Europe and is known for its art, culture, and military strength.

Hungary: Hungary is represented by the figure of King Ferdinand I, who is shown in the lower right corner of the map. He is the last emperor of the Austro-Hungarian Empire and is depicted as a man in a red and white uniform, holding a sword. Hungary is a major power in Europe and is known for its art, culture, and military strength.

Croatia: Croatia is represented by the figure of King Ferdinand I, who is shown in the lower right corner of the map. He is the last emperor of the Austro-Hungarian Empire and is depicted as a man in a red and white uniform, holding a sword. Croatia is a major power in Europe and is known for its art, culture, and military strength.

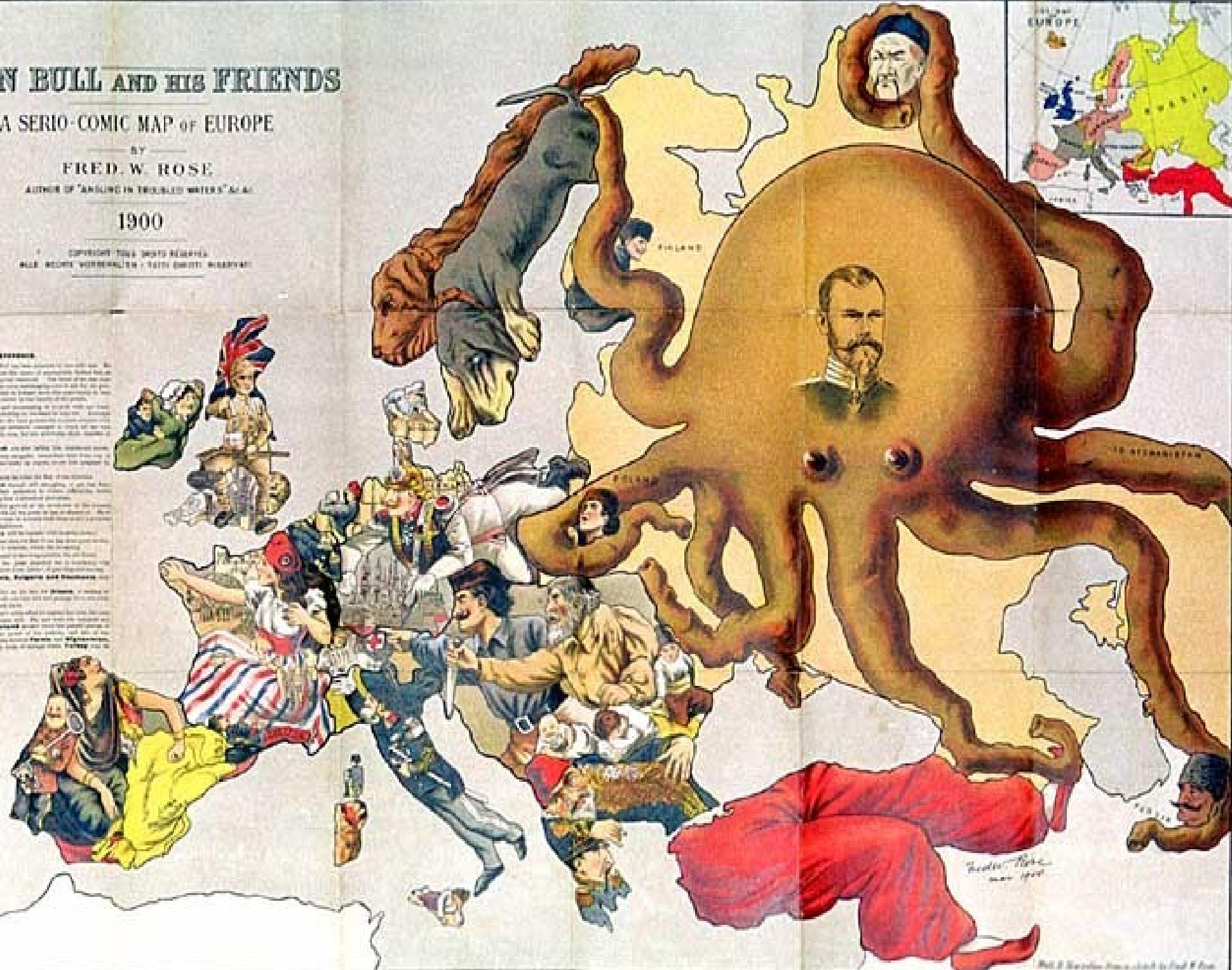
Serbia: Serbia is represented by the figure of King Peter I, who is shown in the lower right corner of the map. He is the last king of the House of Karađorđević in Serbia and is depicted as a man in a red and white uniform, holding a sword. Serbia is a major power in Europe and is known for its art, culture, and military strength.

Romania: Romania is represented by the figure of King Carol I, who is shown in the lower right corner of the map. He is the last king of the House of Hohenzollern-Sigmaringen in Romania and is depicted as a man in a red and white uniform, holding a sword. Romania is a major power in Europe and is known for its art, culture, and military strength.

Bulgaria: Bulgaria is represented by the figure of King Ferdinand I, who is shown in the lower right corner of the map. He is the last emperor of the Austro-Hungarian Empire and is depicted as a man in a red and white uniform, holding a sword. Bulgaria is a major power in Europe and is known for its art, culture, and military strength.

Greece: Greece is represented by the figure of King George I, who is shown in the lower right corner of the map. He is the last king of the House of Glücksburg in Greece and is depicted as a man in a red and white uniform, holding a sword. Greece is a major power in Europe and is known for its art, culture, and military strength.

Turkey: Turkey is represented by the figure of Sultan Abdulhamid II, who is shown in the lower right corner of the map. He is the last sultan of the Ottoman Empire and is depicted as a man in a red and white uniform, holding a sword. Turkey is a major power in Europe and is known for its art, culture, and military strength.



Printed by George Allen & Unwin Ltd., London.

'Black Octopus' is a name newly given to Russia by a certain prominent Englishman. For the black octopus is so voracious, that he stretches out his eight arms in all directions, and seizes up every thing that comes within his reach. But as it sometimes happens he gets wounded seriously even by a small fish, owing to his too much covetousness. Indeed, a Japanese proverb says: "Great avarice is like unselfishness." We Japanese need not to say much on the cause of the present war. Suffice it to say, that the further existence of the Black Octopus will depend entirely upon how he comes out of this war. The Japanese fleet has already practically annihilated Russia's naval power in the Orient. The Japanese army is about to win a signal victory over Russia in Corea & Manchuria. And when..... St. Petersburg? Wait & see! The ugly black Octopus! Hurrah! Hurrah! for Japan.

Nov. 1904. Kiyaburo Ohara.

法學博士 中村進先先生
慶應義塾大學 小原三郎君案

潛督 歐亞外交地圖

A HUMOROUS DIPLOMATIC ATLAS
of EUROPE AND ASIA.

亞 西 露
R U S S I A



著作權所有

明治三十七年三月廿三日印刷
平角式日發行

第四版

發行所

東京市丸の内區本町二丁目 小原三郎發行所

潛督 歐亞外交地圖

持言

此圖乃由著名法學博士中村進先先生所繪。其意蓋在諷刺俄國之侵略也。俄國之勢力，向來擴張於歐亞兩洲。其勢力之盛，實為各國所罕見。然其侵略之手段，則多屬不義。如其在東亞之舉動，尤為人所不齒。此圖以俄國為大章鱼，其八腕伸向各國，象徵其侵略之廣。而中國則被描繪為一巨人之形，其面有愁容，象徵其受俄國之壓迫。此圖不僅具有外交上之諷刺，且為一極佳之藝術品也。

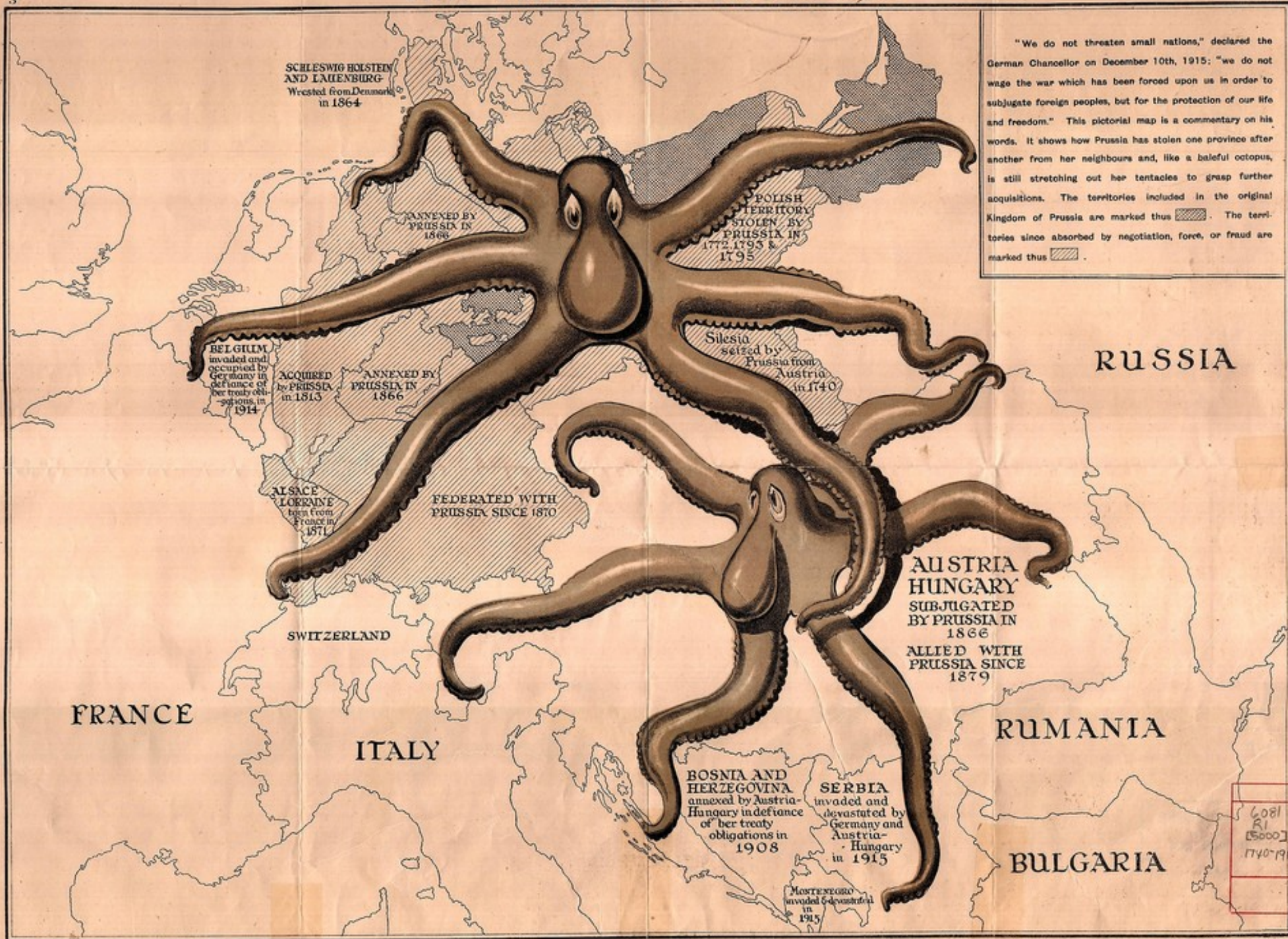
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

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明治三十七年三月

發行所 小原三郎發行所

THE PRUSSIAN OCTOPUS.

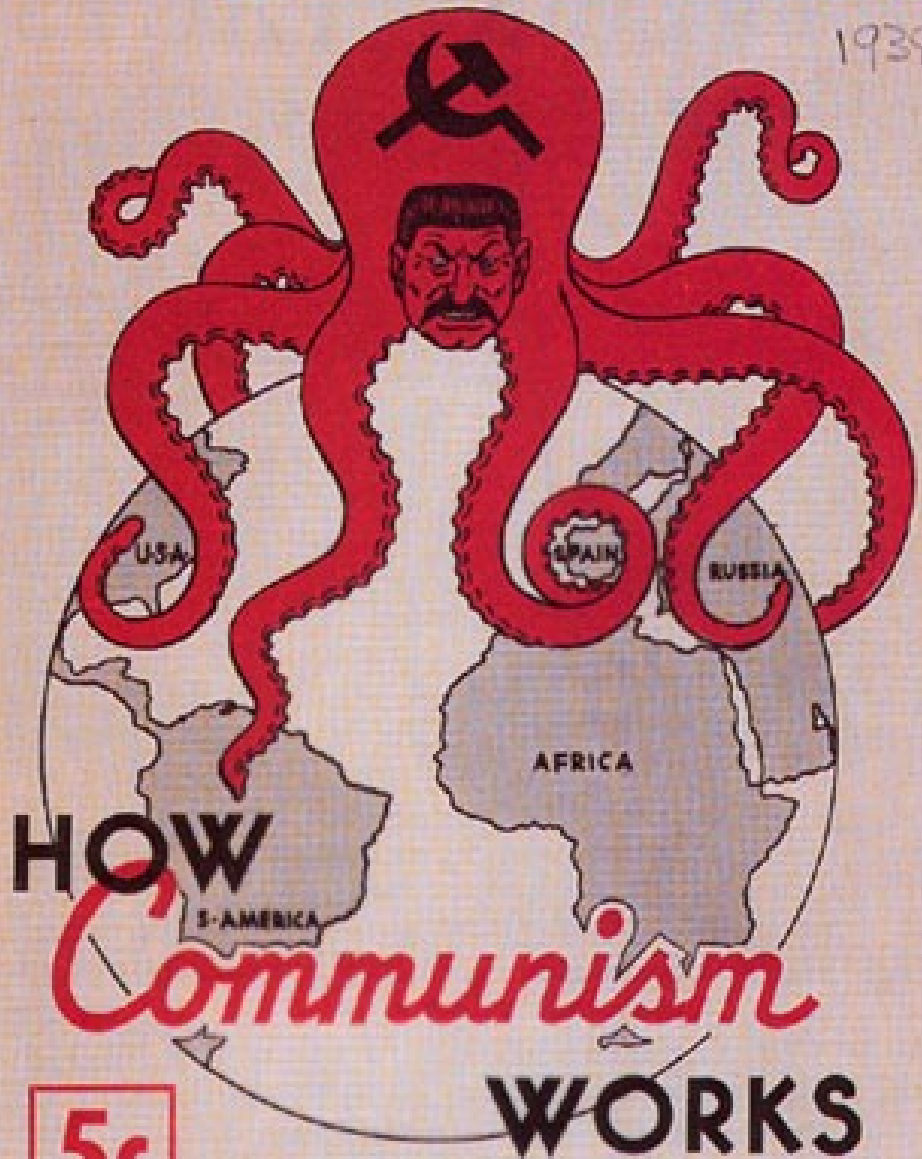


"We do not threaten small nations," declared the German Chancellor on December 10th, 1915: "we do not wage the war which has been forced upon us in order to subjugate foreign peoples, but for the protection of our life and freedom." This pictorial map is a commentary on his words. It shows how Prussia has stolen one province after another from her neighbours and, like a baleful octopus, is still stretching out her tentacles to grasp further acquisitions. The territories included in the original Kingdom of Prussia are marked thus . The territories since absorbed by negotiation, force, or fraud are marked thus .

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R1
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1740-1915

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Baron Tish, Communism; Telling Facts, Vol. 1, p. 50

CONFIANCE...



**SES AMPUTATIONS SE
POURSUIVENT MÉTHODIQUEMENT**

..MACKAY..
HAMILTON SPECTATOR



RUSSIA
IN 2008

CORNERED

The last pockets of al-Qaeda forces—and perhaps Osama bin Laden himself—remained holed up in the mountains of Tora Bora last week. It was al-Qaeda's final stand against advancing alliance forces and U.S. special ops. From the air, U.S. planes blasted the mountain caves hoping either to bury or unearth the holdouts and bin Laden.



ON THE GROUND Aided by U.S. special forces, Alliance fighters, armed with Kalashnikovs, rocket-propelled grenades and a few tanks, have advanced over the treacherous terrain from the north and fought pitched battles against al-Qaeda forces, capturing caves and taking prisoners.

PINNING DOWN OSAMA

One Eastern Alliance group claimed to be dosing in on a cave in the mountains of Tora Bora that held bin Laden. A barrage of allied bombing ensued. U.S. officials, though, insisted they didn't know bin Laden's exact whereabouts, and some reports even claimed he had escaped into Pakistan weeks ago.

B-52 bomber

AIR STRIKES In an all-out air assault, both short- and long-range bombers, including F-16s, F-14s, B-52s and B-1s, have been targeting underground cave complexes and above-ground al-Qaeda forces with laser-guided bunker busters, earth-penetrating JDAMs and several BLU-82s—the 15,000-lb. bombs known as “daisy cutters”

AC-130 gunship

Predator drone



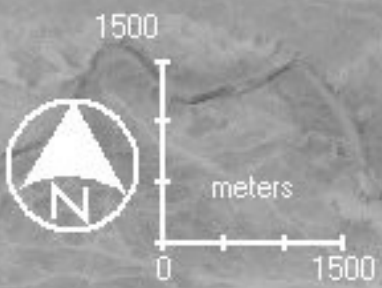
ALONG THE BORDER U.S. Predator drones and E-8C JSTARS planes scan the border for al-Qaeda fighters hoping to escape through remote passes and across the high White Mountains (Spin Ghar). When the fighters are spotted, AC-130 gunships as well as armed drones swoop in to strike them. Just over the border, Pakistani troops have been deployed to seal the passes and other possible escape routes.

THE MAP BY JON LINTON. TACTIC ILLUSTRATIONS BY ADAM SHERMAN. AIRCRAFT FROM EASTVIEW CARTOGRAPHY.

Weapon Storage Area



Al Asad Airfield



US SOLDIERS - 2009

COMMITTED SUICIDE

KILLED IN IRAQ



304

149



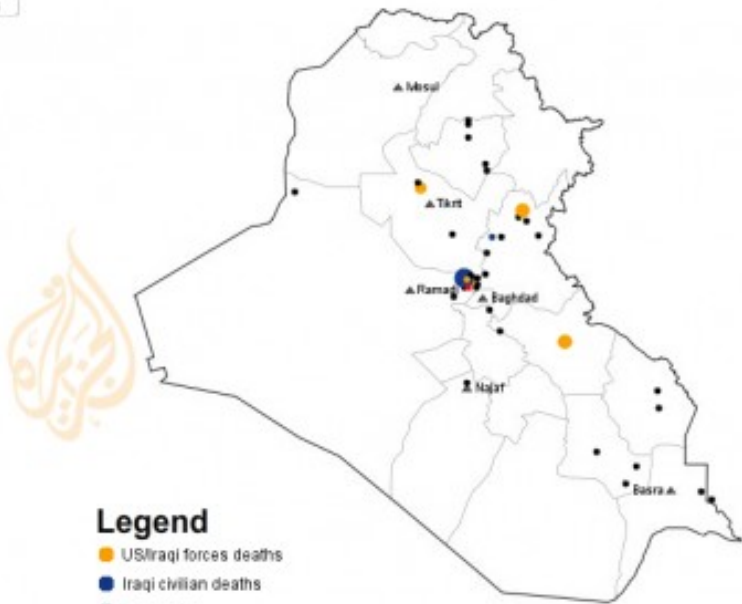
- Roadside Bombs
- Checkpoint Deaths
- Assassinations

Roadside Bombs

Militant groups in other countries, perhaps after seeing the success of IEDs in Iraq, have begun using them as well.

Their use in Afghanistan has increased exponentially, from just 308 in 2004 to more than 7,000 in 2009. More than 100 IEDs detonated each day in the week leading up to Afghanistan's presidential election last year. They have become the leading killer of US and NATO troops in Afghanistan.

JIEDDO, the Pentagon organisation that tracks IEDs, said they have also been repeatedly used in Pakistan, India, Russia, Sri Lanka and other countries.



Incidents: 49,683
Deaths: 21,156

Fast Slow
◀ ▶ ⏪ ⏩

- Legend**
- US/Iraqi forces deaths
 - Iraqi civilian deaths
 - No deaths
 - Explosively formed penetrators

June 11, 2008

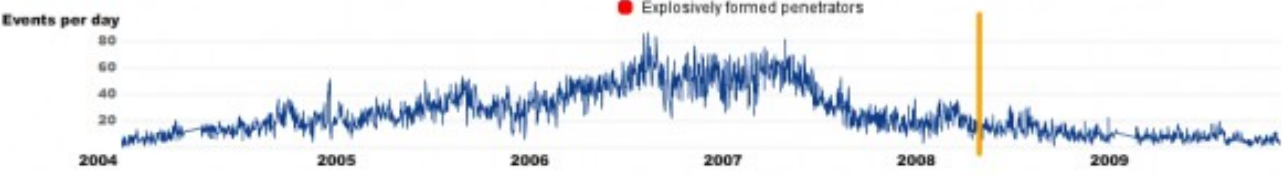
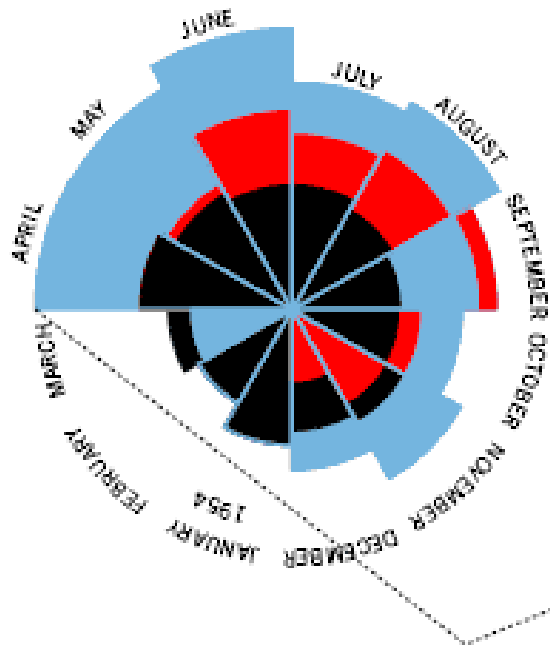
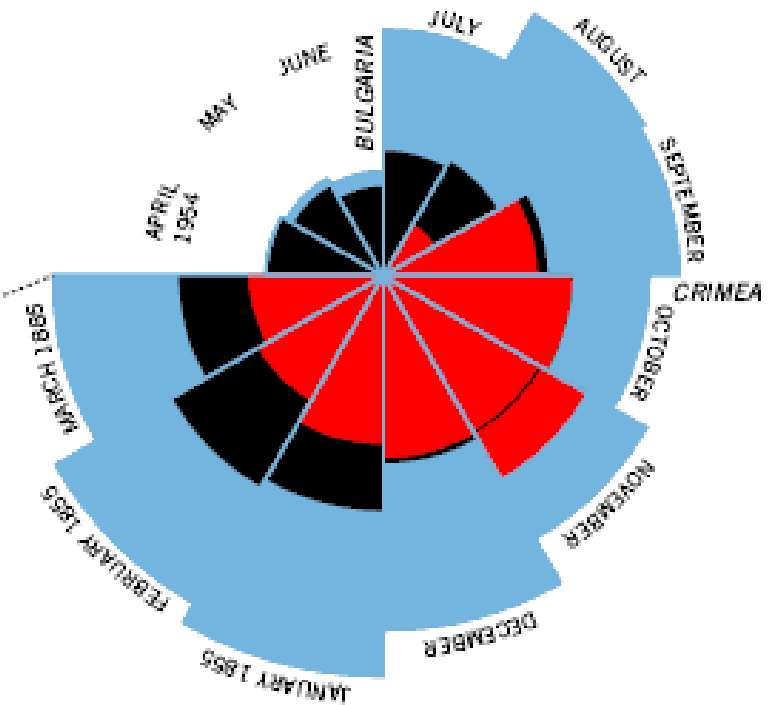


DIAGRAM OF THE CAUSES OF MORTALITY IN THE ARMY IN THE EAST

2.
APRIL 1855 to MARCH 1856



1.
APRIL 1854 to MARCH 1855



The Areas of the blue, red, & black wedges are each measured from the centre as the common vertex

The blue wedges measured from the centre of the circle represent area for area the deaths from Preventible or Mitigable Zymotic Diseases, the red wedges measured from the centre the deaths from wounds, & the black wedges measured from the centre the deaths from all other causes

The black line across the red triangle in Nov' 1854 marks the boundary of the deaths from all other causes during the month

In October 1854, & April 1855, the black area coincides with the red, in January & February 1856, the blue coincides with the black

The entire areas may be compared by following the blue, the red & the black lines enclosing them.

Types of charts

- Scatterplot, line chart, histogram, bar chart
- Pie chart, tree map,
- Bubble chart, radar chart
- Time line, flow chart, mind map
- Choropleth, flow map, cartogram

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Gestalt principles of visual perception

- law of proximity
- law of similarity
- law of enclosure
- law of closure
- law of continuity

Manuel Lima's information visualisation manifesto

a selection

- form follows function
- start with a question
- cite your source
- the power of narrative
- embrace time
- avoid gratuitous visualisations

Carte Figurative des pertes successives en hommes de l'Armée Française dans la campagne de Russie 1812-1813.

Dressée par M. Minard, Inspecteur Général des Ponts et Chaussées en retraite Paris, le 20 Novembre 1869.

Les nombres d'hommes présents sont représentés par les largeurs des zones colorées à raison d'un millimètre pour dix mille hommes; ils sont de plus écrits en travers des zones. Le rouge désigne les hommes qui entrent en Russie, le noir ceux qui en sortent. — Les renseignements qui ont servi à dresser la carte ont été puisés dans les ouvrages de M. M. Chiers, de Ségur, de Fezensac, de Chambray et le journal inédit de Jacob, pharmacien de l'Armée depuis le 28 Octobre. Pour mieux faire juger à l'œil la diminution de l'armée, j'ai supposé que les corps du Prince Jérôme et du Maréchal Davoust qui avaient été détachés sur Minsk et Mohilow et ont rejoint vers Orscha et Witebsk, avaient toujours marché avec l'armée.

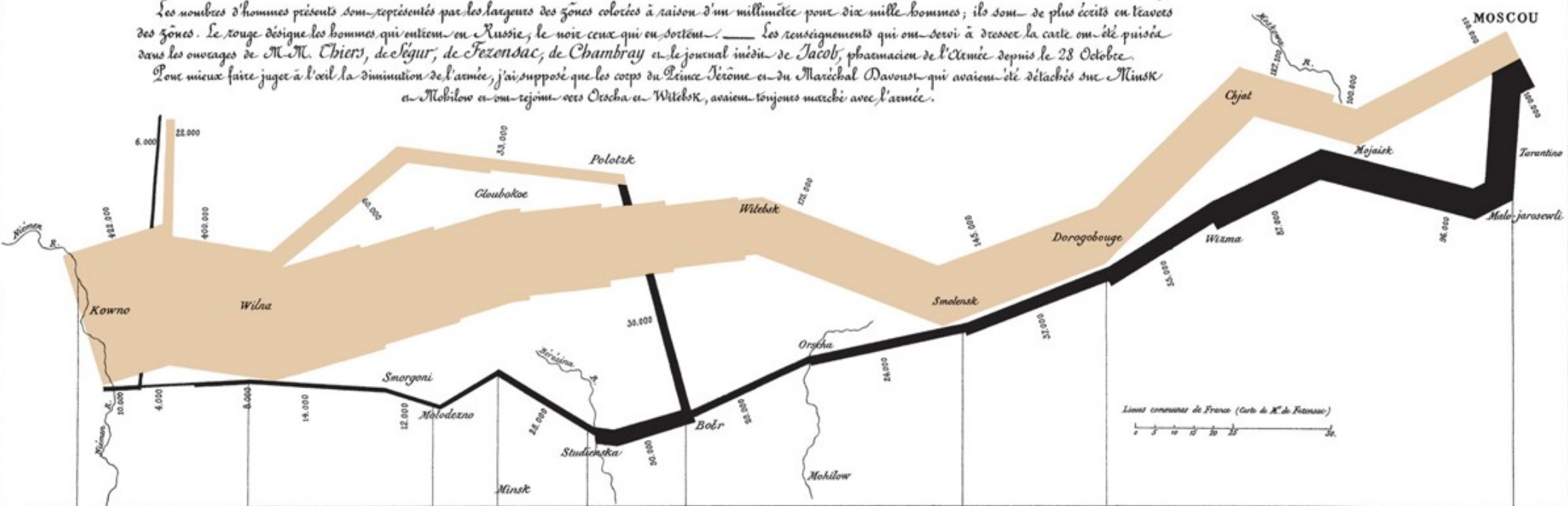
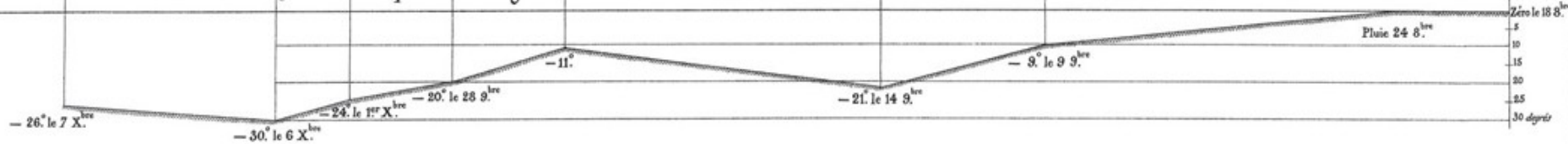


TABLEAU GRAPHIQUE de la température en degrés du thermomètre de Réaumur au dessous de zéro.



Les Cosaques passent au galop le Niémen gelé.

Subjective guiding principles

- juxtapose, compare and relate
- combine/collect data to challenge existing views
- it is easy to make complicated and beautiful data visualisations but difficult to communicate them
- reading visualisation requires understanding of the context, do not generalise the visualisation too much



GREAT MARLBOROUGH

PORTLAND

WORK HOUSE

PORTLAND NEWS

BENYCHA STREET

PUMP

MARSHALL ST

EDWARD STREET

DUGORE PLACE

D PUMP

BREWERY

BROAD STREET

NEW STREET

BUCK LANE

LITTLE WINDMILL STREET

WILLIAM AND BERTYNS

PULTENEY

BRIDLE

GREAT PULTEN

HUBBARD ST

PETER STREET

WILKINSON STREET

LOCKETT

FORBES

NEW STREET

UP JAMES ST

STREET

STREET

CROSS STREET

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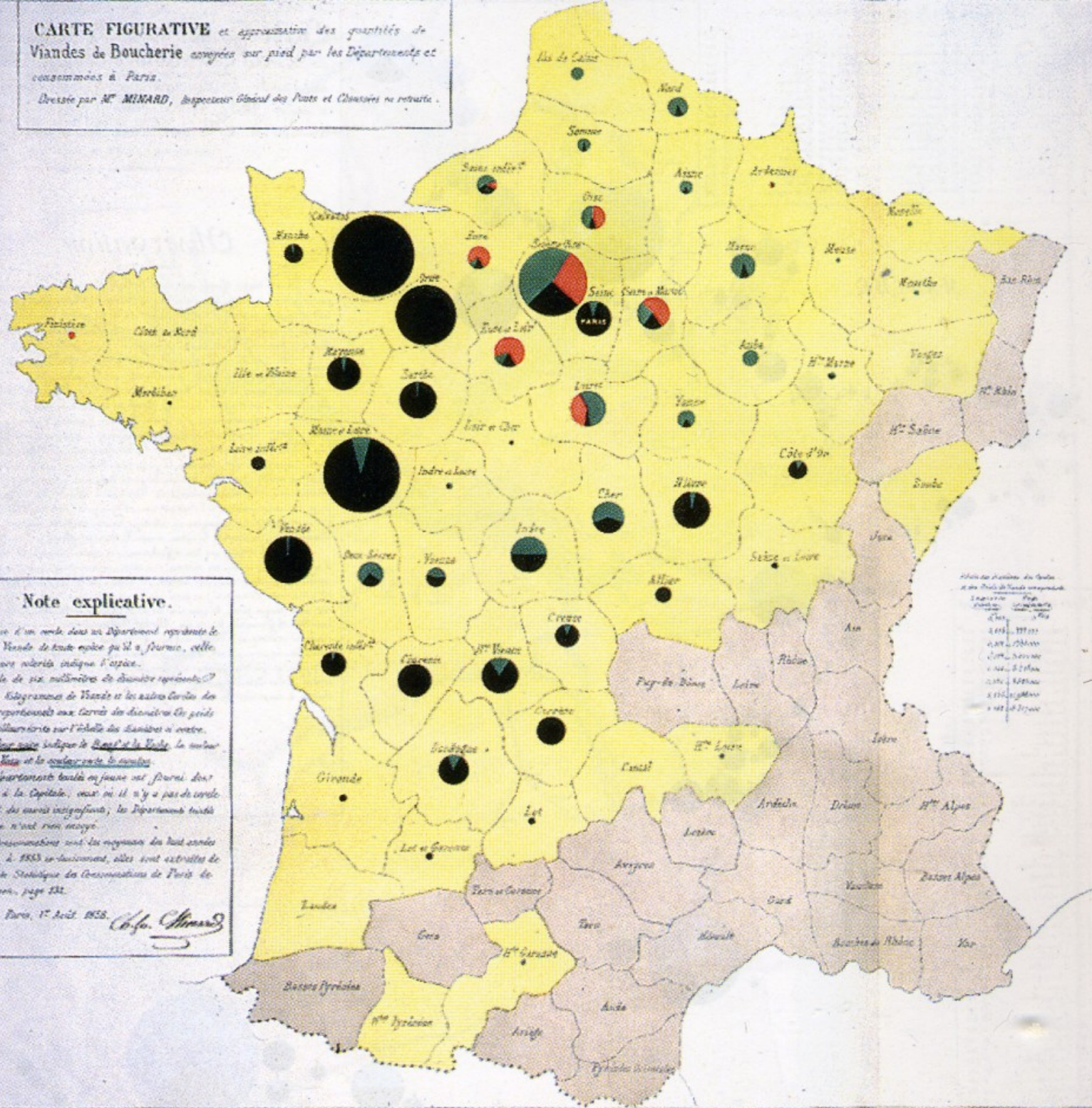
STREET

STREET

STREET

CARTE FIGURATIVE et approximative des quantités de Viandes de Boucherie consommées sur pied par les Départements et consommées à Paris.

Dressée par M^r MINARD, Inspecteur Général des Ponts et Chaussées en retraite.



Note explicative.

La surface d'un cercle dans un département représente le poids de Viande de toute espèce qu'il a fournie, celle du Secteur noir indique l'espèce.
 Un cercle de six millimètres de diamètre représente 333 333 Kilogrammes de Viande et les autres Cercles des poids proportionnels aux Carrés des diamètres. Ces poids sont étalonnés sur l'échelle des diamètres à quatre.
 La couleur noire indique le Bœuf et la Rouge le mouton ou le Veau et le vert le porc.
 Les Départements tous en jaune ont fourni des Bœufs à la Capitale, ceux où il n'y a pas de cercle ont fait des moutons insignifiants, les Départements tous en blanc n'ont rien envoyé.
 Ces Consommations sont les moyennes des huit années de 1845 à 1853 et successives, elles sont extraites de l'Annuaire Statistique des Consommations de Paris de M^r Bignon, page 132.

Paris, 17 Août 1853. *Ch. Minard*

Tableau des Consommations de Paris et des Poids de Viande consommés

Année	Poids
1845	1 000 000
1846	1 000 000
1847	1 000 000
1848	1 000 000
1849	1 000 000
1850	1 000 000
1851	1 000 000
1852	1 000 000
1853	1 000 000
Moyenne	1 000 000

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



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

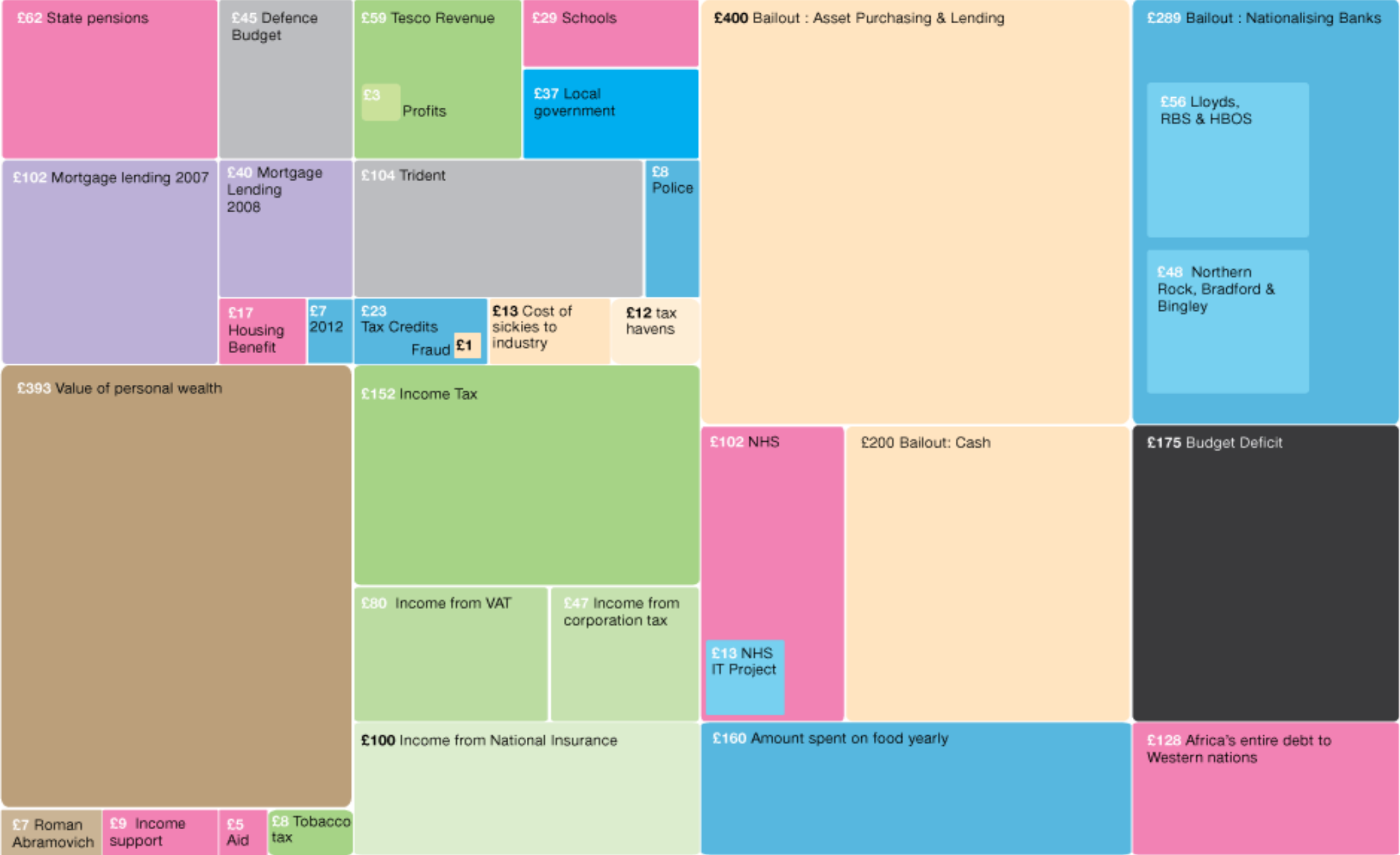
Even with Asian and European college students, geographical estimates were often off by factors of 2-3. This is partly due to the highly distorted nature of the predominantly used mapping projections (such as *Mercator*).

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

	AREA km ²	%	
1	Russia	17.096.242	11,50
2	Canada	9.984.670	6,70
3	China	9.596.961	6,40
4	United States	9.629.091	6,40
5	Brazil	8.514.877	5,70
6	Australia	7.692.024	5,20
7	India	3.287.283	2,30
8	Argentina	2.780.400	2,00
9	Kazakhstan	2.724.900	1,80
10	Sudan	2.505.813	1,70
11	Algeria	2.381.741	1,60
12	Congo	2.344.858	1,60
13	Greenland	2.166.086	1,50
14	Saudi Arabia	2.149.690	1,40
15	Mexico	1.964.375	1,30
16	Indonesia	1.860.360	1,30
17	Libya	1.759.540	1,20
18	Iran	1.628.750	1,10
19	Mongolia	1.564.100	1,10
20	Peru	1.285.216	0,86
21	Chad	1.284.000	0,86
22	Niger	1.267.000	0,85
23	Angola	1.246.700	0,85
24	Mali	1.245.182	0,83
25	South Africa	1.221.037	0,82
26	Colombia	1.141.748	0,76
27	Ethiopia	1.104.300	0,74
28	Bolivia	1.098.581	0,74
29	Mauritania	1.025.520	0,69
30	Egypt	1.002.000	0,67
31	Tanzania	945.087	0,63
32	Nigeria	923.768	0,62
33	Venezuela	912.050	0,61
34	Namibia	824.116	0,55
35	Mozambique	801.590	0,54
36	Pakistan	796.095	0,53
37	Turkey	780.562	0,53
38	Chile	756.102	0,51
39	Zambia	752.612	0,51
40	Myanmar	676.578	0,45
41	Afghanistan	652.090	0,44
42	Somalia	637.657	0,43
43	France	632.834	0,43
44	C. African Rep	622.964	0,42
45	Ukraine	603.500	0,41
46	Madagascar	587.041	0,39
47	Botswana	582.000	0,39
48	Kenya	580.367	0,39
49	Yemen	527.968	0,35
50	Thailand	513.120	0,34
51	Spain	505.992	0,34
52	Turkmenistan	488.100	0,33
53	Cameroon	475.442	0,32
54	Papua New Guinea	462.840	0,31
55	Uzbekistan	447.400	0,30
56	Morocco	446.550	0,30
57	Sweden	441.370	0,30
58	Iraq	438.317	0,29
59	Paraguay	406.752	0,27
60	Zimbabwe	390.757	0,26
61	Japan	377.930	0,25
62	Germany	357.114	0,24
63	Rep. of Congo	342.000	0,23
64	Finland	338.119	0,23
65	Vietnam	331.219	0,22
66	Malaysia	330.800	0,22
67	Norway	323.802	0,22
68	Côte d'Ivoire	322.463	0,22
69	Poland	312.685	0,21
70	Oman	309.500	0,21
71	Italy	301.336	0,20
72	Philippines	300.000	0,20
73	Burkina Faso	274.222	0,18
74	New Zealand	270.467	0,18
75	Gabon	267.668	0,18
76	Western Sahara	266.000	0,18
77	Ecuador	256.369	0,20
78	Guinea	245.857	0,17
79	United Kingdom	242.900	0,16
80	Uganda	241.038	0,16
81	Ghana	238.539	0,16
82	Romania	238.391	0,16
83	Laos	236.800	0,16
84	Qatar	214.969	0,14
85	Bahrain	207.600	0,14
86	Kyrgyzstan	199.951	0,13
87	Senegal	196.722	0,13
88	Syria	185.180	0,12
89	Cambodia	181.035	0,12
90	Uruguay	176.215	0,12
91	Suriname	163.820	0,11
92	Tunisia	163.610	0,11
93	Nepal	147.181	0,10
94	Bangladesh	143.998	0,10
95	Tajikistan	143.100	0,10
96	Greece	131.957	0,09
97	Nicaragua	130.373	0,09
98	North Korea	125.538	0,08
99	Malawi	118.484	0,08
100	Eritrea	117.600	0,08
TOP 100 TOTAL		132.632.524	89,34



The Billion Pound-O-Gram

● Giving
 ● Spending
 ● Fighting
 ● Hoarding
 ● Lending
 ● Bailing
 ● Earning

CARTE ANNALE et APPROXIMATIVE représentant pour l'année 1850
Les ÉMIGRANTS du GLOBE

*Les Pays d'où ils partent et ceux où ils arrivent, dessinés par M. MINARD
 Ingénieur Général des Ponts et Chaussées et membre, principalement avec les
 renseignements publiés dans l'Émigration Européenne de M. A. LEGOTT
 et le remarquable ouvrage de New-York
 Paris, le 20 Septembre 1850*

LÉGENDE.
 Couleurs indiquant les Pays d'où sont partis les Émigrants.

Angleterre	
de Hambourg et de	
de France	
de Prusse	
l'Égypte	
de Chine	
de l'Inde Orientale	

*Les nombres des Émigrants sont exprimés par les longueurs des lignes relatives à
 celles d'un millimètre pour quinze cents émigrants; de ceux de plus exprimés par les
 nombres inscrits en lettres de même et dont l'unité est mille émigrants.*

AMÉRIQUE DU
 NORD

EUROPE

ASIE

AFRIQUE

AMÉRIQUE DU
 SUD

AUSTRALIE

Survived

Survived

Perished

Sex

Male

Female

Age

Adult

Child

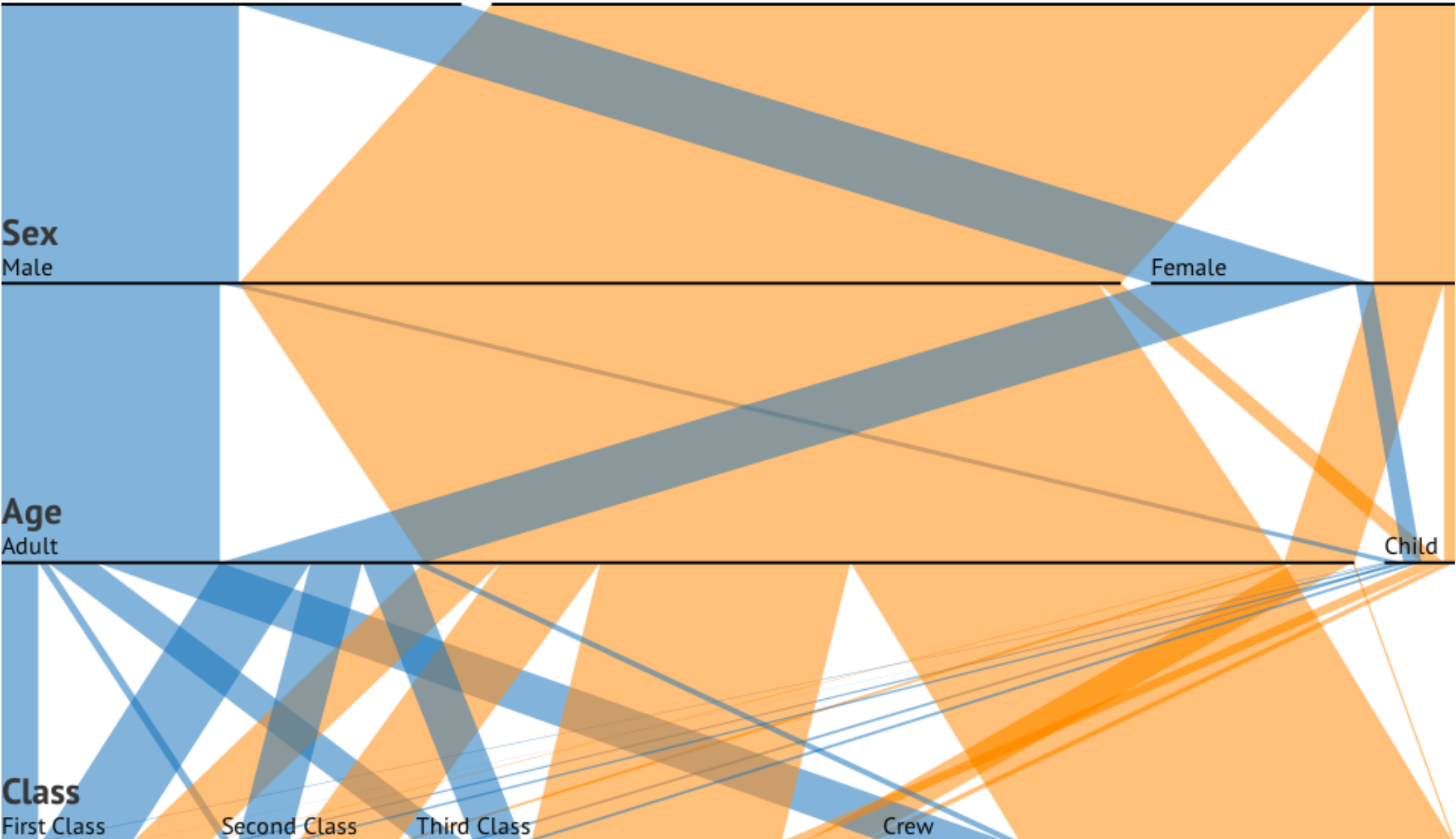
Class

First Class

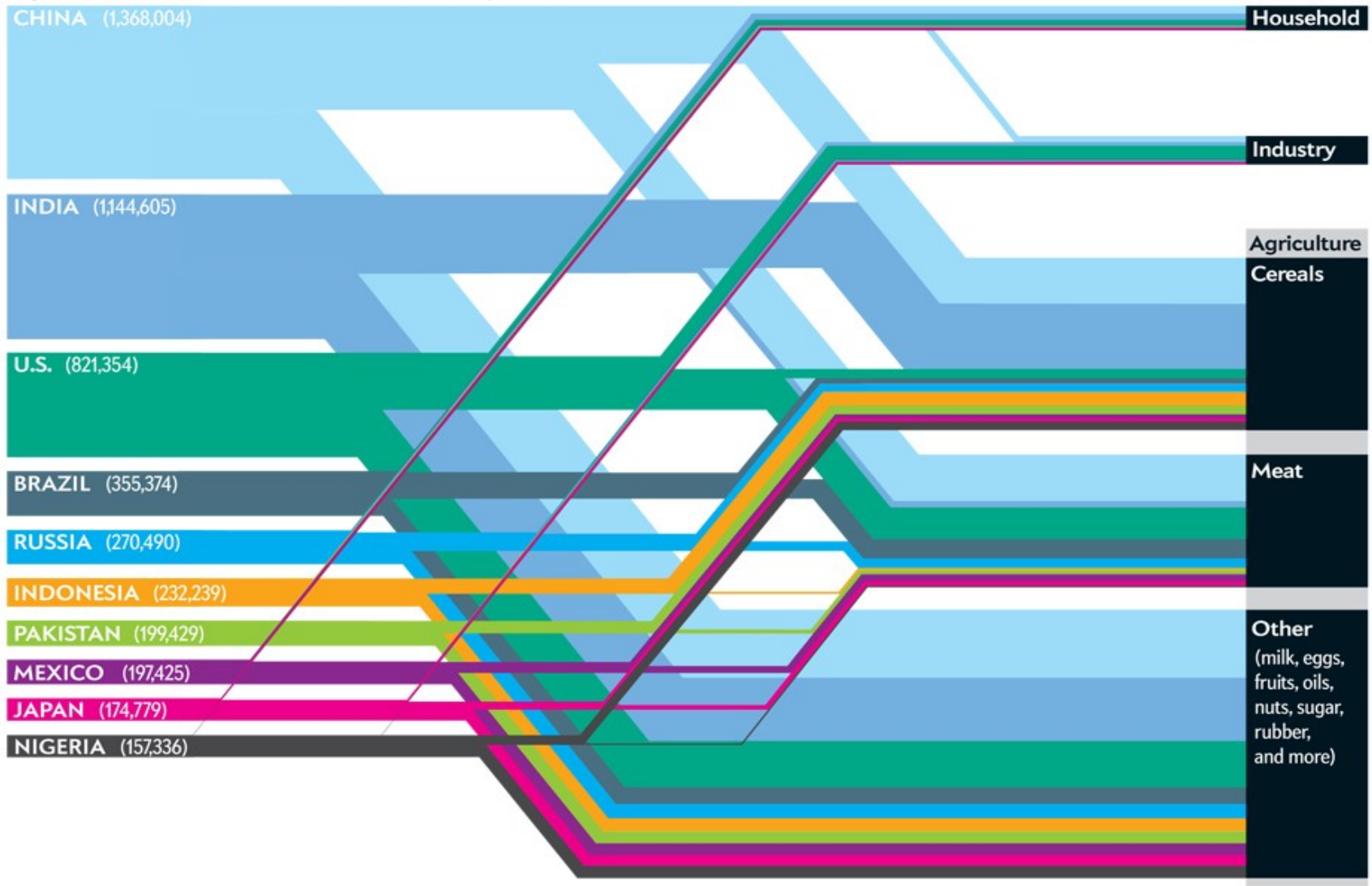
Second Class

Third Class

Crew



Top 10 Freshwater Consumers (million cubic meters per year)



Largest Net Importers and Exporters of Virtual Water (in crop, animal and industrial products)



Graphics by Jen Christiansen

Source: "The Water Footprint of Humanity," by Arjen Y. Hoekstra and Mesfin M. Mekonnen, in Proceedings of the National Academy of Sciences USA. Published online February 13, 2012

Subjective guiding principles

- juxtapose, compare and relate
- **combine/collect data to challenge existing views**
- it is easy to make complicated and beautiful data visualisations but difficult to communicate them
- reading visualisation requires understanding of the context, do not generalise the visualisation too much

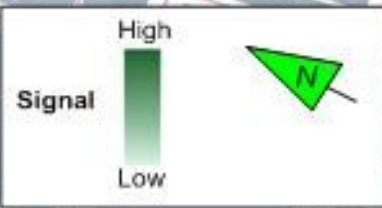


Busy traffic crossing



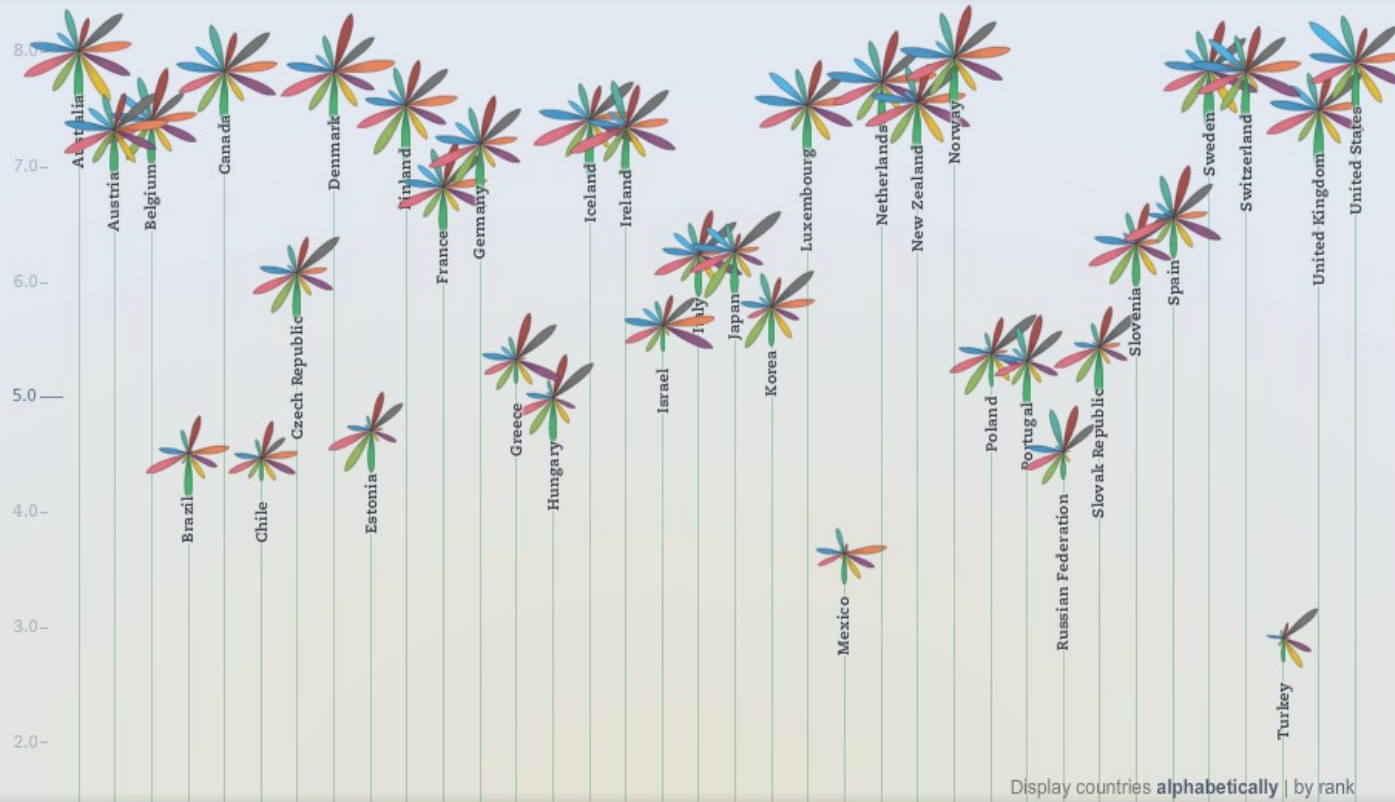
Main Street

600 South



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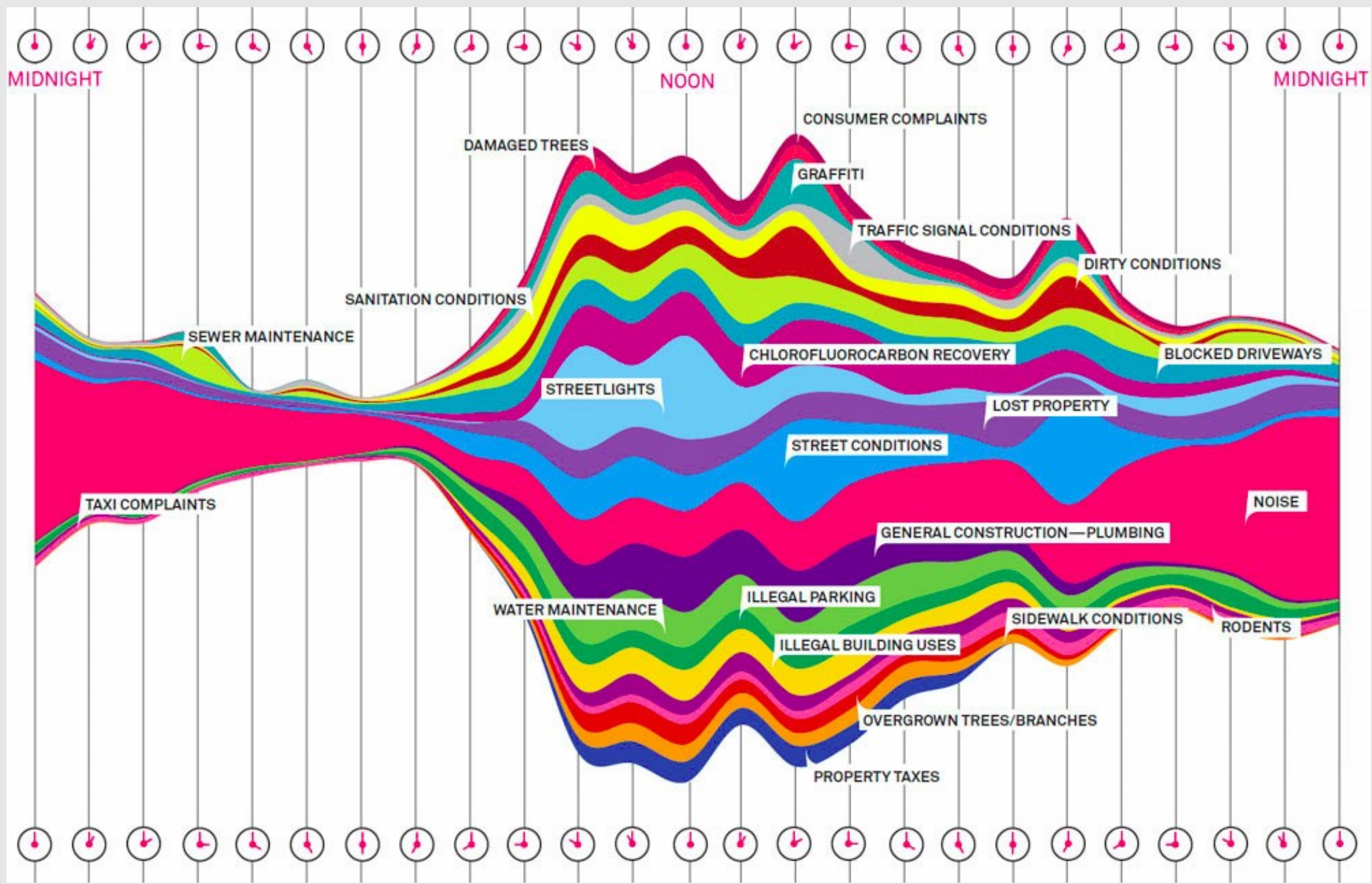


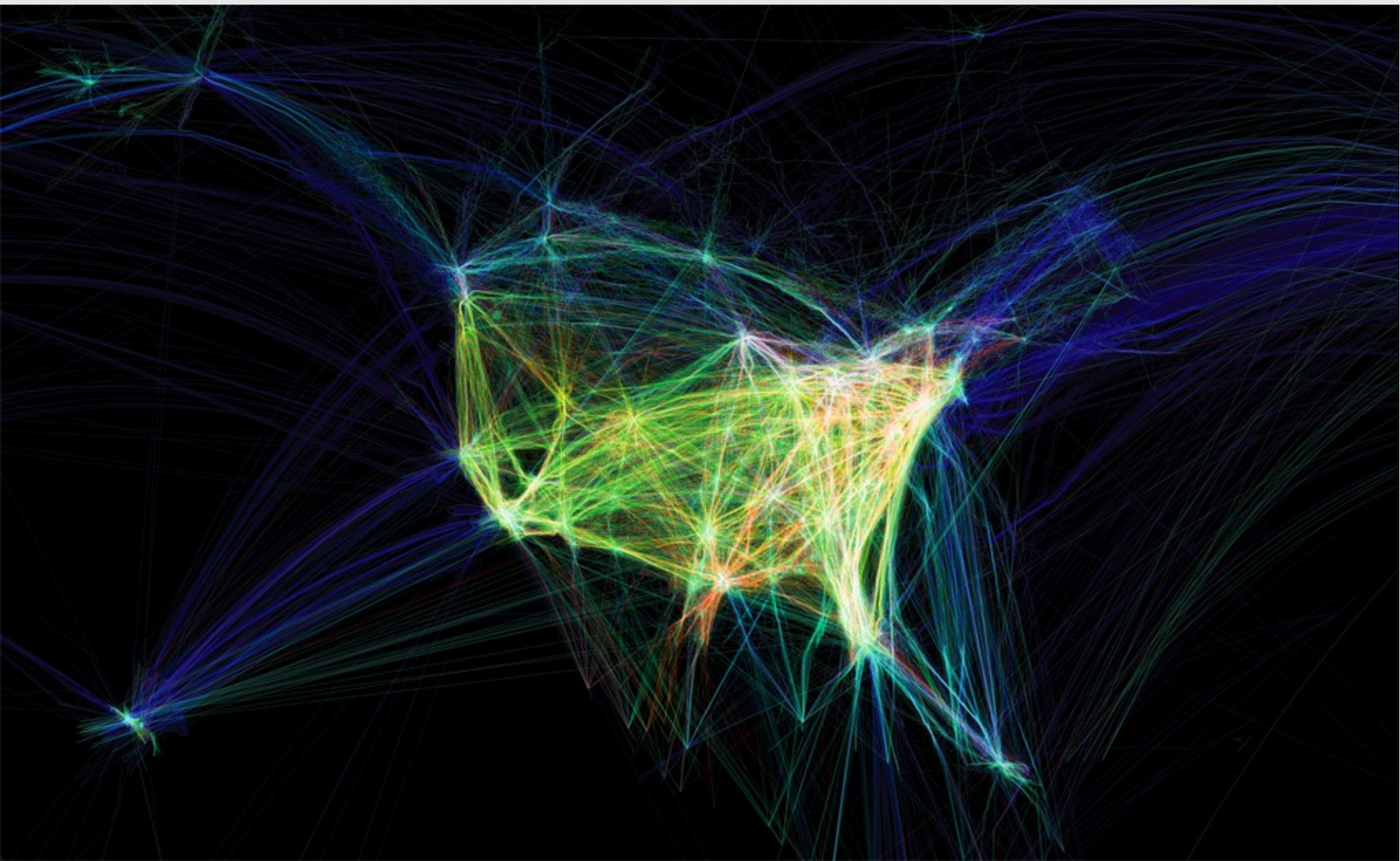
Create Your Better Life Index

Rate the topics according to their importance to you:

- Housing
- Income
- Jobs
- Community
- Education
- Environment
- Civic Engagement
- Health
- Life Satisfaction
- Safety
- Work-Life Balance

How's life?

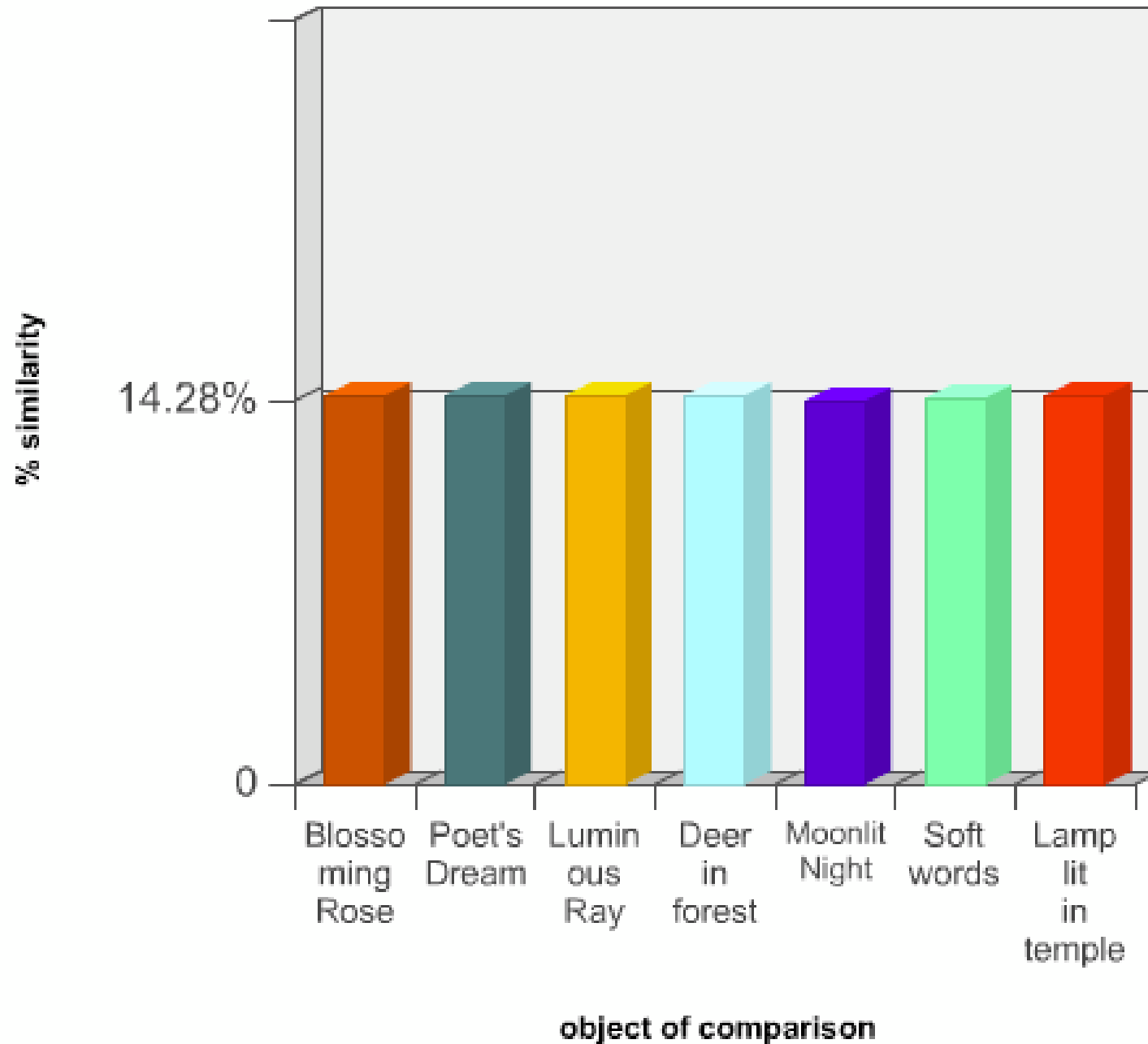




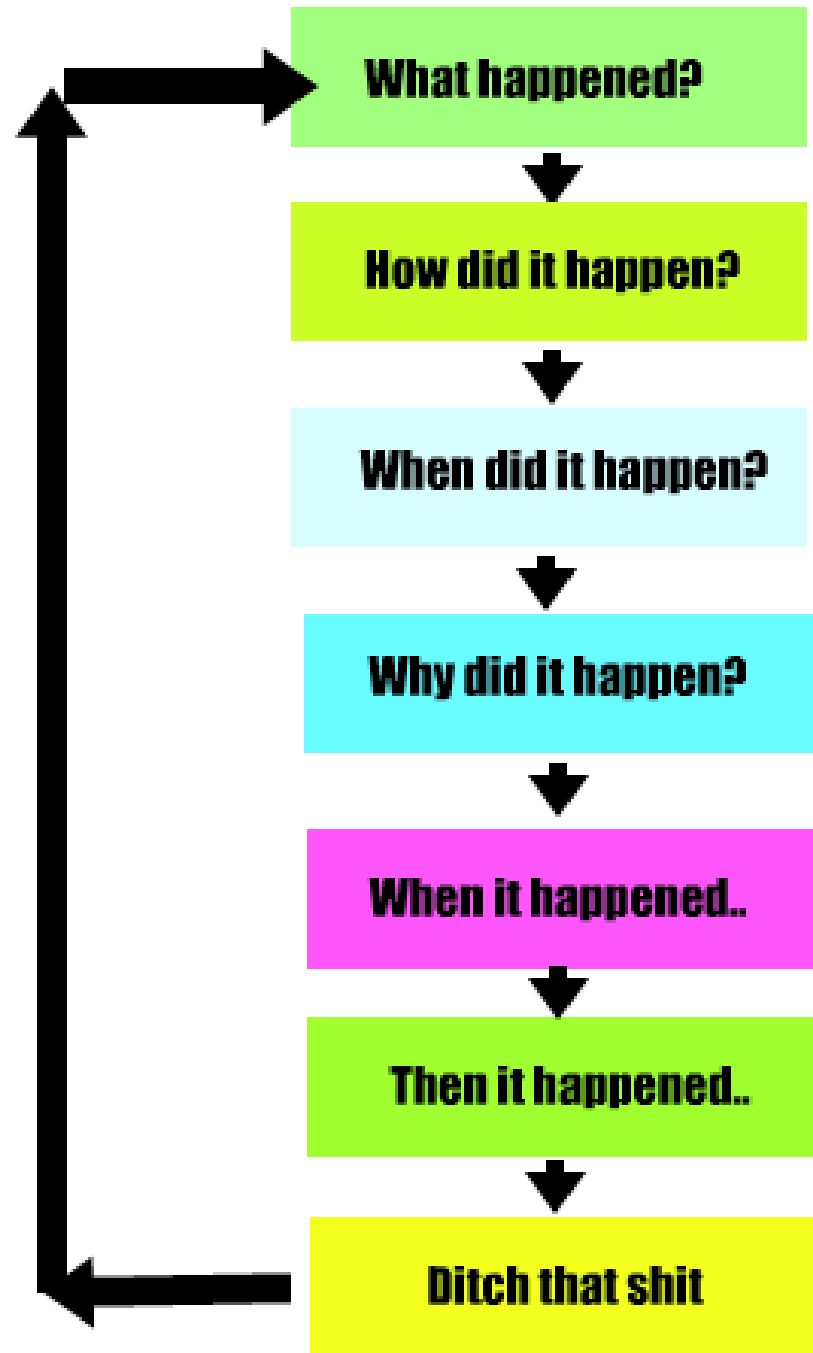
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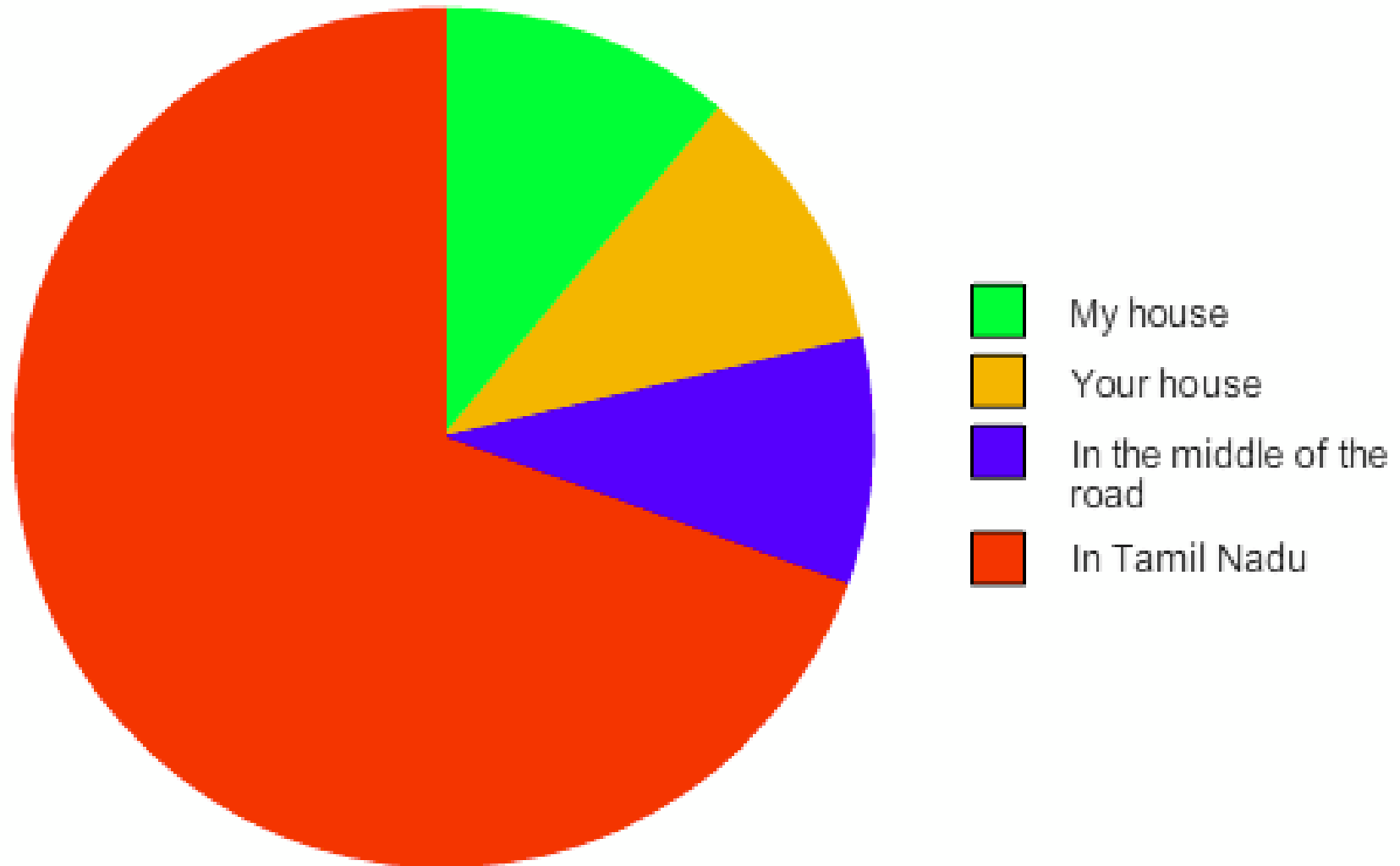
When I saw a girl in 1942, it felt like



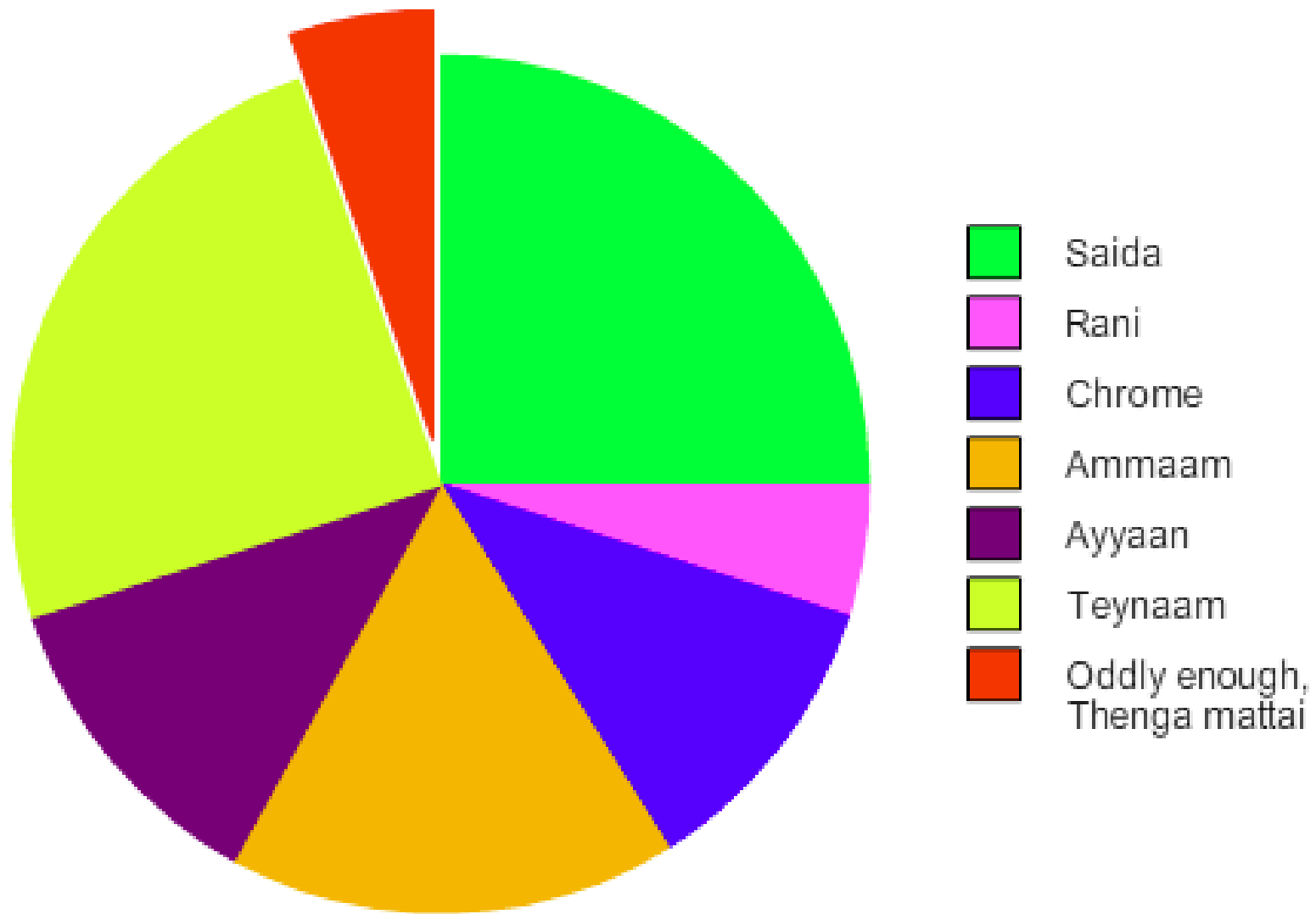
Rajesh Khanna's algorithm of life



Party Location probabilities



Kinds of Pettais that make up Tamil Nadu based Hip-Hop



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