Edward R. Tufte

The Visual Display of Quantitative Information

Graphical Displays Should :

show the data

tell the truth

help the viewer think about the information rather than the design

encourage the eye to compare the data

make large data sets coherent

Clarity in Technical Reporting

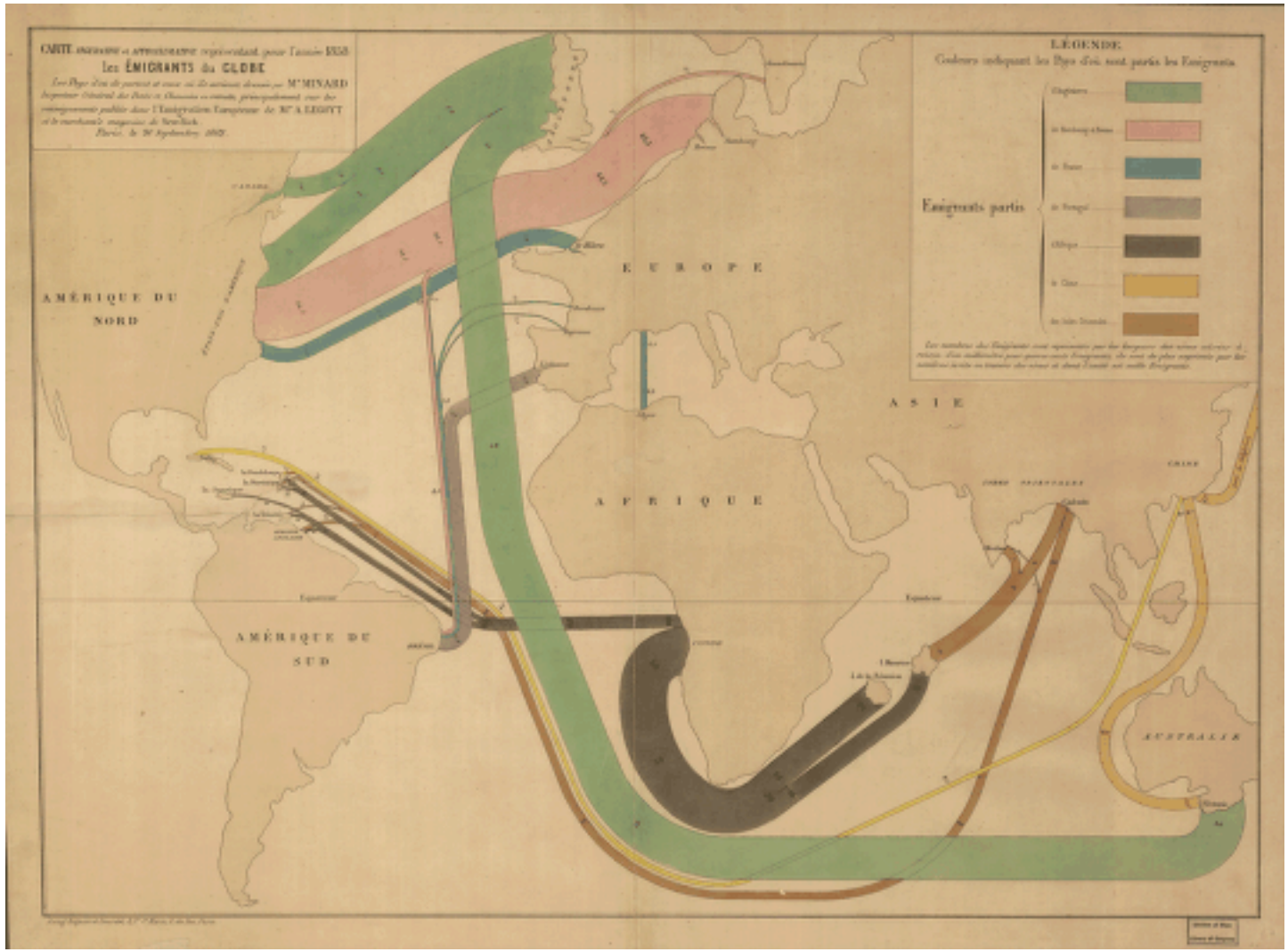
(NASA 1964)

BASIC ATTITUDE

Purpose

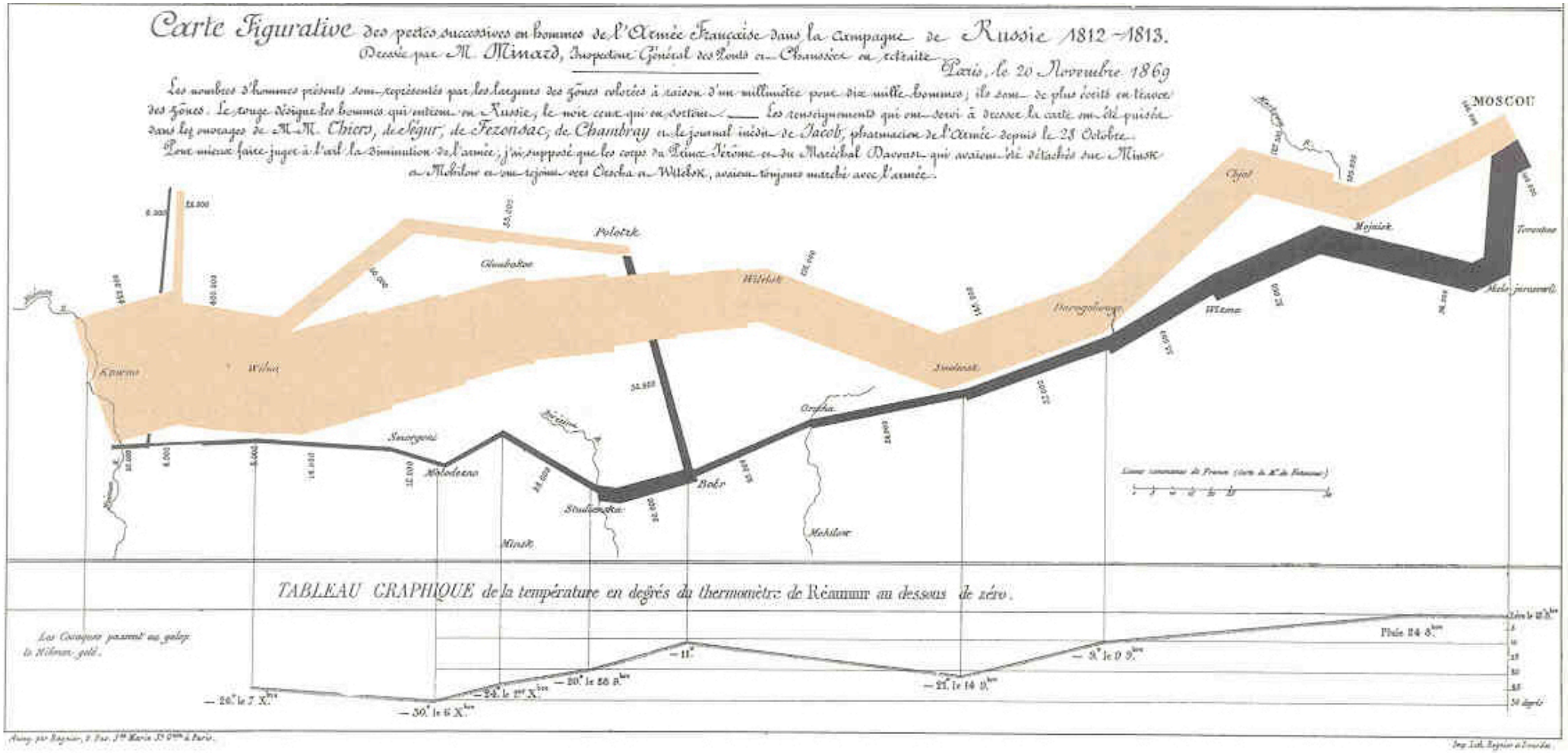
The purpose of the report is to present information. You will hardly disagree with this statement; yet many authors seem to subordinate this purpose and quite forget the poor reader when preparing a report. For example, when a reviewer complains that a certain word seems incorrect, the author may proceed to an unabridged dictionary and triumphantly point out the rare definition that clarifies his sentence. Obviously such an author is more interested in demonstrating his erudition than in presenting information clearly to his harried reader; for if he had his reader in mind, he would try immediately to substitute a more common phraseology.

Data Maps :



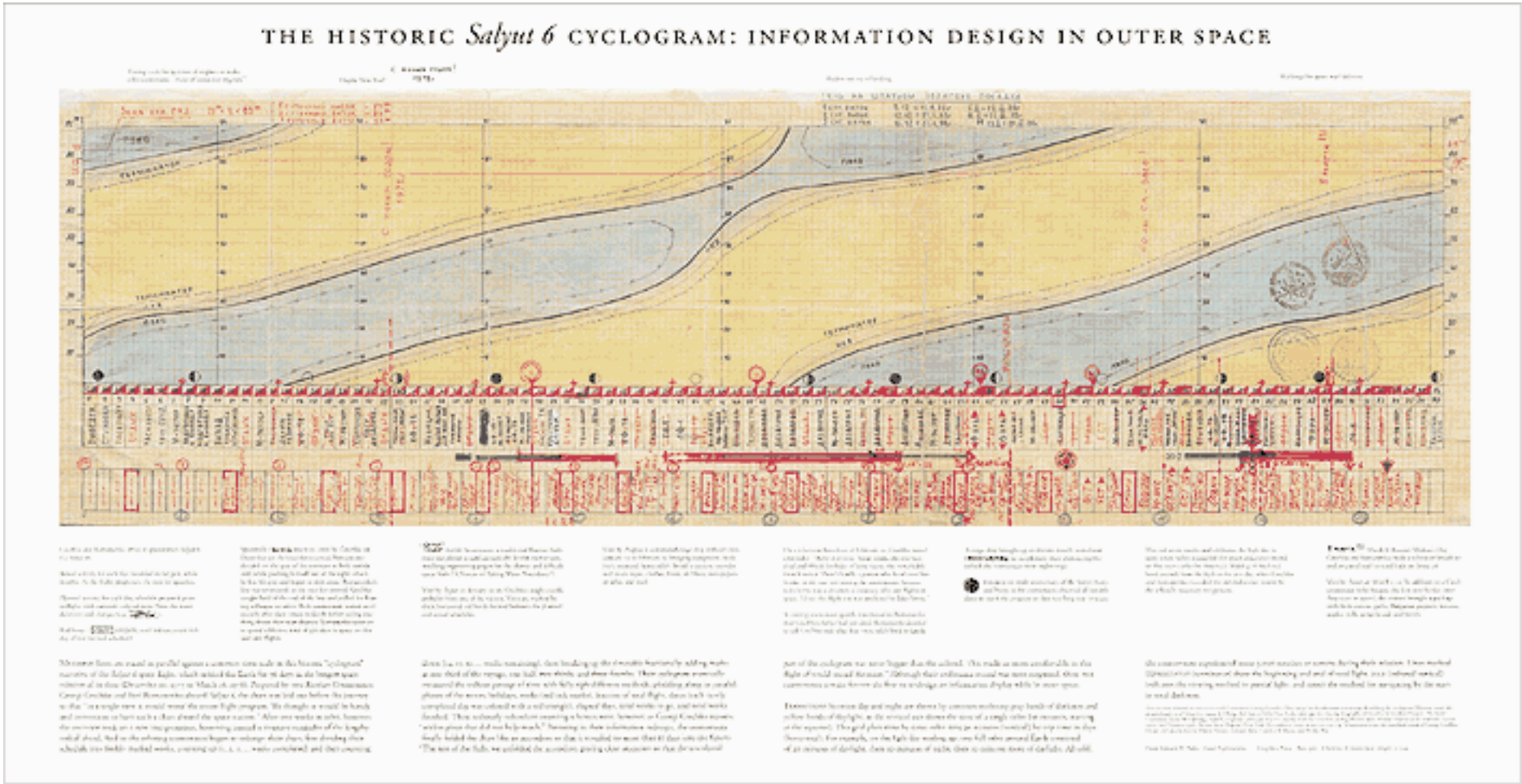
Charles Joseph Minard- Emmigration

Data Maps :



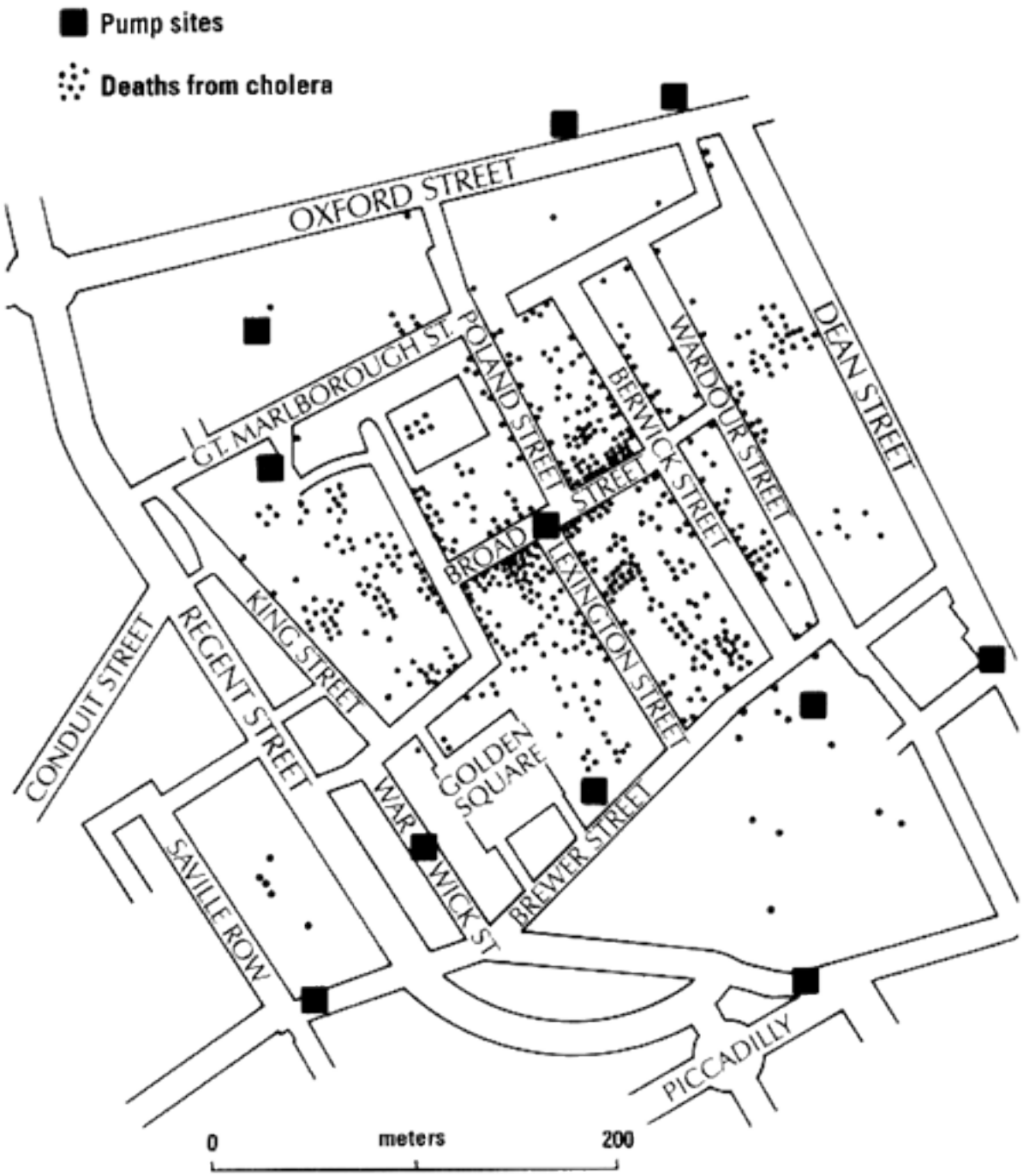
Charles Joseph Minard- Napoleon's Campaigns

Time Series :

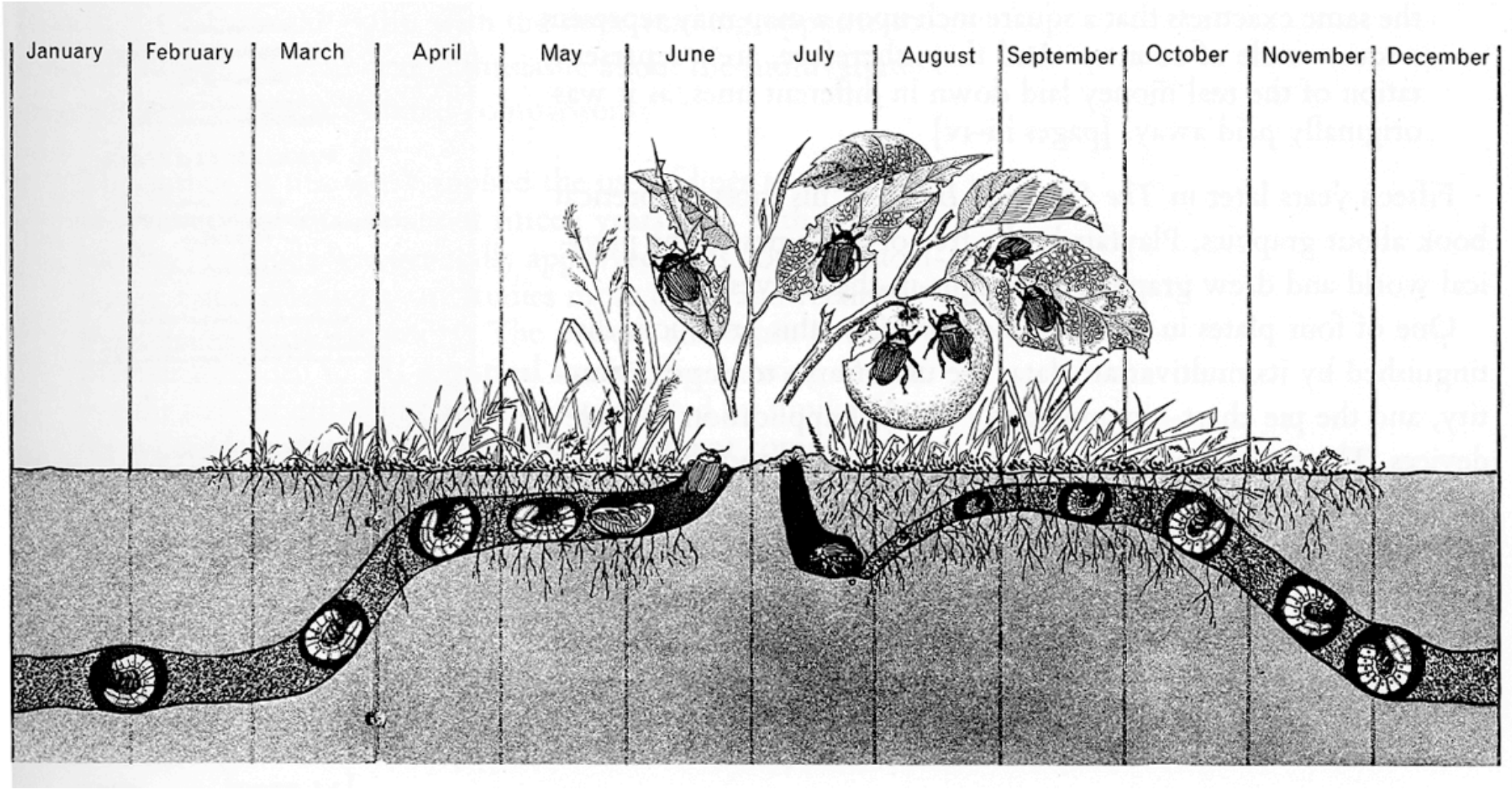


Salyut 6 Cyclogram


Deaths from cholera
OXFORD STREET
G.T. MARLBOROUGH ST.
POLAND STREET
BERWICK STREET
WARDOUR STREET
DEAN STREET
BROAD STREET
LEXINGTON STREET
KING STREET
REGENT STREET
CONDUIT STREET
GOLDEN SQUARE
WARWICK ST.
BREWER STREET
SAVILLE ROW
PICCADILLY
0
meters
200

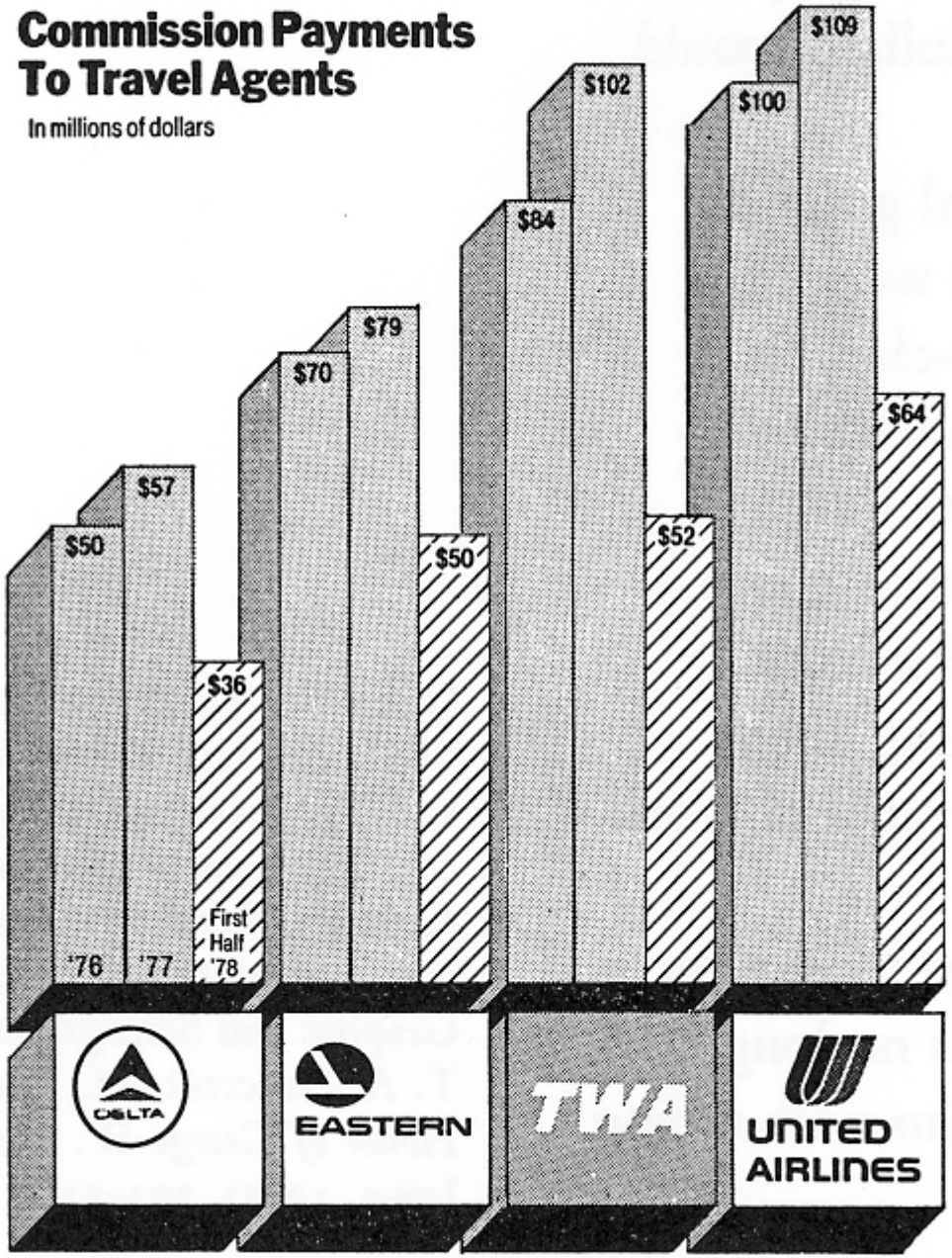

Pump sites
Deaths from cholera
OXFORD STREET
G.T. MARLBOROUGH ST.
POLAND STREET
BERWICK STREET
WARDOUR STREET
DEAN STREET
BROAD STREET
LEXINGTON STREET
KING STREET
REGENT STREET
CONDUIT STREET
GOLDEN SQUARE
WARWICK ST
BREWER STREET
SAVILLE ROW
PICCADILLY
0
meters
200

Space and Time :

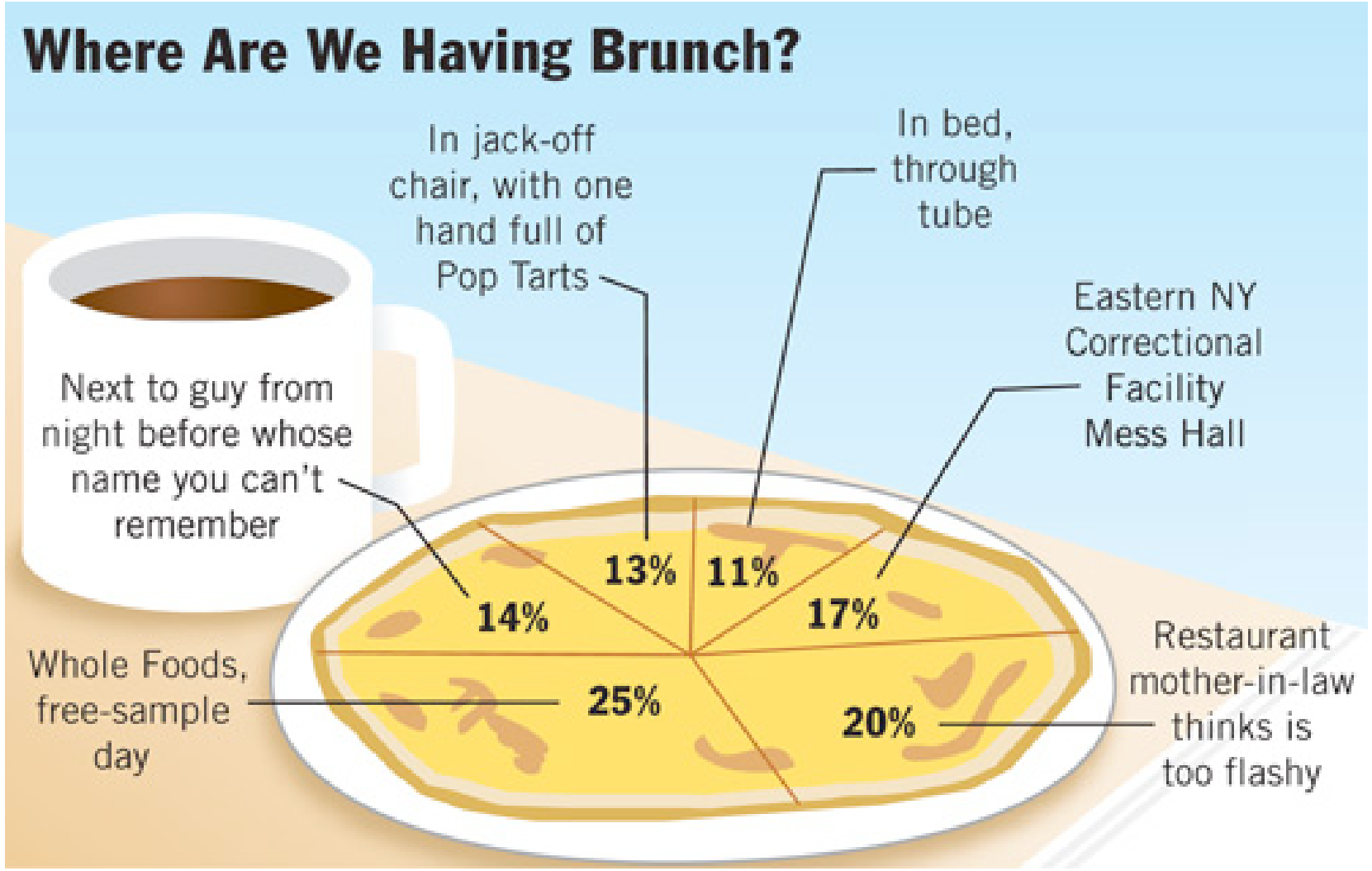


Life Cycle of the Japanese Beetle

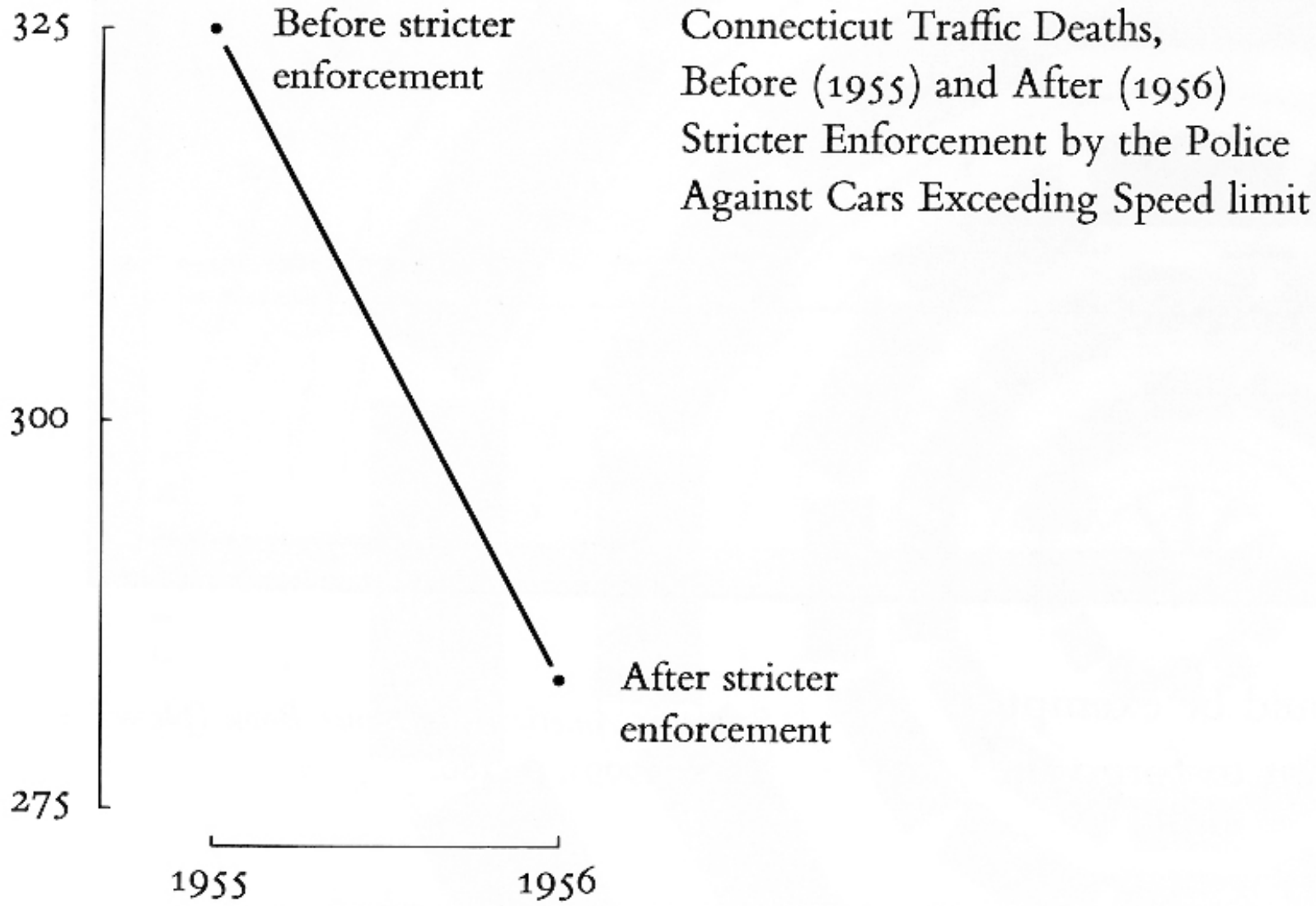
Graphical Integrity : The data must tell the truth



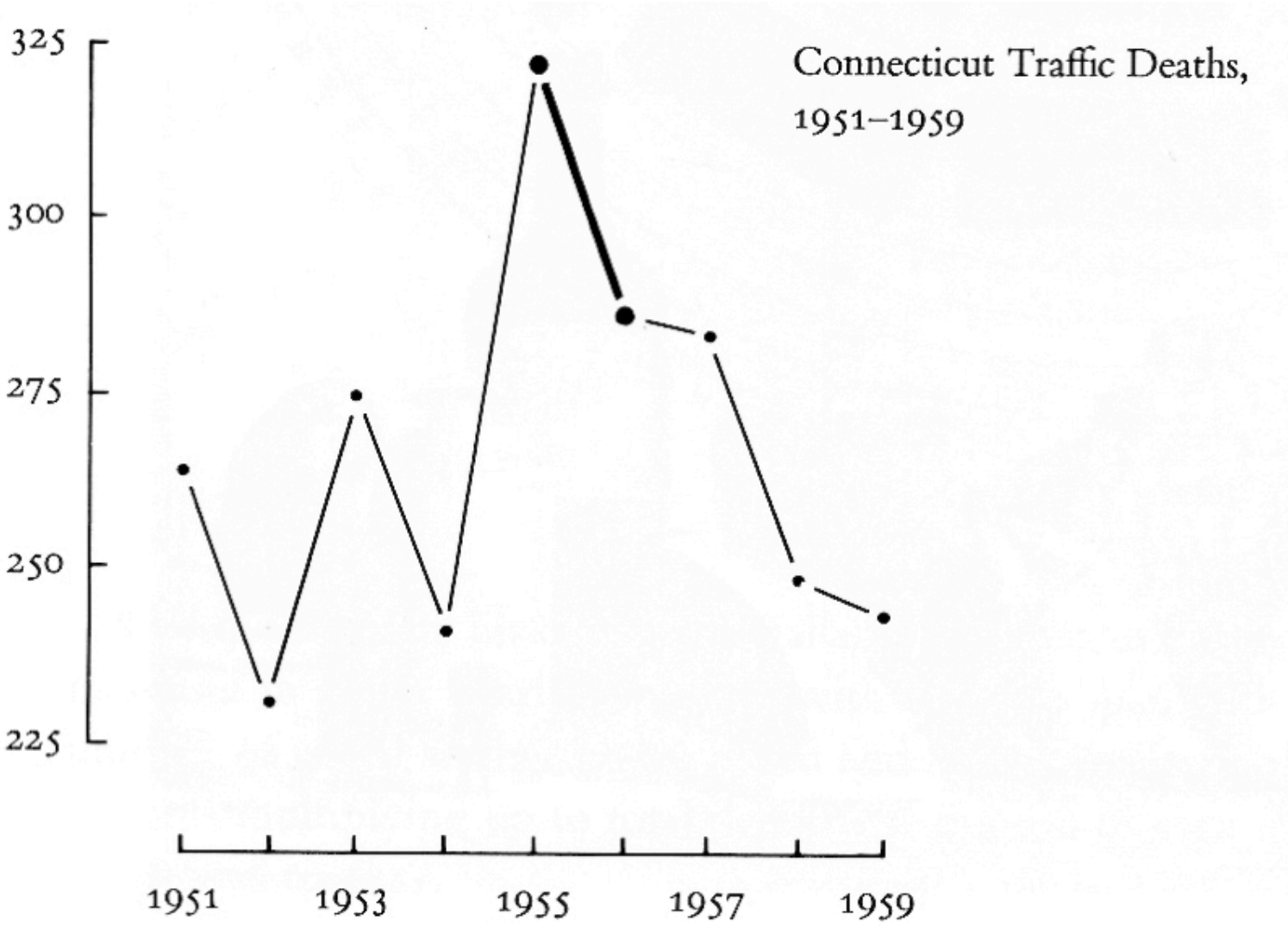
Graphical Integrity : The data must tell the truth



Graphical Integrity : Context is Essential



Graphical Integrity : Context is Essential



Other Design Considerations :

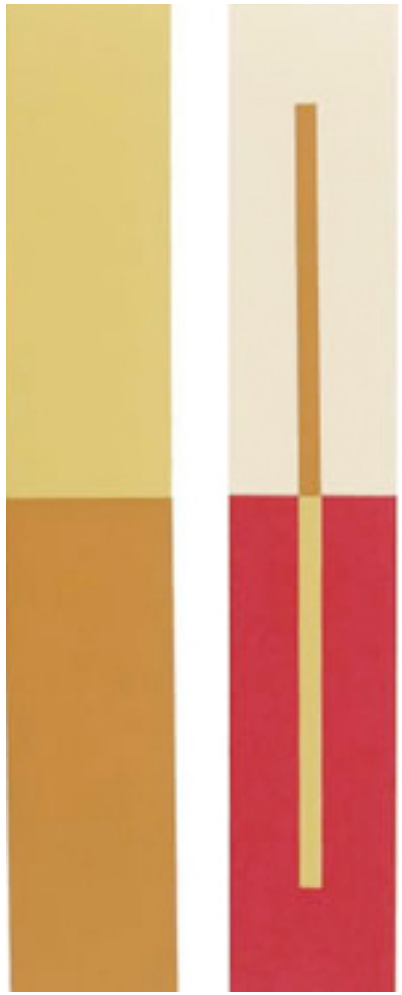
color

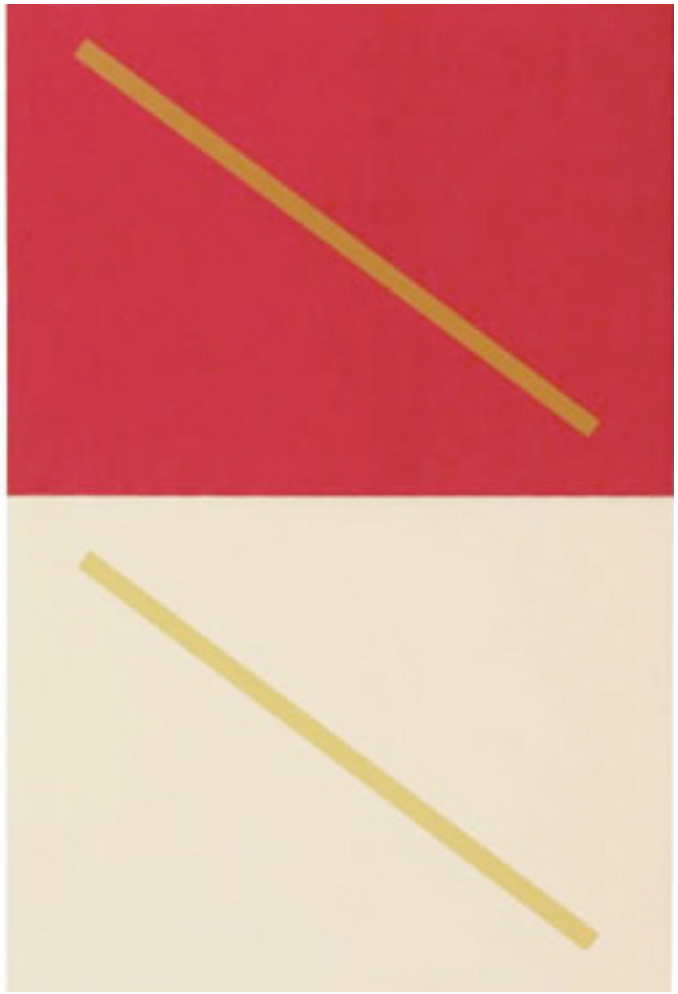
line and form

typography

format and scale

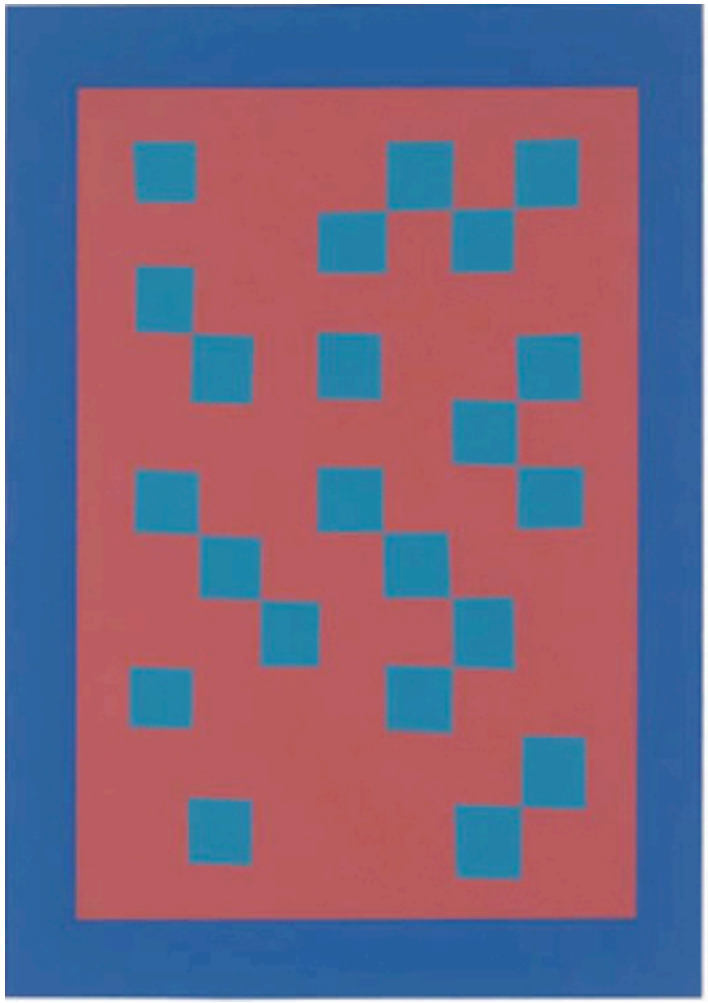
Color :

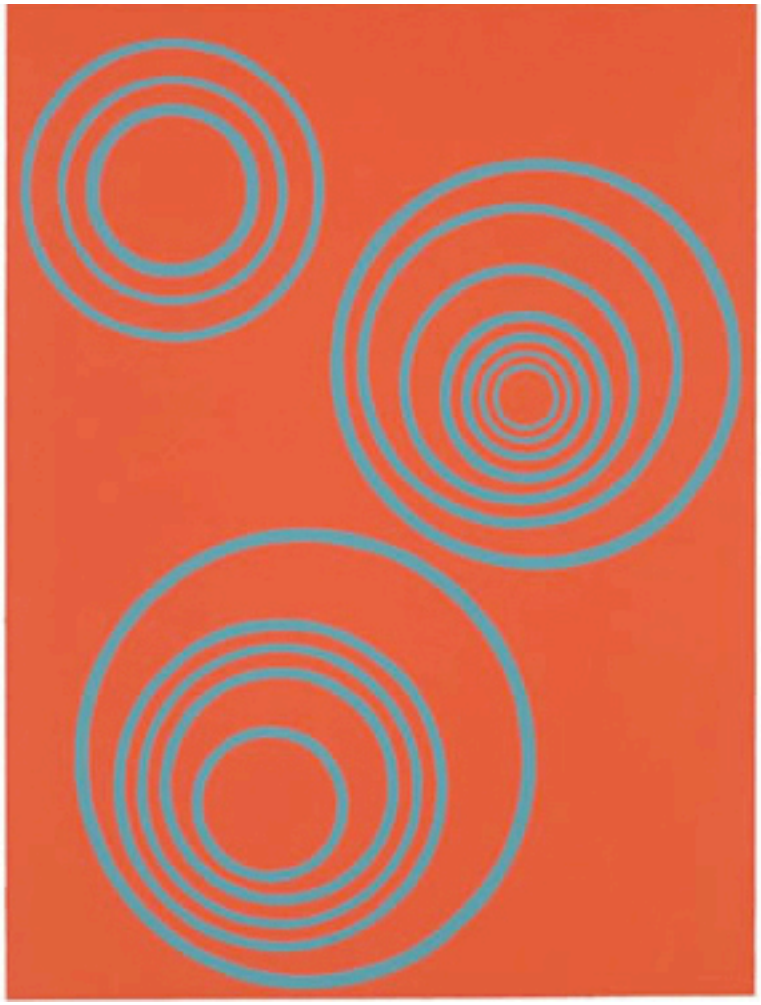




Joseph Albers- The Interaction of Color

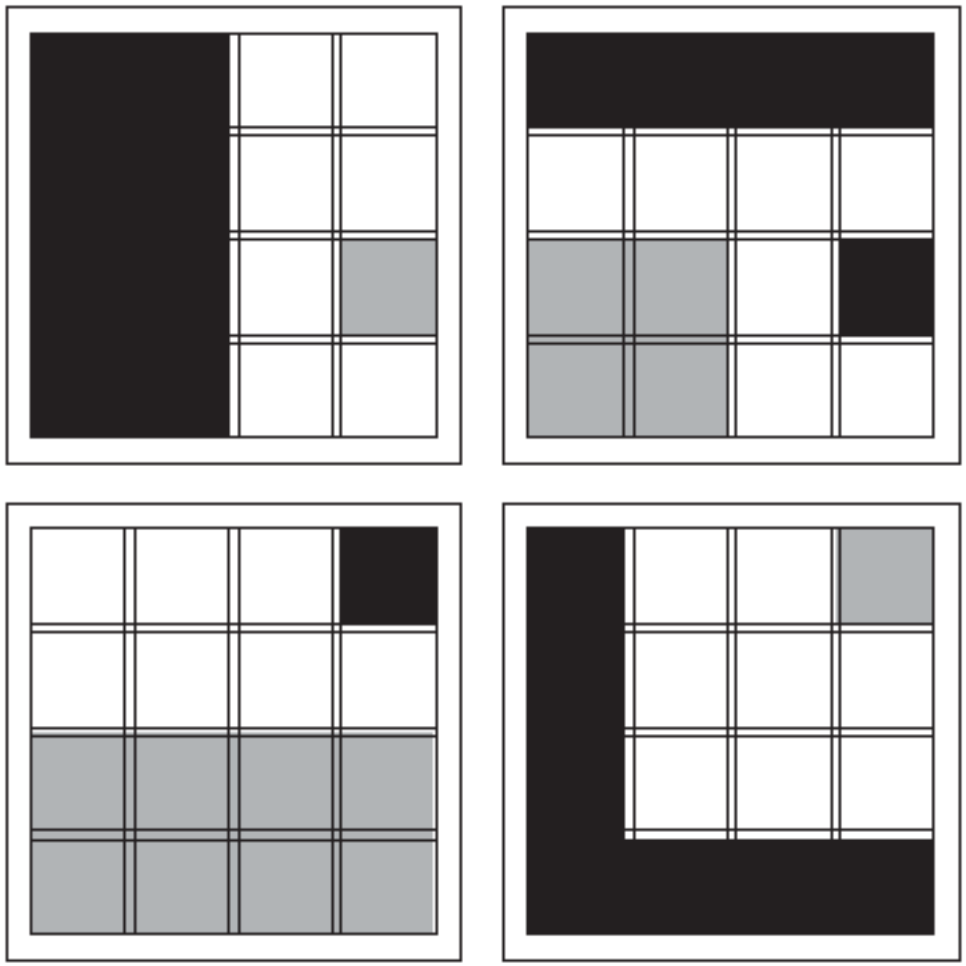
Color :





Joseph Albers- The Interaction of Color

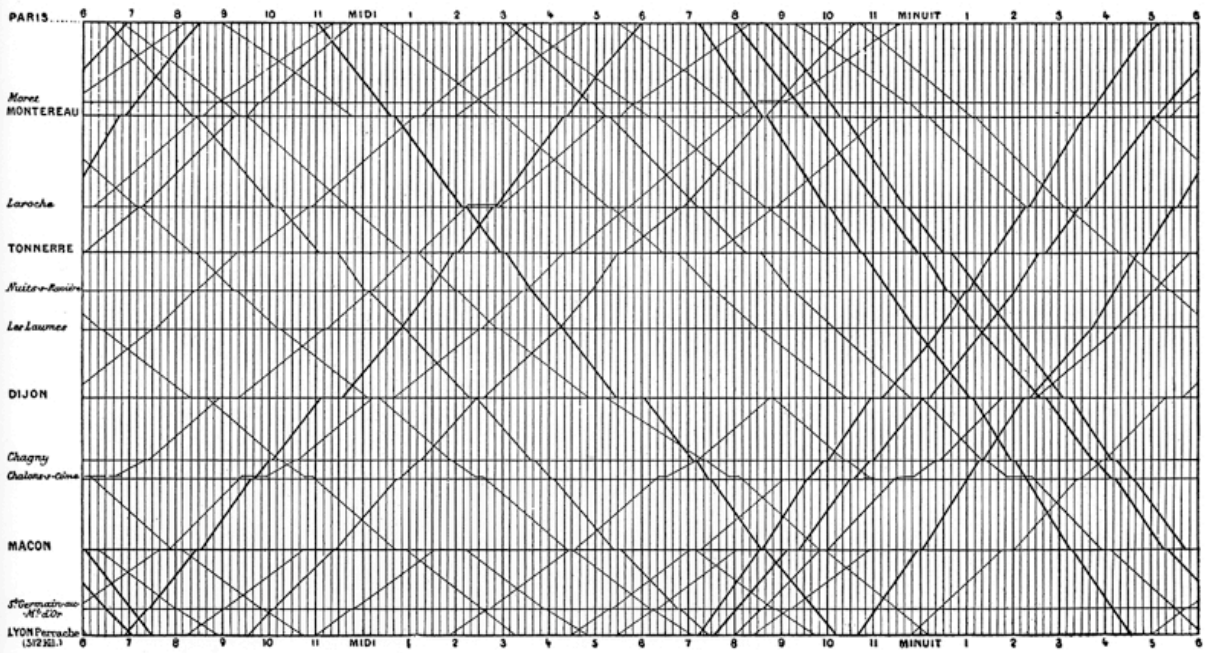
Line and Form :



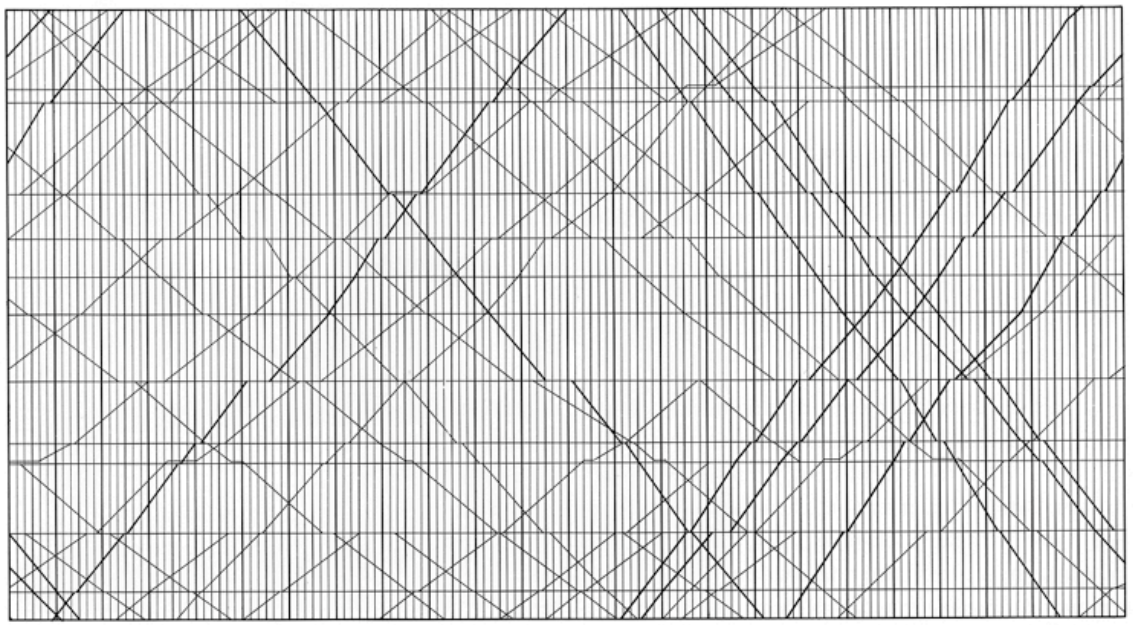
Melissa Kaup Augustine- Type 1

Line and Form :

The grid in the classic Marey train schedule is very active:

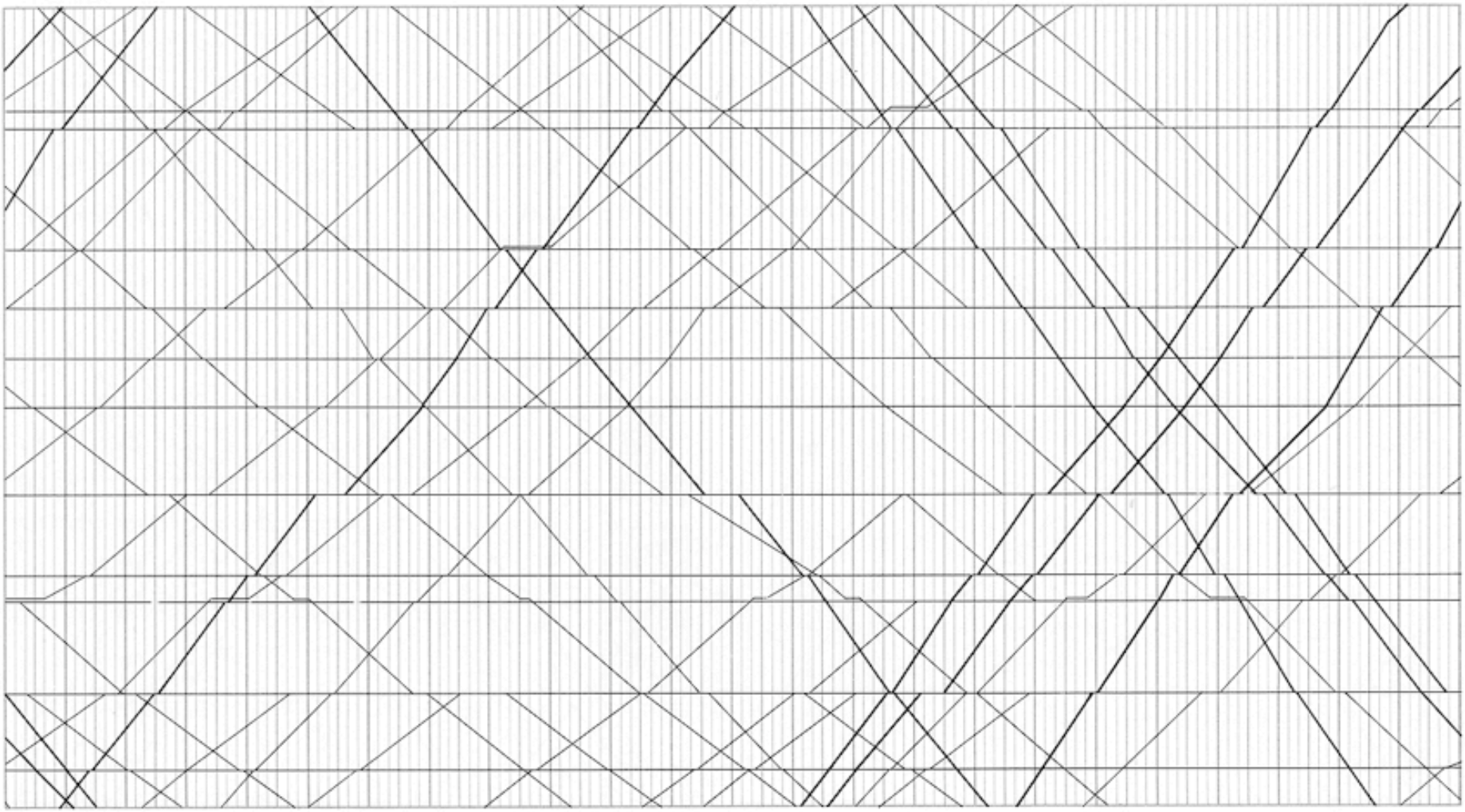


Thinning the grid lines helps a little bit:



Line and Form :

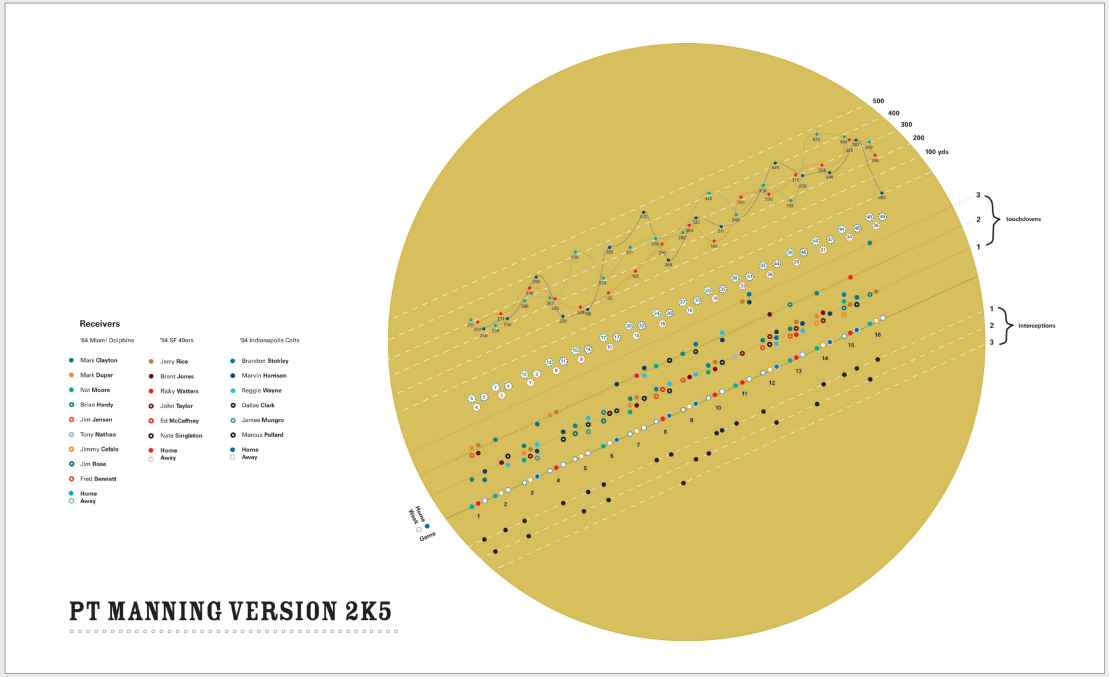
A better treatment, however, is a *gray grid*:



Typography :

Melissa Kaup Augustine- Type 1

Format and Scale :



peyton manning project study
Pro Football Hall of Fame, Canton, Ohio

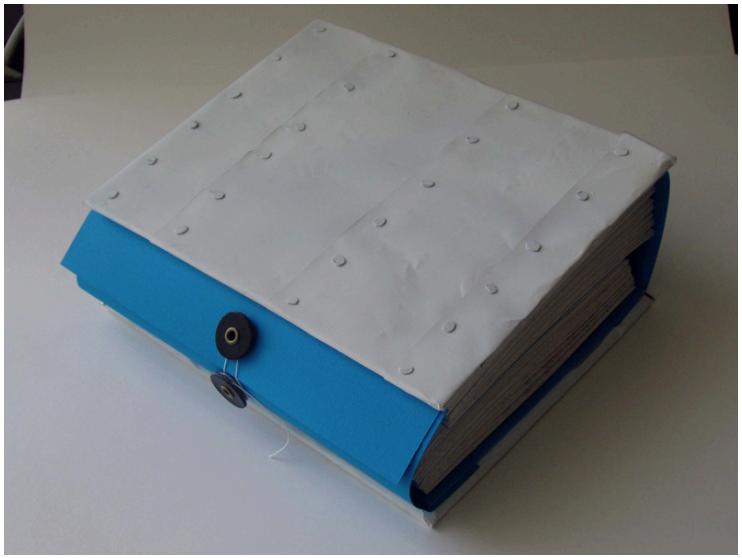
To commemorate Peyton Manning's 2004 single season touchdown record of 49 touchdown throws, The Pro Football Hall of Fame is showing a tribute to his amazing season. In conjuction with Dan Marino's previous record of 48 touchdown throws in the 1984, and Steve Young's 1994 season, each player is showcased in this exhibit.

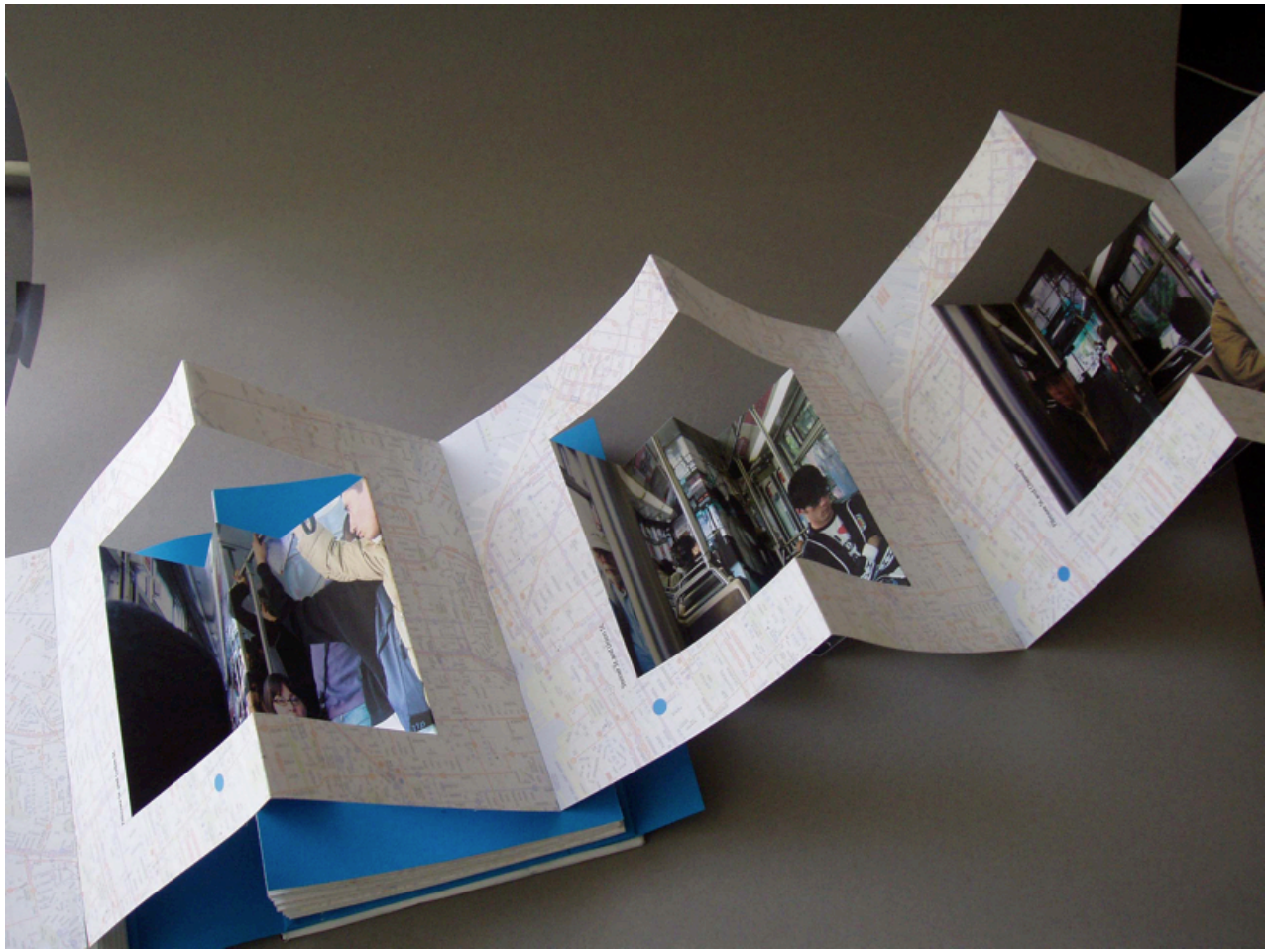
The purpose of this project was to collect and analyze multiple types of data, and present them in a logical and informative display system. Using graphic shapes, colors, and icons, each element represents touchdowns per game, receivers, yardage, and interceptions.

designed by david fung

David Fung- Student Examples

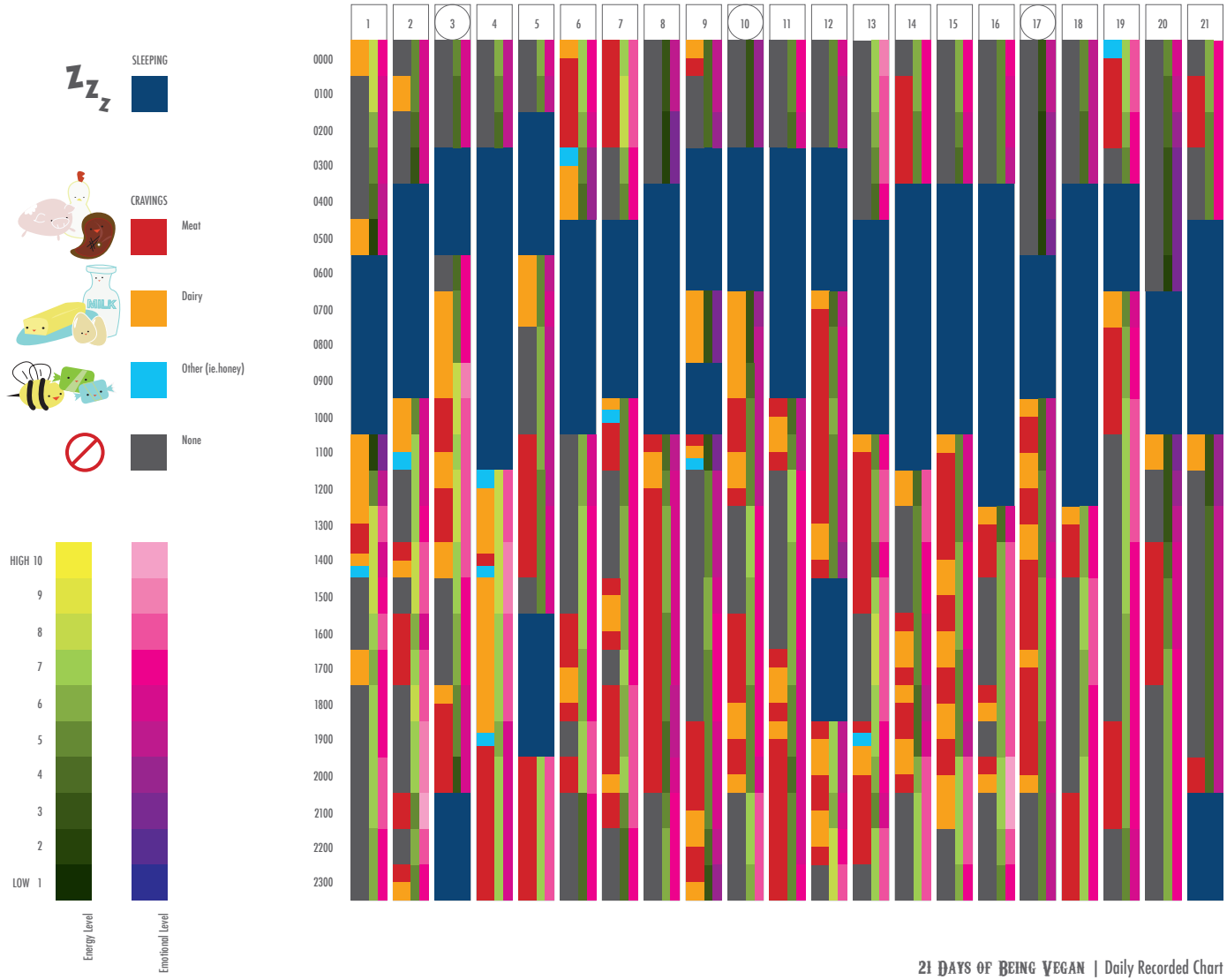
Format and Scale :





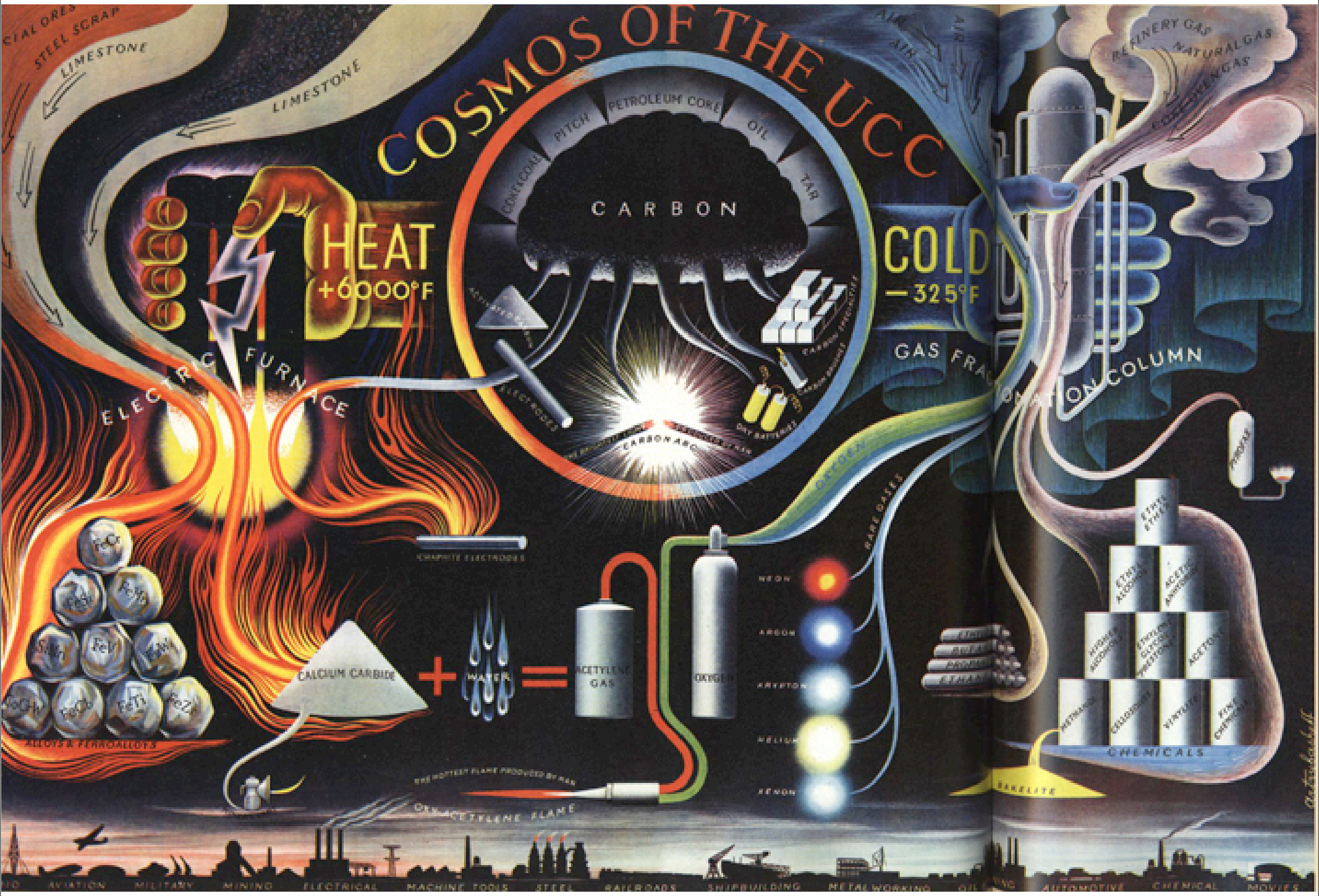
Christina Gonzalez- Student Examples

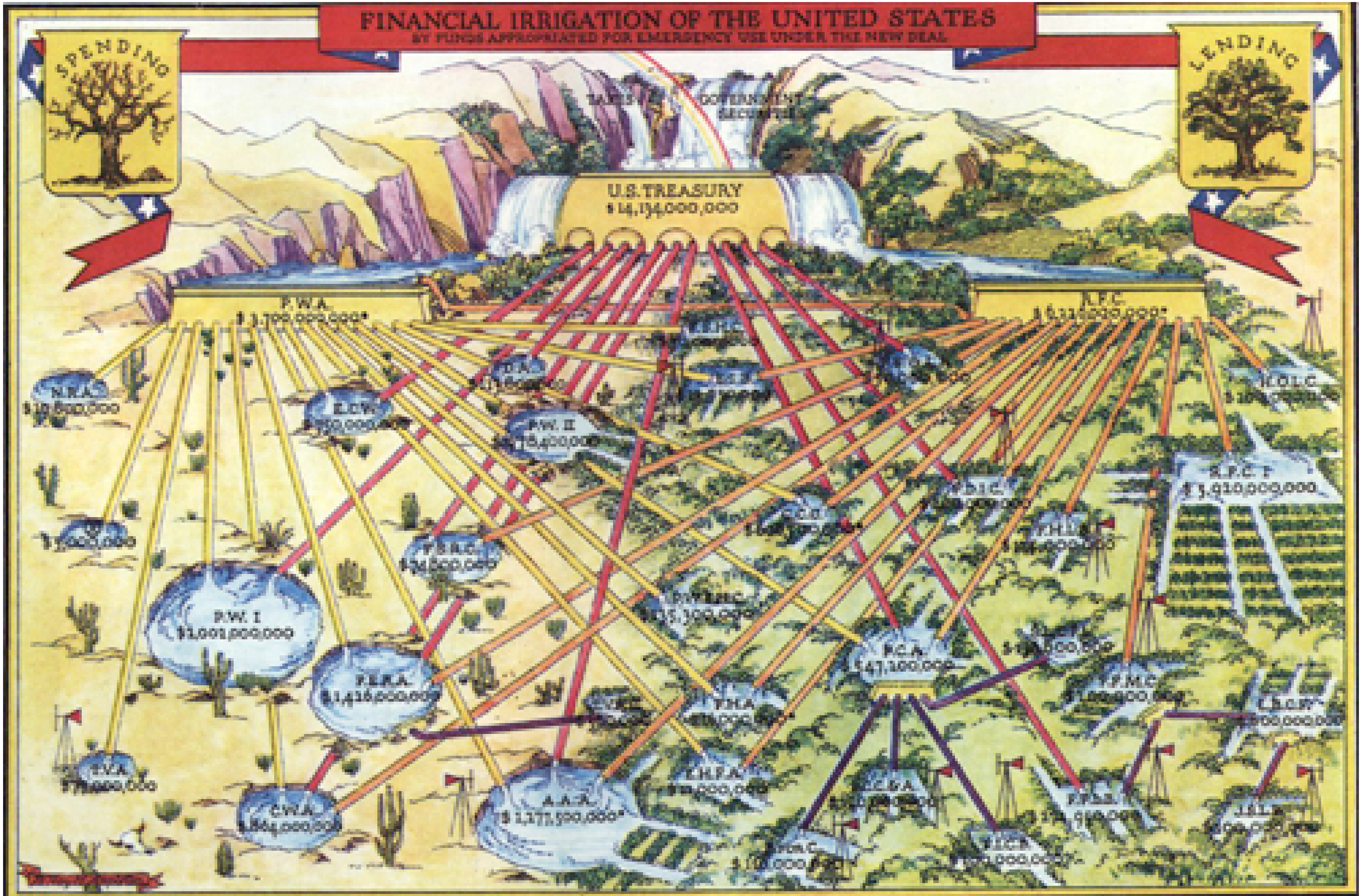
Format and Scale :



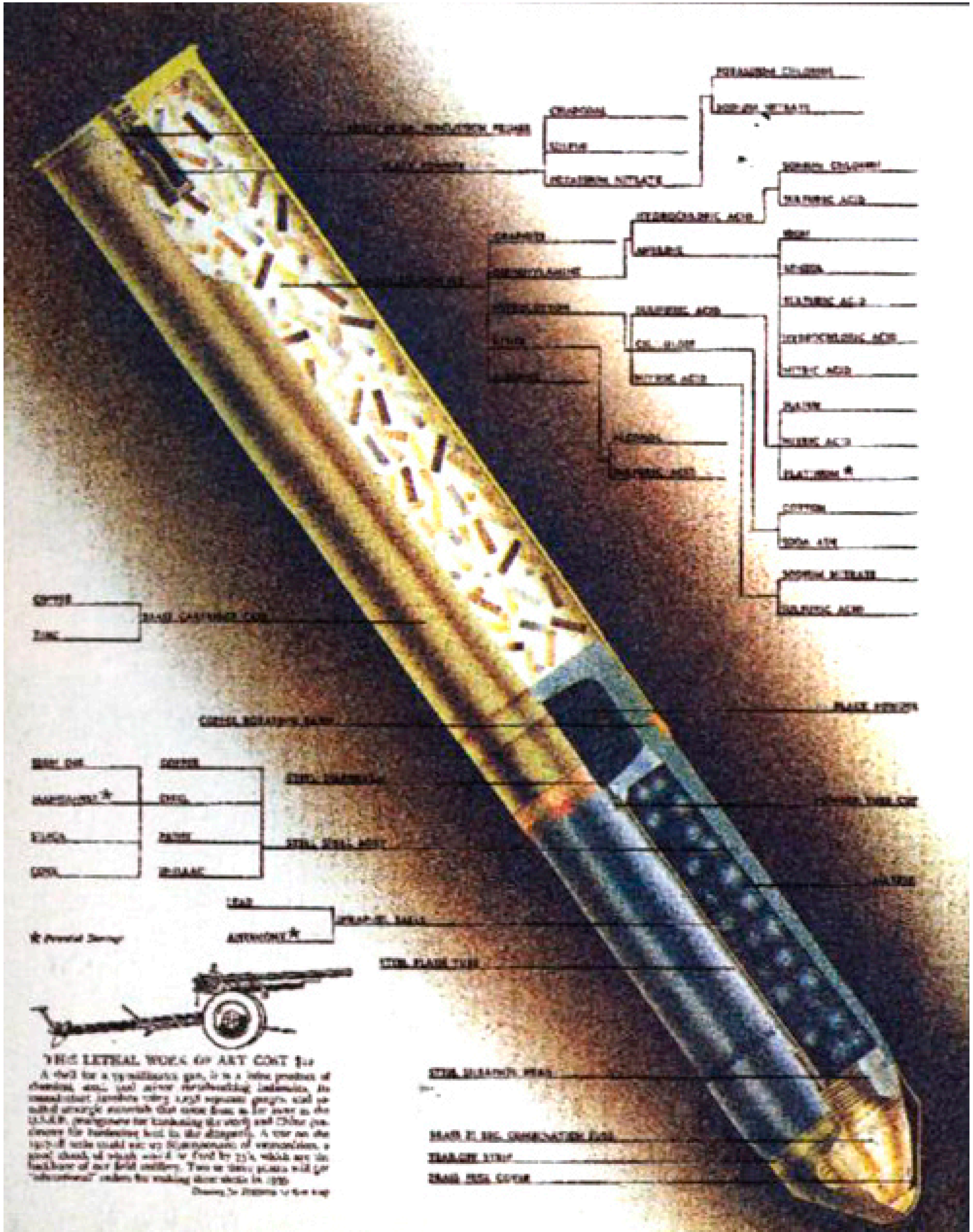
Stephanie Tang- Student Examples

Fortune Magazine


COSMOS OF THE UCC
CIAL ORES
STEEL SCRAP
LIMESTONE
LIMESTONE
AIR
AIR
REFINERY GAS
NATURAL GAS
COKE OVEN GAS
CARBON
COKE
PITCH
PETROLEUM CORE
OIL
TAR
HEAT
+6000°F
COLD
−325°F
ELECTRIC FURNACE
GAS FRACTIONATION COLUMN
ELECTRODES
CARBON ARC
DRY BATTERY
CARBON TRANSMITTER
GRAPHITE ELECTRODES
OXYGEN
RARE GASES
NEON
ARGON
KRYPTON
HELIUM
XENON
CALCIUM CARBIDE
WATER
ACETYLENE GAS
OXYGEN
ALLOYS & FERROALLOYS
THE HOTTEST FLAME PRODUCED BY MAN
OXY-ACETYLENE FLAME
ETHYL ETHER
ETHYL ALCOHOL
ACETALDEHYDE
ACETONE
ETHYLENE GLYCOL
ETHYLENE OXIDE
ACETYLENE
ACETALDEHYDE
CELLOPHANE
VINYLITE
ETHYL CHLORIDE
CHEMICALS
BAKELITE
AVIATION
MILITARY
MINING
ELECTRICAL
MACHINE TOOLS
STEEL
RAILROADS
SHIPBUILDING
METAL WORKING
AUTOMOTIVE
CHEMICAL
MOVIES


FINANCIAL IRRIGATION OF THE UNITED STATES
BY FUNDS APPROPRIATED FOR EMERGENCY USE UNDER THE NEW DEAL
SPENDING
LENDING
U.S. TREASURY
$14,134,000,000
P.W.A.
R.F.C.
N.R.A.
P.W. II
P.W. I
$1,001,000,000
F.E.R.A.
$1,416,000,000
C.W.A.
$844,000,000
A.A.A.
$1,271,500,000*
F.C.A.
$47,100,000
F.H.A.
R.F.C. I
$3,010,000,000

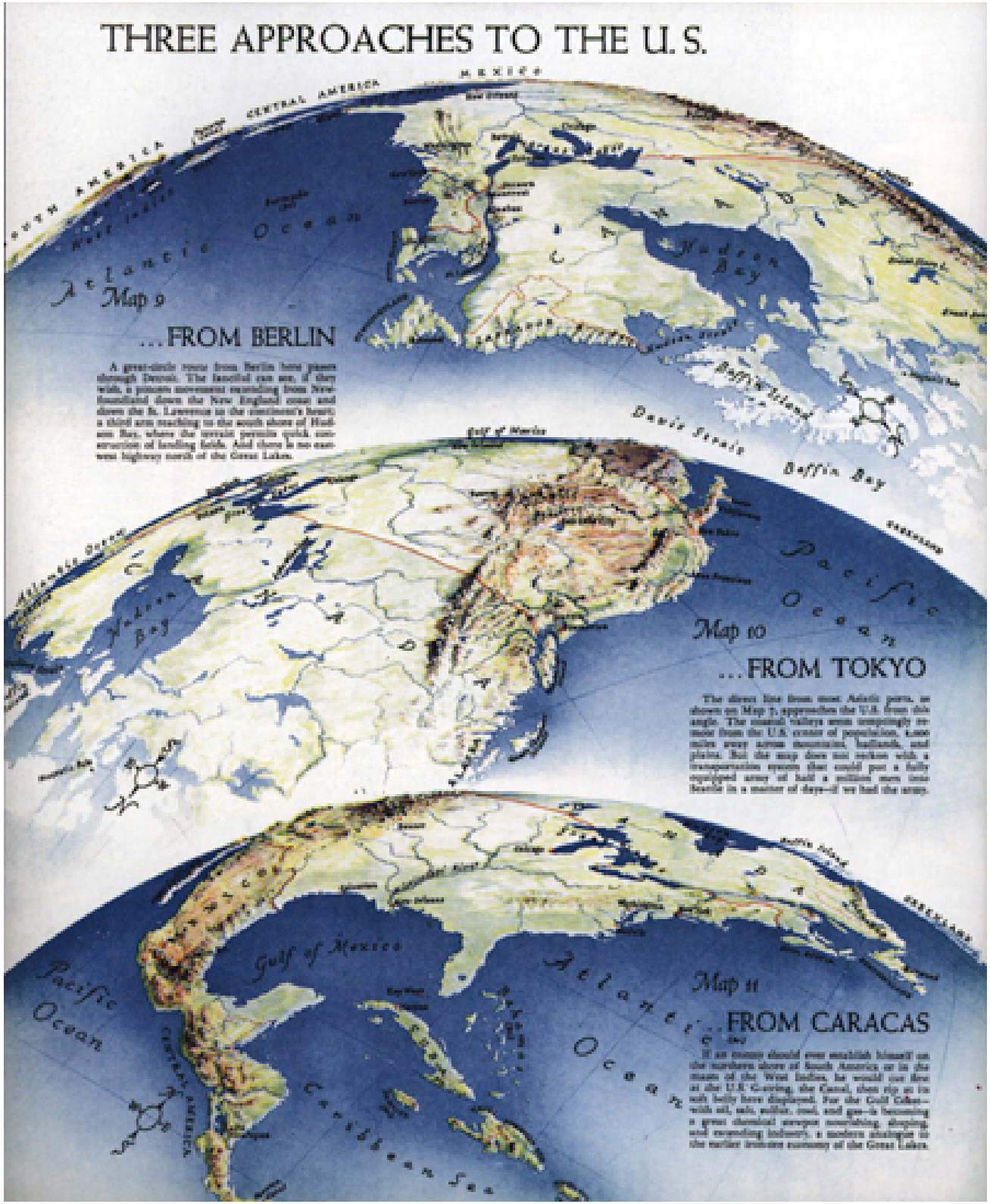

CHINA
ASIA
ALASKA
CANADA
EUROPE
CHINA
INDIA
AFRICA
PACIFIC OCEAN
ATLANTIC OCEAN
PHILIPPINE ISLANDS
JAVA
AUSTRALIA
NEW ZEALAND
SOUTH AMERICA
INDIAN OCEAN
Silver
WORLD PRODUCTION AND CONSUMPTION
PRODUCTION
CONSUMPTION
MAJOR PRODUCING AREAS
TRAFFIC IN SILVER



POTASSIUM CHLORIDE
SODIUM NITRATE
CHARCOAL
SULFUR
POTASSIUM NITRATE
SULFURIC ACID
NITRIC ACID
COTTON
SODA ASH
COPPER
ZINC
LEAD
ANTIMONY


Corn Kernel
STARCH
HULL
GLUTEN & STARCH
GERM
STARCH
SUGAR

THREE APPROACHES TO THE U. S.



Map 9

...FROM BERLIN

A great-circle route from Berlin here passes through Detroit. The fanciful can see, if they wish, a pincers movement extending from Newfoundland down the New England coast and down the St. Lawrence to the continent's heart; a third arm reaching to the south shore of Hudson Bay, where the terrain permits quick construction of landing fields. And there is no east-west highway north of the Great Lakes.

Map 10

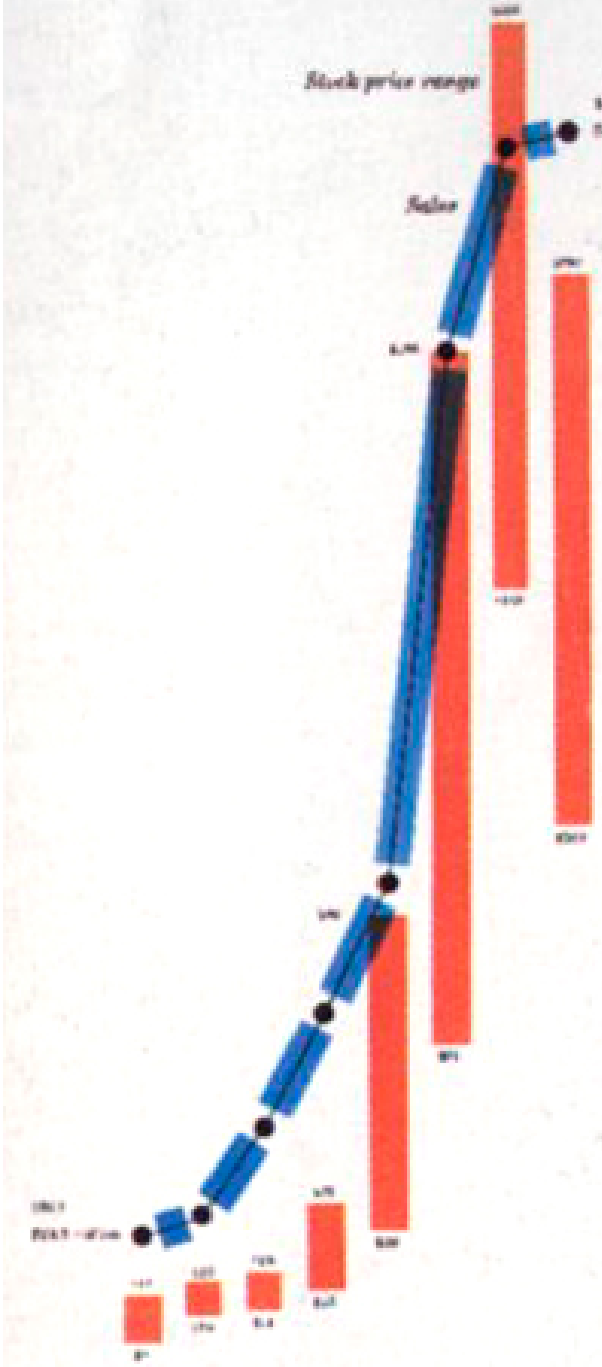
...FROM TOKYO

The direct line from most Asiatic ports, as shown on Map 7, approaches the U.S. from this angle. The coastal valleys seem temptingly remote from the U.S. centers of population. Lose miles away across mountains, badlands, and plains. But the map does not reckon with a transportation system that could put a fully equipped army of half a million men into Seattle in a matter of days—if we had the army.

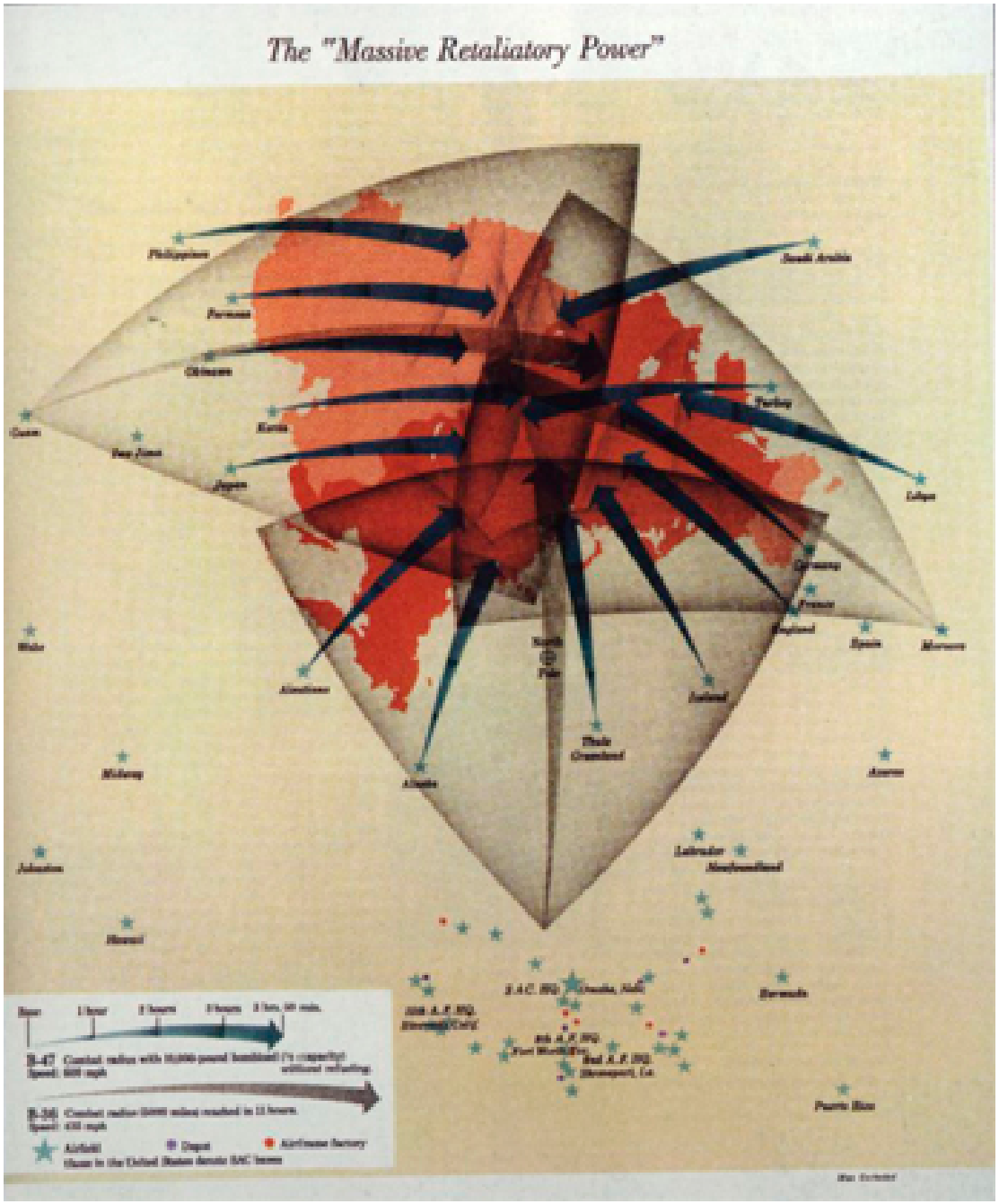
Map 11

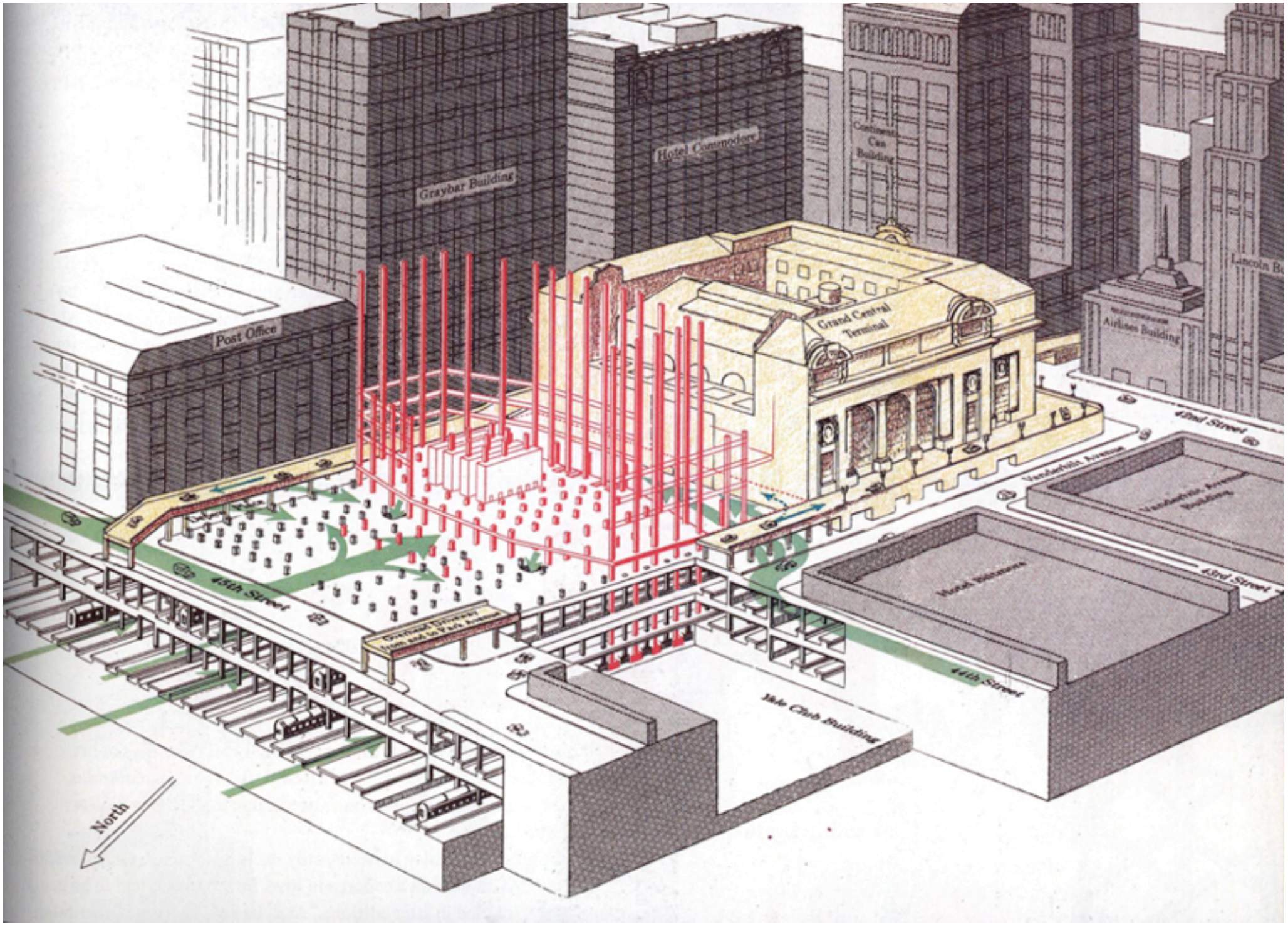
...FROM CARACAS

If an enemy should ever establish himself on the northern shore of South America, or in the islands of the West Indies, he would not live at the U.S. doorstep, the Canal, then rip at its soft belly here displayed. For the Gulf Coast—with oil, salt, sulfur, coal, and gas—is becoming a great chemical complex nourishing, shaping, and expanding industry, a modern analogue to the earlier iron-ore economy of the Great Lakes.



Texas Instruments, one of the glamour companies of the past decade, hit a big, bad bump recently. Its success in solving its current problems depends on a group of men who found that when they got together they had something unique.


The "Massive Retaliatory Power"
Philippines
Formosa
Okinawa
Guam
Wake
Midway
Johnston
Hawaii
Alaska
Thule (Greenland)
Labrador
Newfoundland
Bermuda
Puerto Rico
Saudi Arabia
Turkey
Libya
Morocco
Spain
France
Portugal
Azores
Okinawa
Guam
Midway
Alaska
Thule
Labrador
Newfoundland
Bermuda
Puerto Rico
Hawaii
Johnston
Depot
Airframe factory


Graybar Building
Hotel Commodore
Continental Can Building
Post Office
Grand Central Terminal
Airlines Building
Lincoln Building
42nd Street
Vanderbilt Avenue
43rd Street
45th Street
44th Street
Yale Club Building
North

START Infoporn

Power Up!

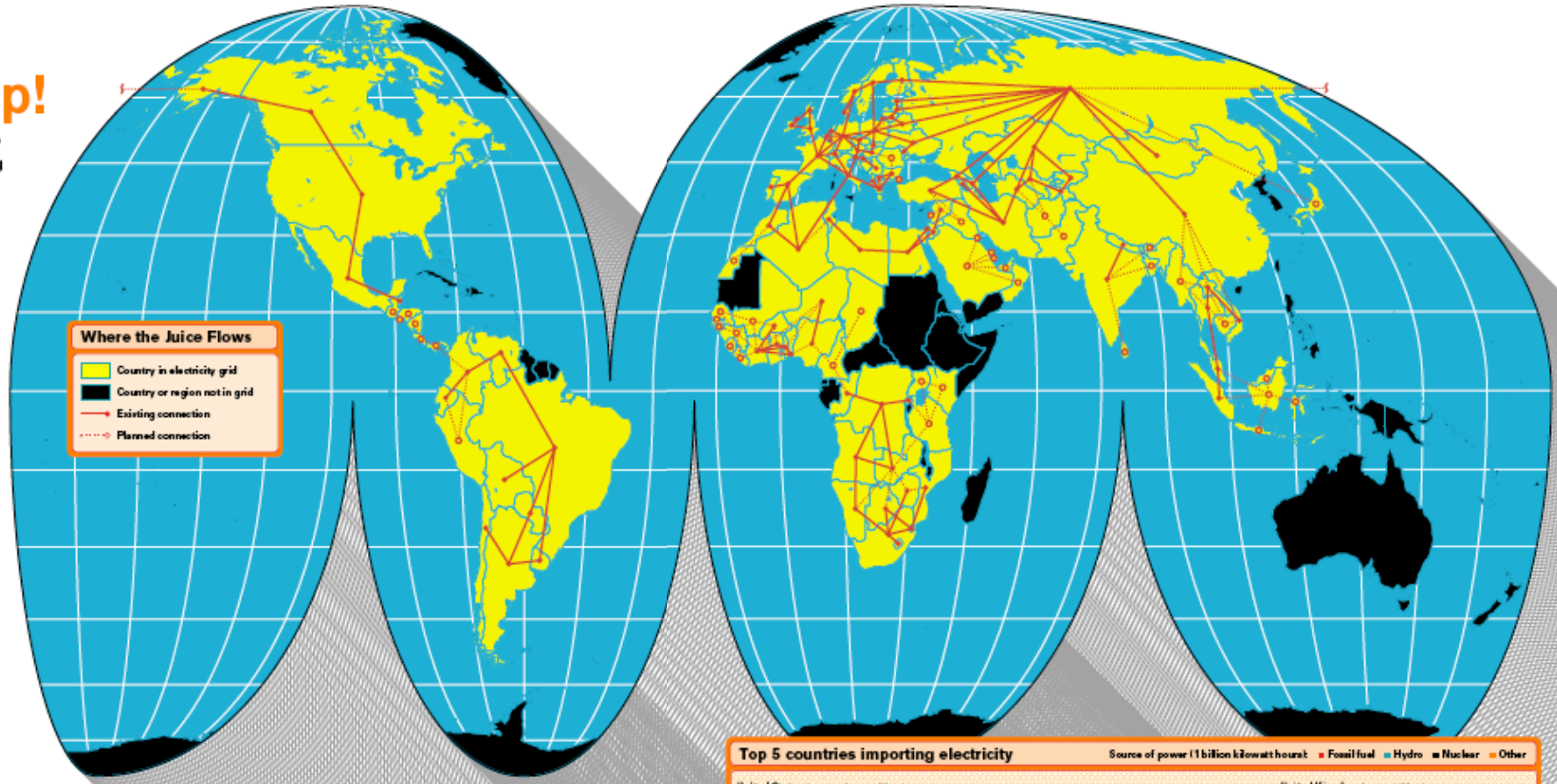
Twenty years from now, the whole world will be sharing electricity through one grid

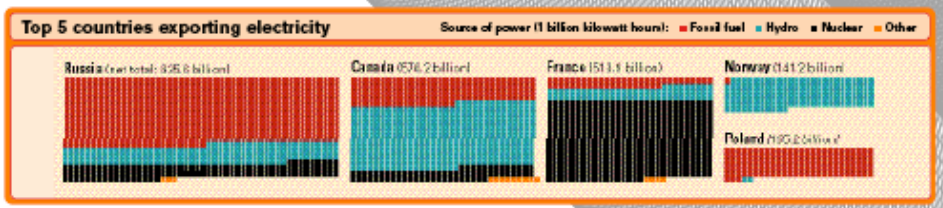
Some 30 years ago, Buckminster Fuller came up with a plan to plug all the world's continents into the same electrical grid. The idea was to let power flow between, say, Siberia and the northwestern US, or Norway and Laos. Energy companies dismissed the notion as pie in the sky – and then proceeded to build such a grid. To get the most use of their generation capacity and to maintain an emergency reserve, power companies found it efficient to connect their grids to their neighbor's, who then connected to their neighbor's.

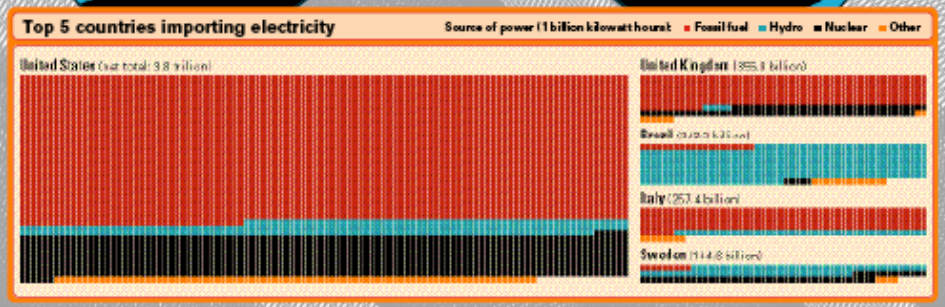
The result, according to Peter Meisen of the Global Energy Network Institute, is that the electricity grids of all the nations of North and South America should be interconnected within the next 10 years. The Eastern Hemisphere could follow a decade later, as companies like Eskom, the largest energy firm in South Africa, plow ahead with plans to install high-capacity transmission lines across Africa and into Europe.

Once the grid is fully functional, the only excuse for power shortages will be greed. When demand is high in one region, it's almost certain to be low in another. By making electric power as easily transferrable as data, analysts expect a global grid to smooth the market spikes out of the world's most useful commodity.

– Patrick Di Justo







SOURCES: ASEAN Centre for Energy; CIA Factbook 2002; Energy Information Administration, US Department of Energy; Economic Community of West African States; Eskom; Global Energy Network Institute; Greenpeace; Lao National Committee for Energy; National Grid; National Energy Board of Canada; Northern Ireland Electricity; Russian Joint-Stock Power and Electrification Company; Slovak Power Control Authority; Trade Partners UK; Transmission & Distribution World; United Nations Office for the Coordination of Humanitarian Affairs; US Department of Commerce; World Energy Council.

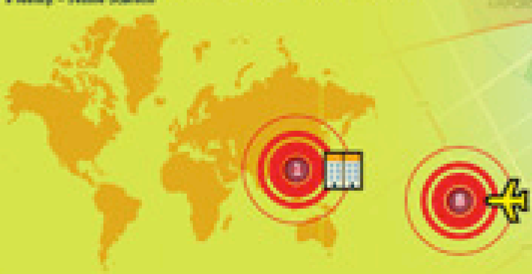
Wired Magazine : Infoporn

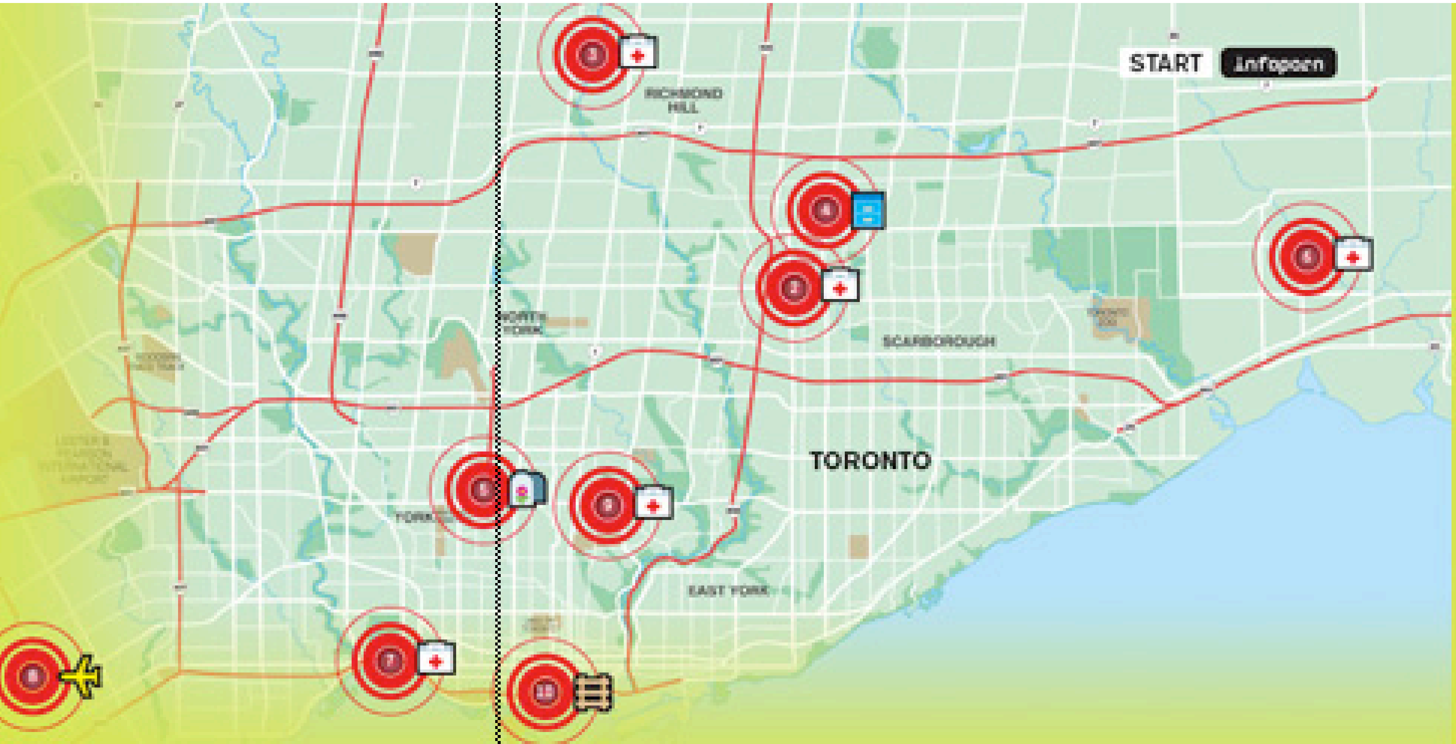
Serial Killer

How do you stop a disease like SARS? Follow its victims, from China to

Tracking an illness like SARS takes an amazing level of international cooperation. When severe acute respiratory syndrome was first noted, 11 labs around the world shared samples, data, and techniques to identify it. Almost instantly, researchers knew that SARS didn't match any known disease taxonomy, and within a month they'd isolated the virus and decoded its DNA – something completely unprecedented for a new disease strain. Meanwhile, World Health Organization officials and local health representatives pounded the pavement, interviewing and retracing the paths of the thousands known to be infected.

Still, all of their work isn't enough to conquer today's bugs – so epidemiologists are expanding their efforts. The WHO and Unicef are developing software that maps global estimates of, say, HIV infection with country-level scores charting prevalence among risk groups. And researchers at Los Alamos National Laboratory are building an even more sophisticated app that uses elements like genetic analysis to model epidemics. The Los Alamos team hasn't run a SARS simulation yet, because specific demographic and environmental data hasn't been available. But as more details of the illness come to light, the prospect of slowing or even stopping tomorrow's superspreaders will become a reality. – Jessie Scanlon



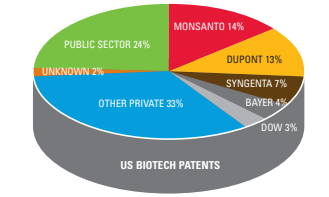


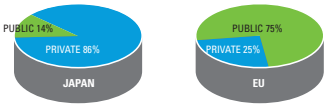
SEEDS OF CHANGE

About 10,000 years ago, probably in what is now Turkey, some proto-agronomy genius got sick of hunting and gathering and decided to grow food instead. Too bad that guy didn't get a business method patent. But it didn't take long for farmers who raised better animals or developed hardier seeds to learn they could charge more, an idea formalized in the last two centuries with proprietary rights assigned to breeds and strains. Today, agriculture is steeped in intellectual property: Plants come with license agreements, farmers can't sow seeds from last year's crops without fear of a lawsuit, and every DNA tweak of a bacterium, plant, or animal could spawn a new patent and revenue stream. Indeed, from 1991 to 2001, the number of agricultural patents increased sevenfold in the US, which leads the world in ag IP. Not surprisingly, agribusiness holds most of those patents, but public entities like universities and nonprofit groups have begun developing their own IP as well as initiating open source projects. With the amount of genetically modified crops soaring, IP rights are the seeds for an ever-more-bountiful harvest.
– Thomas Hayden

WHO OWNS AGRICULTURAL BIOTECH

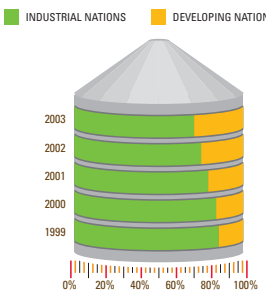
While public entities control many enabling technologies for agricultural biotech, a handful of private companies owns three-quarters of US patents, including the most relevant genes.





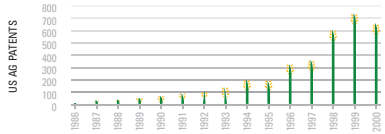
GM MOVES TO THE DEVELOPING WORLD

Genetically modified crops offer many benefits – but carry the added burdens of patent-protected agriculture. So farmers who plant GM in developing nations also reap a bumper crop of licensing agreements.



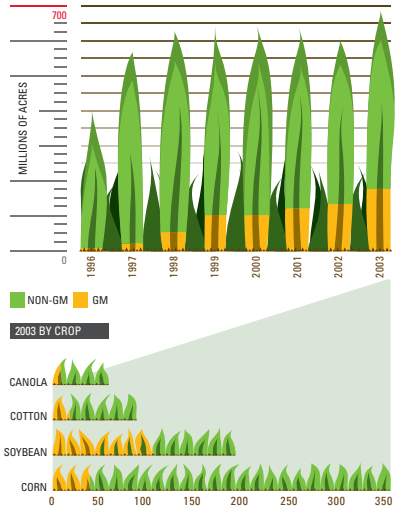
THE RISE OF AG PATENTS

The boom in biotechnology in the 1980s came with a related blossoming of patents, especially in the US.



GM IN THE FIELD

The total supply of cropland worldwide is holding steady at nearly 700 million acres. More and more of those crops are genetically modified – which means they're grown on intellectual property.



WAR OF THE WORLDS

THINK LOCALLY, MARKET GLOBALLY

Crops that local farmers have harvested for millennia sometimes turn out to have global appeal. That's when corporate muscle moves in to patent key traits and take their product to new markets.

CROP & COUNTRY	USE	PATENT HOLDER
Teff (traditional cereal grain) Ethiopia	Locally, used to make injera (flat-bread). Globally, the low-gluten flour could make allergy-friendly baked goods.	Soil and Crop Improvement BV (Netherlands)
Nap Hal (low-gluten wheat) India	Used to make breads in India. Lower visco-elasticity makes for better cookies, crackers, and other crispy baked goods.	Monsanto (USA)
Maca (rain-forest tuber) Peru	In Peru, eaten like sweet potatoes. Extract is supposed to increase libido and potency.	Pureworld Botanicals (USA)

THE GROWTH OF GOLDENRICE

Part open source agriculture, part savvy licensing, GoldenRice is an attempt to use genetic modification to prevent nutritional deficiencies.

THE PURPOSE

Cure vitamin-A deficiency in the parts of the world where rice is a major staple (white rice lacks vitamin A).

PERCENTAGE OF DIET FROM RICE

ASIA	AFRICA	SOUTH AMERICA
72% BANGLADESH	47% MADAGASCAR	31% GUYANA
67% LAOS	46% SIERRA LEONE	26% SURINAME
51% INDONESIA	42% GUINEA BISSAU	17% ECUADOR
42% PHILIPPINES	29% COTE D'IVOIRE	15% PERU
30% CHINA		15% BRAZIL

THE PROCESS

Using an open source bacterial "vector," researchers insert licensed genes to boost the rice genome's ability to make vitamin A.

GENE	CaMV	GI-1	Psy	Crtı
OWNERS	University of California, Monsanto	National Foods (Japan), University of California	Amoco, AstraZeneca, Fitzmorris, Kirin Brewery, Imperial Chemical, etc.	Amoco, DuPont

THE RESULT

In just one country, the Philippines, GoldenRice could solve health problems in thousands of children.

ESTIMATED CASES AVERTED	
Night blindness	15,398
Corneal ulcers	1,925
Death	870

Sources: Salim Al-Babili; American Society of Plant Biologists; Alan Bennett; Peter Beyer; Kent Bradford; Center for the Application of Molecular Biology to International Agriculture; Susan Cullen; Gregory Graff; Tran Thi Cuc Hoa; Ingo Potrykus; International Service for the Acquisition of Agri-biotech Applications; Patrick Schaub; West Africa Rice Development Association; David Zilberman

STREAMING MEDIA

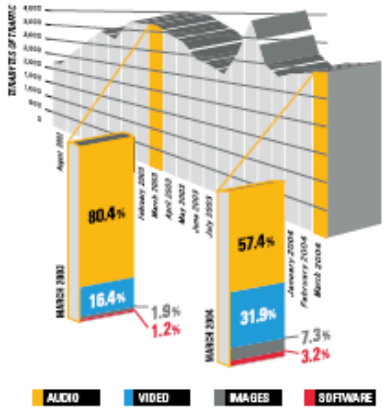
The great global shipping lanes for black market content are the P2P networks. File-sharing technologies – combined with cheap burners – have produced a lawless zone where notions of copyright don't apply. After all, what's the RIAA to a broadband-bolstered Shakira fan in Korea?

The result is a war over who controls our culture's collective body of ideas. Think: Within hours of its premiere at Grauman's Chinese Theater in Los Angeles, a $100 million movie will be sold for 230 forint – about a dollar – in an open-air market in Budapest. This black market, worth more than $1 billion in Russia alone, bankrolls organized crime syndicates and terrorist networks alike, according to Interpol.

Copyright owners and governments are fighting back. Gun-toting agents storm Thai CD-stamping plants; subpoenas swamp New England dormitories. Between the extremes, copyright activists propose a third course: Stop wasting money on the losing enforcement battle, rethink copyright to allow for technological evolutions, and find practical, sustainable ways to reward those who create good content. Will it work? In some cases, it already has. – Jeff Howe

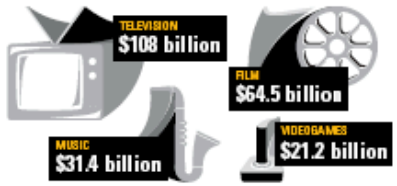
THE GROWTH OF P2P

Thousands of terabytes seep through P2P networks every month. While it's mostly music, video and images (yes, porn) are surging.



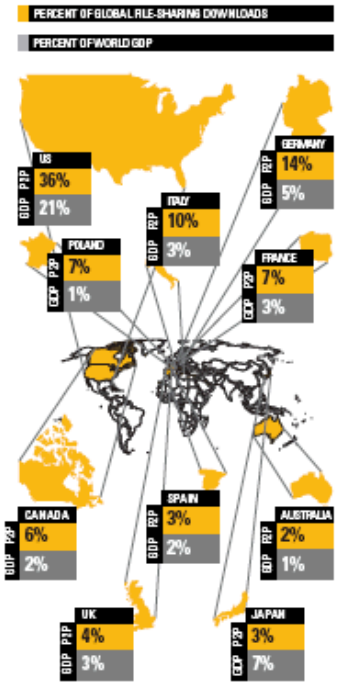
THE CORPORATE MEDIA MONEY MACHINE

Worldwide, there are billions in revenue at stake each year in the IP war.



THE TOP 10 FILE-TRADING NATIONS

Of course the US leads the world in file-trading – it's the richest country, too. But Poland, which has only a sliver of the US's GDP, has a full one-fifth of America's P2P traffic.



300 YEARS OF COPYRIGHT

In the US, continued extensions of copyright protection have put the squeeze on the public domain.

100 yrs
75 yrs
50 yrs
25 yrs

1710
Britain's Statute of Anne provides 14 years and a 14-year extension.
Total Protection 28 yrs

1790
Copyright Act provides 14-year term to US authors, with optional 14-year renewal.
28 yrs

1831
Copyright Act extended to 28 years with option for a 14-year extension.
42 yrs

1909
Copyright broadened to music and other works: renewal extended to 28 years.
56 yrs

1976
Preempting all previous law, protection extended to life of the author plus 50 years.
75 yrs*

1992
Copyright renewal made automatic, dramatically curtailing the public domain.
75 yrs*

1998
Sonny Bono Act extends protection to life of the author plus 70 years.
95 yrs*

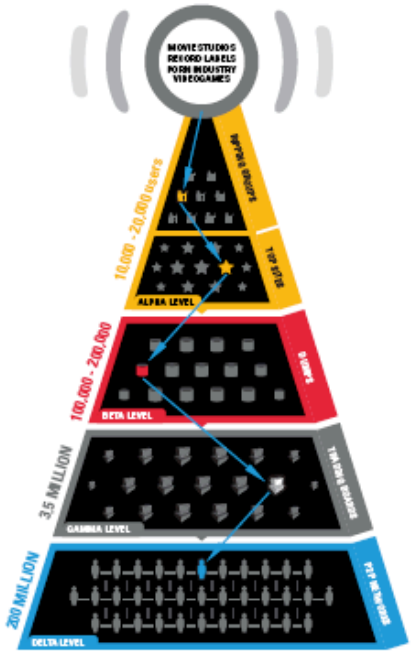
*Duration of average copyright.

Sources: Association of Research Libraries; Bigchampagne; Creative Commons; Jan Group; Felix Oberholzer, Harvard Business School; PricewaterhouseCoopers' Entertainment and Media Practice; Kolenan Strampf, University of North Carolina at Chapel Hill

WAR OF THE WORLDS

THE INSIDE STORY OF THE FILE-SHARING UNIVERSE

Think file-sharing is all about individual consumers ripping CDs onto Kazaa? Think again. There's a world of exclusive P2P sites that traffic in top-quality merchandise direct from industry insiders.



RIPPING GROUPS
Industry renegades who make illicit copies and drop them into the P2P ecosystem.

TOP SITES
About 30 small, protected servers that host new content and "nuke" poor-quality files.

DUMPS
Larger and less protected servers. More files available; membership is by invite only.

TRADING BOARDS
Files hit FTP sites, Usenets, and IRCs. The original file has multiplied exponentially.

P2P NETWORKS
The P2P masses – Kazaa, Morpheus, Gnutella et al. Spoofs and malware seep in.

THE GREY ALBUM

Late last year, LA-based DJ Danger Mouse took one part Beatles' *White Album* and one part Jay-Z's *Black Album*. The result was the notorious *Gray Album*, a mashup that swept through the blogosphere and file-sharing networks like an Asian flu. Here's the path of a musical contagion.

		DOWNLOADS
Dec 25	After 2½ weeks, Danger Mouse finishes album.	
Jan 1 – Jan 30	Presses and distributes 3,000 CDs. Media coverage picks up; files hit P2P networks.	
Feb 12	*White Album* owner EMI issues cease and desist.	
Feb 24	Gray Tuesday protest: 171 sites offer downloads.	
March 11	P2P drives total downloads to 1 million.	
April 20	Gray Album peaks: 1.25 million downloads so far.	

ANOTHER PATH: CREATIVE COMMONS

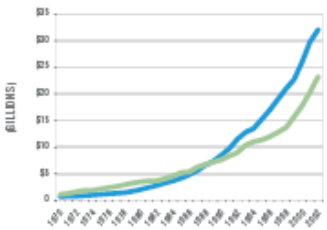
Creative Commons aims to replace the "all rights reserved" notion of copyright with a "some rights reserved" approach, offering licenses for reproduction in all media.

STRONG MEDICINE

The modern pharmaceutical industry is built on a simple formula. Patents equal temporary monopolies equal big profits equal research for new drugs. But there is a cost to this virtuous cycle of capitalist science: The people who most need medicines are the least likely to be able to afford them. So while big pharmas focus on the lucrative bald-impotent-white-man market, the developing world's drugmakers have gone rogue, turning out cheap generic meds. They sell them in the countries that don't care much about patents and, not coincidentally, are most in need of drugs for AIDS and other diseases. Meanwhile, advances in genetics could redraw the medical map. DNA may trump IP. – Stuart Luman

THE R&D ARMS RACE

Until 1980, the National Institutes of Health set the pace for US R&D funding. These days, big pharmaceutical companies do.

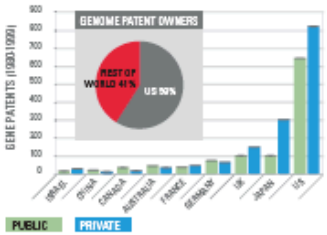


WHERE DRUGS COME FROM (AND GO TO)

Only western Europe exports more drugs than it imports: every other region is a net importer. But the wealthier parts of the planet deal in far bigger dollar amounts than the poor.

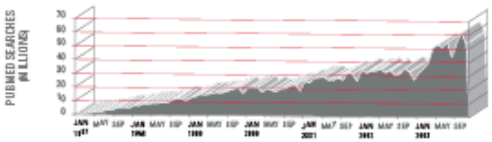
WHO OWNS THE HUMAN GENOME

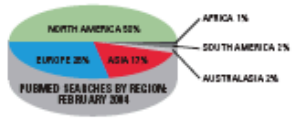
Patents on human genes are the new stock in trade for medical research. Not surprisingly, the US owns the lion's share. Around the world, more than half are held privately.



THE MEDICAL RESEARCH FREE-FOR-ALL

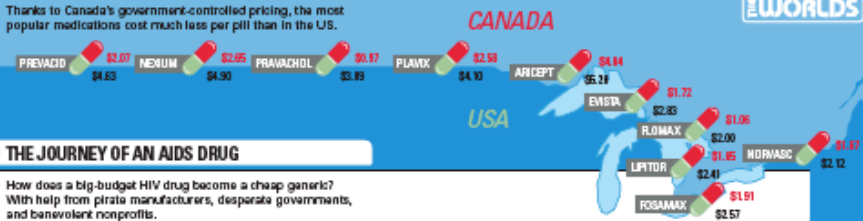
Since NIH put its PubMed archive online, abstracts of almost all medical research have been free. The word is out, worldwide.





ONE BORDER, TWO PRICES

Thanks to Canada's government-controlled pricing, the most popular medications cost much less per pill than in the US.



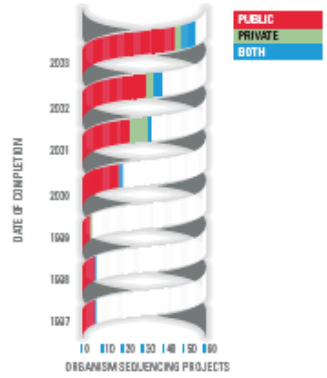
THE JOURNEY OF AN AIDS DRUG

How does a big-budget HIV drug become a cheap generic? With help from pirate manufacturers, desperate governments, and benevolent nonprofits.

1. Researchers at IAF Biochem International in Canada invent lamivudine, a reverse transcriptase inhibitor.
2. GlaxoSmithKline, based in the UK, licenses the drug as Epivir (2003 net sales: $519 million).
3. The drug is sold throughout the developed world, including the US for $4,048 ppy (per patient per year).
4. Enter the generics: Pharma companies in India and Thailand reverse-engineer the drug and sell it for $88 ppy.
5. Generic makers combine the drug into "triple therapies," selling them for about $580 ppy ($13,800 ppy in the West).
6. Meanwhile, the US-based Clinton Foundation cuts a deal to sell generic triple therapies in Africa for $140 ppy.

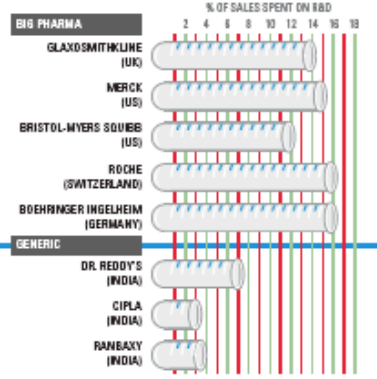
SEQUENCING THE GENES OF EVERYTHING

Researchers have sequenced the genomes of 200 organisms. Most of the projects have been public efforts, but recent years have seen more private or joint endeavors.



PUTTING REVENUE BACK TO WORK

For Big Pharma, the business model requires using current drug revenues for new drug research. Generic makers don't have that problem and spend much less on R&D.



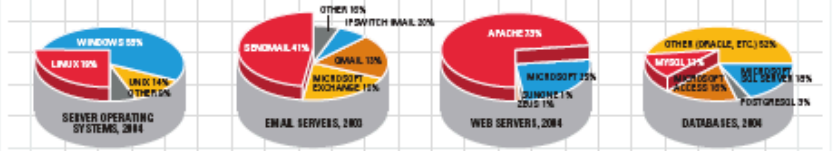
Sources: American Association of Retired Persons; Bloomberg; Campaign for Access to Essential Medicines/Médecins Sans Frontières; Consumer Project on Technology; CVS.com; Dr. Reddy's Laboratories Ltd.; Genome News Network; GlaxoSmithKline; Integrated Genomics Inc.; International Trade Centre; Matrix Labs India; Medicentercanada.com; MedHelp.org; Moges Research and Analysis Associates; National Center for Biotechnology Information; National Institutes of Health; National Science Foundation; Office of Former President William Jefferson Clinton; Pharmaceutical Research and Manufacturers of America; Ranbaxy Laboratories Ltd.; World Health Organization

OPEN SOURCE EVERYWARE

Since free-software pioneer Richard Stallman started building the GNU operating system in the early 1980s, openness has thrived in software more than in any other industry. Today there are open source operating systems for Web servers, email, and cell phones. This success has provoked a reaction in the proprietary world, from Microsoft charging different prices in different countries to SCO asserting retroactive copyright over Linux's open code. These moves may be bona fide threats to openness or simply the throes of an industry undergoing commoditization. In some ways, though, the point has already been made: Openness in the software industry is inspiring worlds far beyond computers. Software was just the beginning. – Patrick Di Justo and Jesse Freund

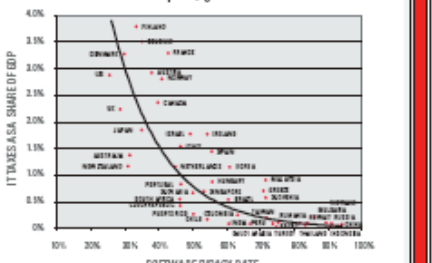
THE PROOF IS IN THE MARKET SHARE

Linux may be the poster child, but lots of open source projects are thriving in the marketplace. Across the tech industry, open source apps are gaining on proprietary competition.



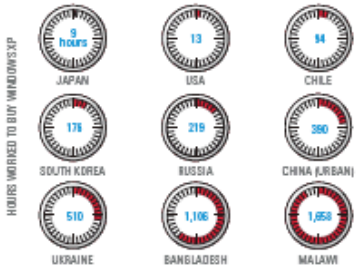
THE COST OF SOFTWARE PIRACY

To crack down on piracy, corporations need help from law enforcement. What's in it for the governments? A few extra bucks. Countries with low rates of piracy get more IT tax revenue.



THE PRICE OF WINDOWS IN THE WORLD

It takes an average Chinese worker more than two months to earn the purchase price of a legal copy of Windows XP. No wonder both piracy and Linux have such appeal in the developing world.



HOW A GLOBAL CODING COALITION BUILT AN OPEN SOURCE SUPERSERVER

Open source coding is a collaboration. Here's how one global band of brothers, led by a lead developer in China, formed to create features for the Linux Virtual Server (LVS), a program that yolks multiple servers into one superserver.

FEBRUARY 2000
Fort Lauderdale, Florida
Programmer Simon Horman proposes modifying LVS to improve scalability for large-scale applications.

MARCH 2000
Sydney, Australia
While visiting his hometown, Horman begins writing the proposed code.

MARCH 20, 2000
Changsha, China
Horman sends his code to LVS lead developer Wensong Zhang. Zhang notices inefficiencies that drag on performance and tweaks the code.

MARCH 30, 2000
Varna, Bulgaria
Zhang sends the revised code to Julian Anastasov in Bulgaria. He helps Zhang address performance problems, and the proposed change is shipped back to Horman.

APRIL 6, 2000
Silicon Valley, Calif.
Horman, back to work at VA Linux Systems, modifies the code using the Zhang/Anastasov solution and sends a finished product back to Zhang.

APRIL 7, 2000
Changsha, China
After a few more tweaks, Zhang releases the code to the several-thousand-strong LVS community as Firewall Mark Virtual Services (fwmark).

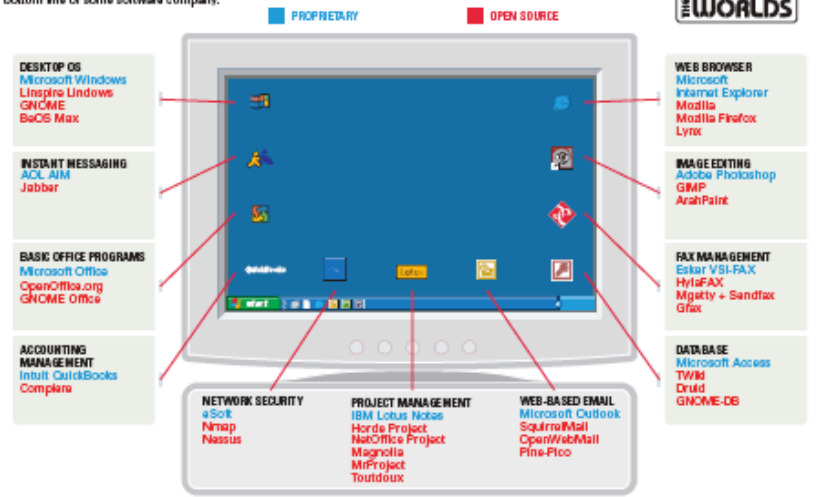
MAY 2000
Zurich, Switzerland
Roberto Nibali suggests a better way for LVS to handle persistent connections – when one server supplies all data over a single connection.

JULY 2000
Columbus, Ohio
Ted Pavlic realizes that fwmark can be configured to address Nibali's concern. The group makes changes to the LVS code accordingly.

TODAY
Durham, North Carolina
fwmark remains a vital component of LVS, and its documentation is maintained by Joseph Mack in Durham.

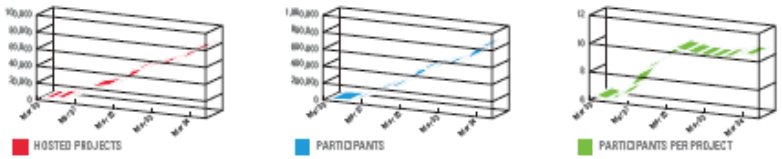
THE FINAL FRONTIER: THE OPEN OFFICE

The desktop is where the movement finally meets the consumer. Increasingly, it's possible to replace the programs on your computer with free, high-quality, open source apps that allow you to be productive without increasing the bottom line of some software company.



THE MAKING OF A MOVEMENT

In the past few years, open source software has gone from being a fringe movement that relied on a small clique of programmers to a global phenomenon. Sourceforge.net, the main clearing-house for open source development, tracks more than 80,000 projects and 800,000 collaborators.



Sources: Evans Data; IDC; International Labor Organization; International Planning and Research/Business Software Alliance; Japan's Ministry of Health, Labour and Welfare; Korea National Statistical Office; Netcraft; Sendmail; Sourceforge.net; The US-China Business Council; The World Bank Group.

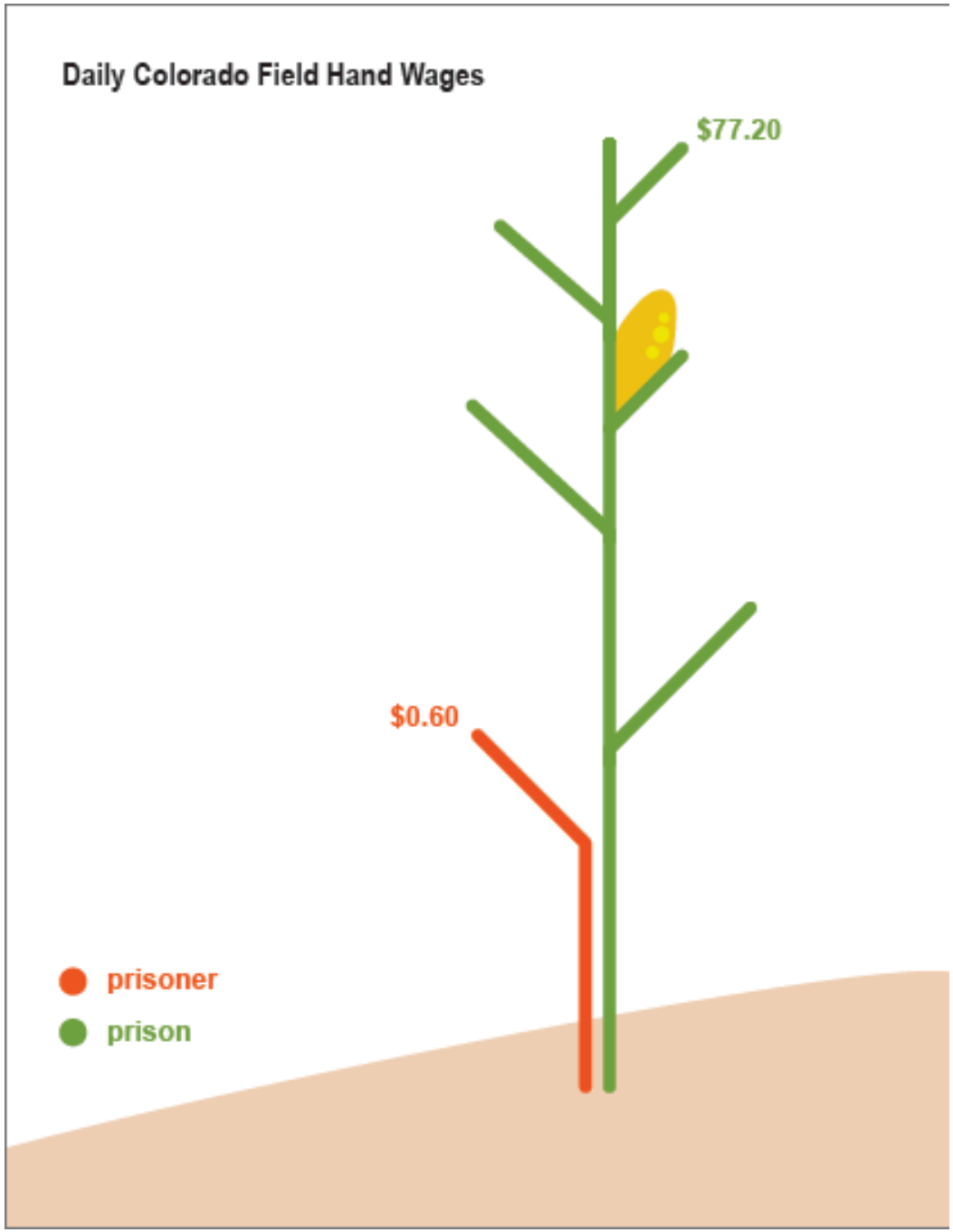
Design Project
Harper's Index

1. select one or two of the facts on this month's Index

2. create a graphic interpretation of the information

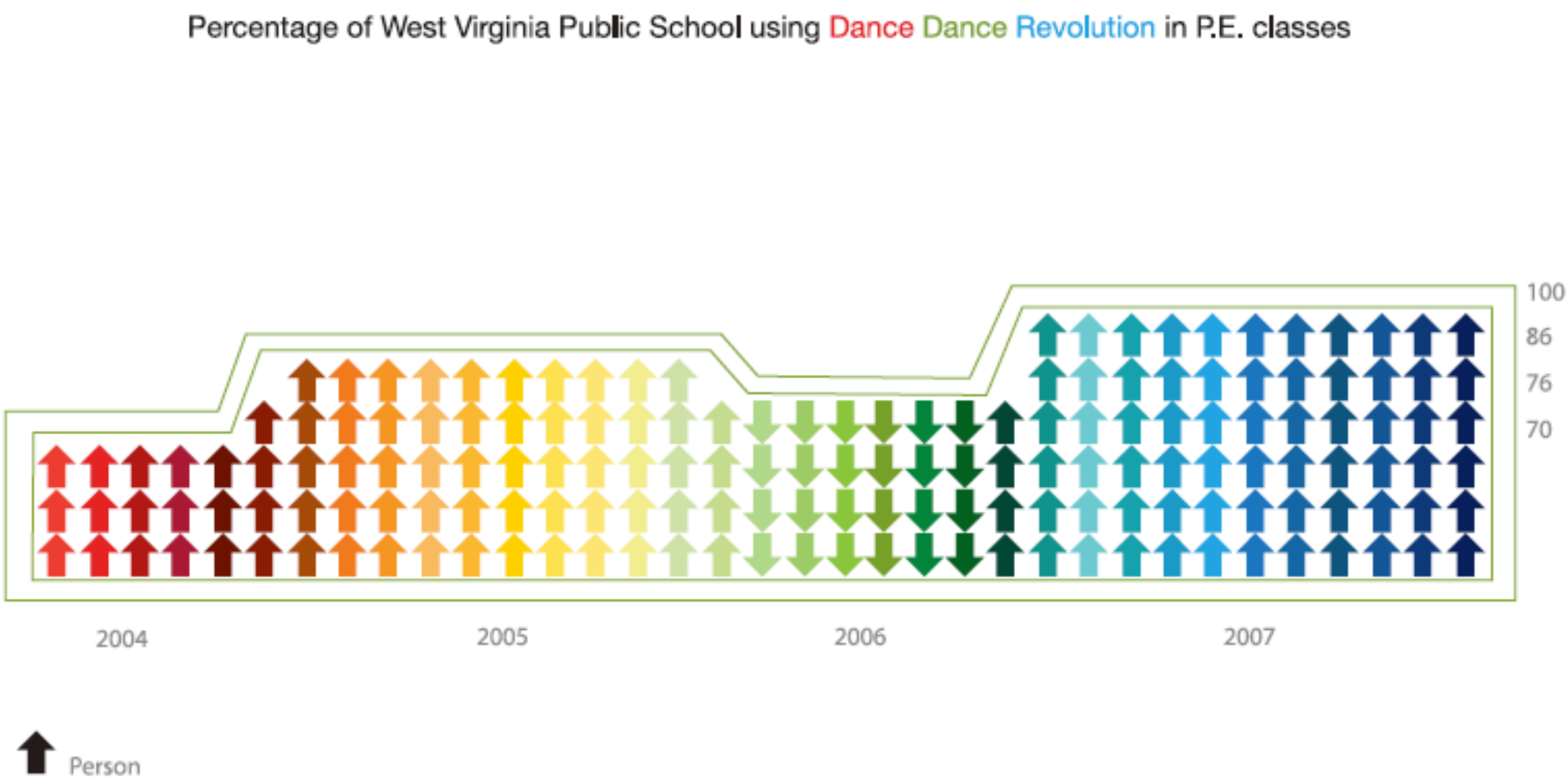
3. adhere to Tufte's principles of graphical display

{show the data, tell the truth, help the viewer think about the information rather than the design, encourage the eye to compare the data, make large data sets coherent}

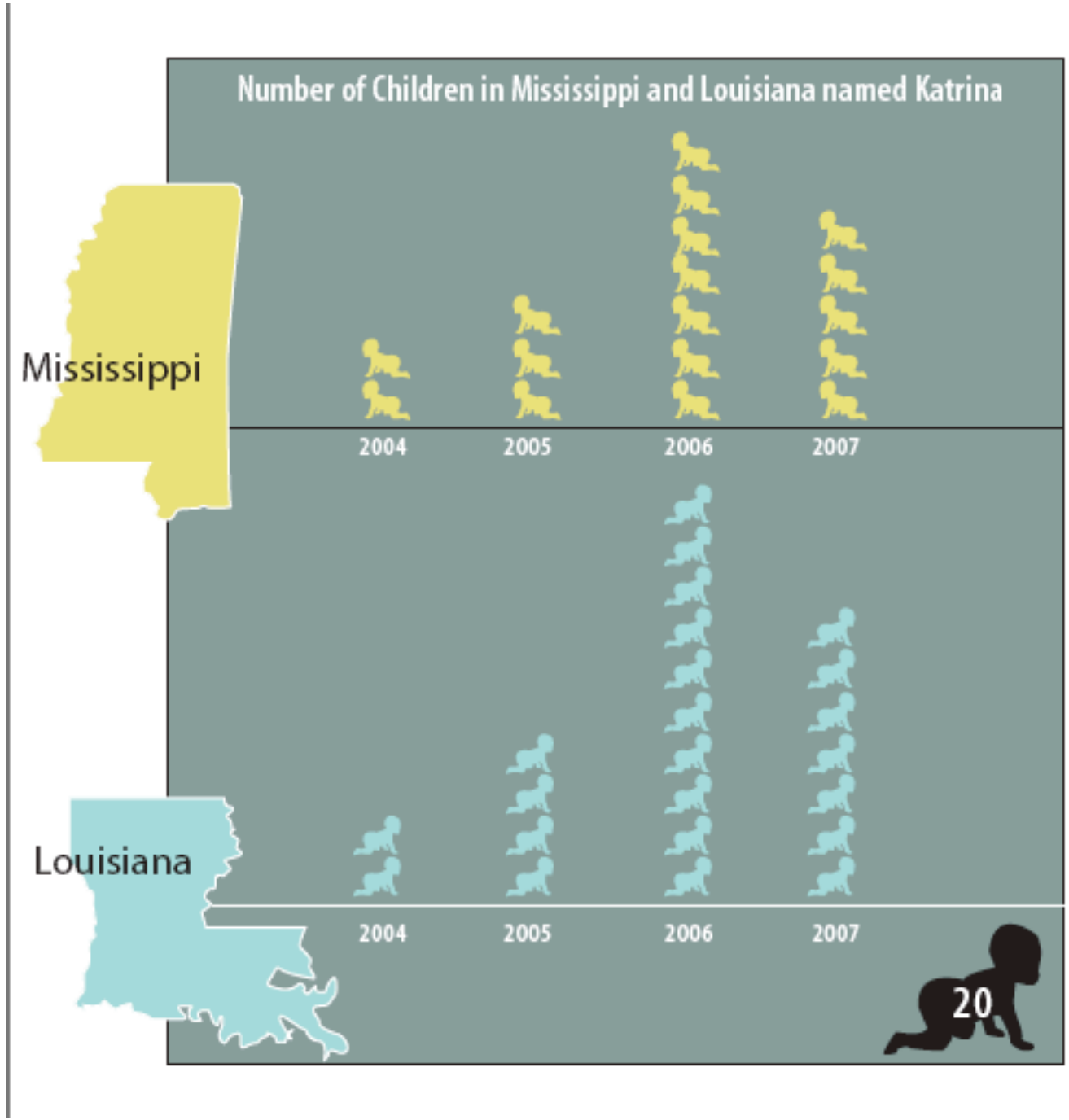


Amount that a Colorado state prisoner is paid to work a day as a field hand at a local farm: 60¢

Amount the prisons are paid by farmers for each inmate's daily work: $77.20



Percentage of West Virginia public schools that will use the video game Dance Dance Revolution in P.E. classes next year: 100



Percentage change in the number of Louisiana and Mississippi newborns named Katrina in the year after the hurricane: +153

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