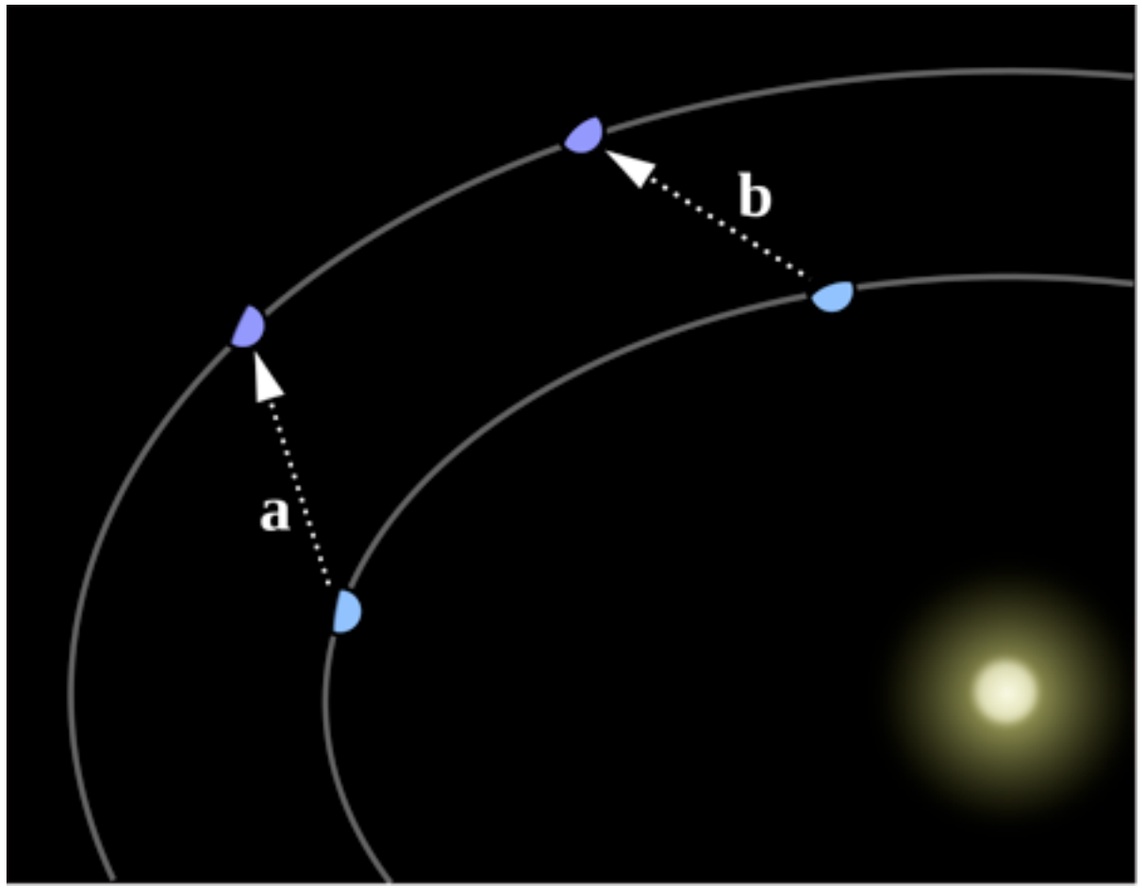
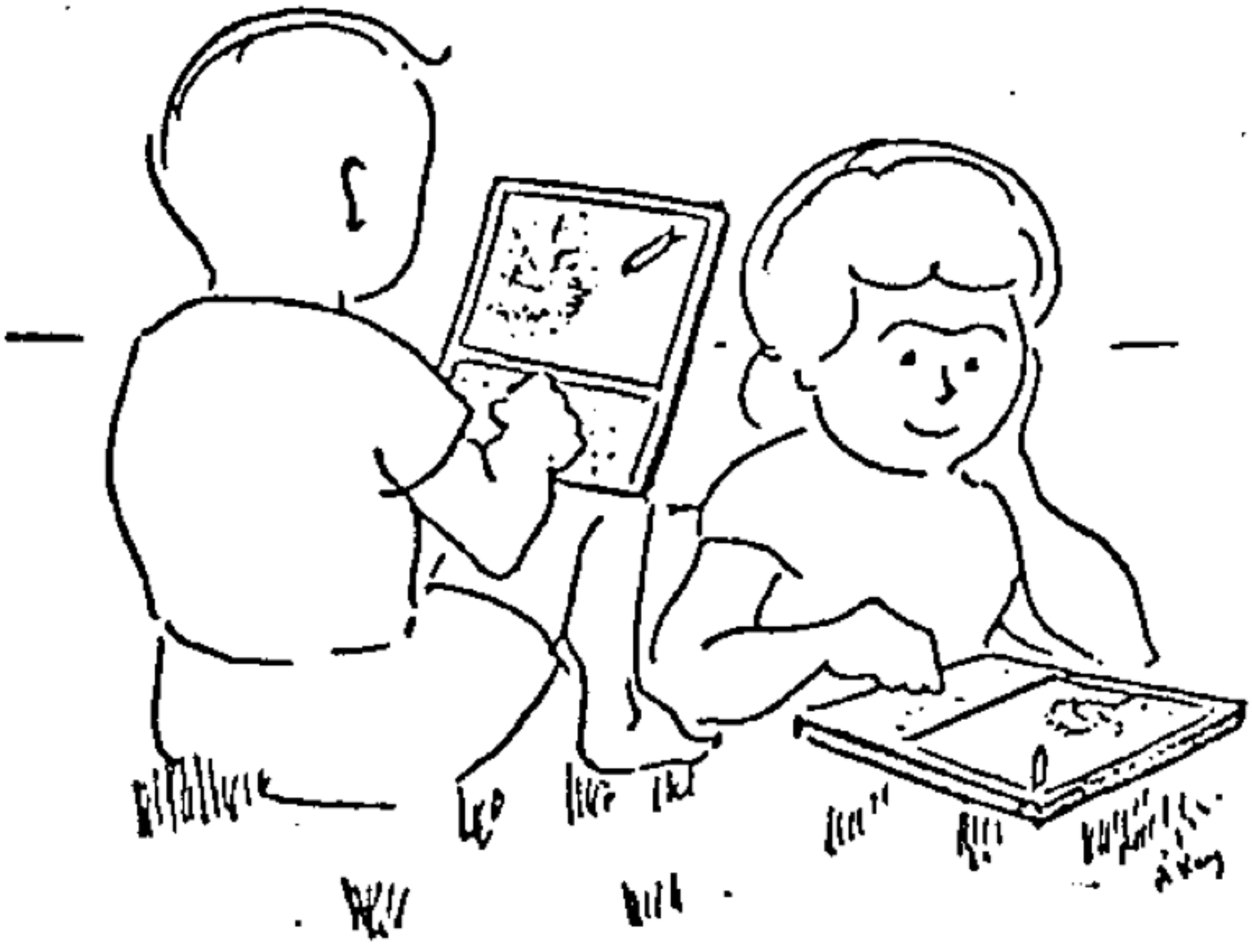
From the Present Into the Future: Four (+1) Paths

Ruben R. Puentedura, Ph.D.


b
a



Redefinition

Tech allows for the creation of new tasks, previously inconceivable

Modification

Tech allows for significant task redesign

Transformation

Enhancement

Augmentation

Tech acts as a direct tool substitute, with functional improvement

Substitution

Tech acts as a direct tool substitute, with no functional change

Social Computing

Digital Storytelling

Social

Narrative

Transformation

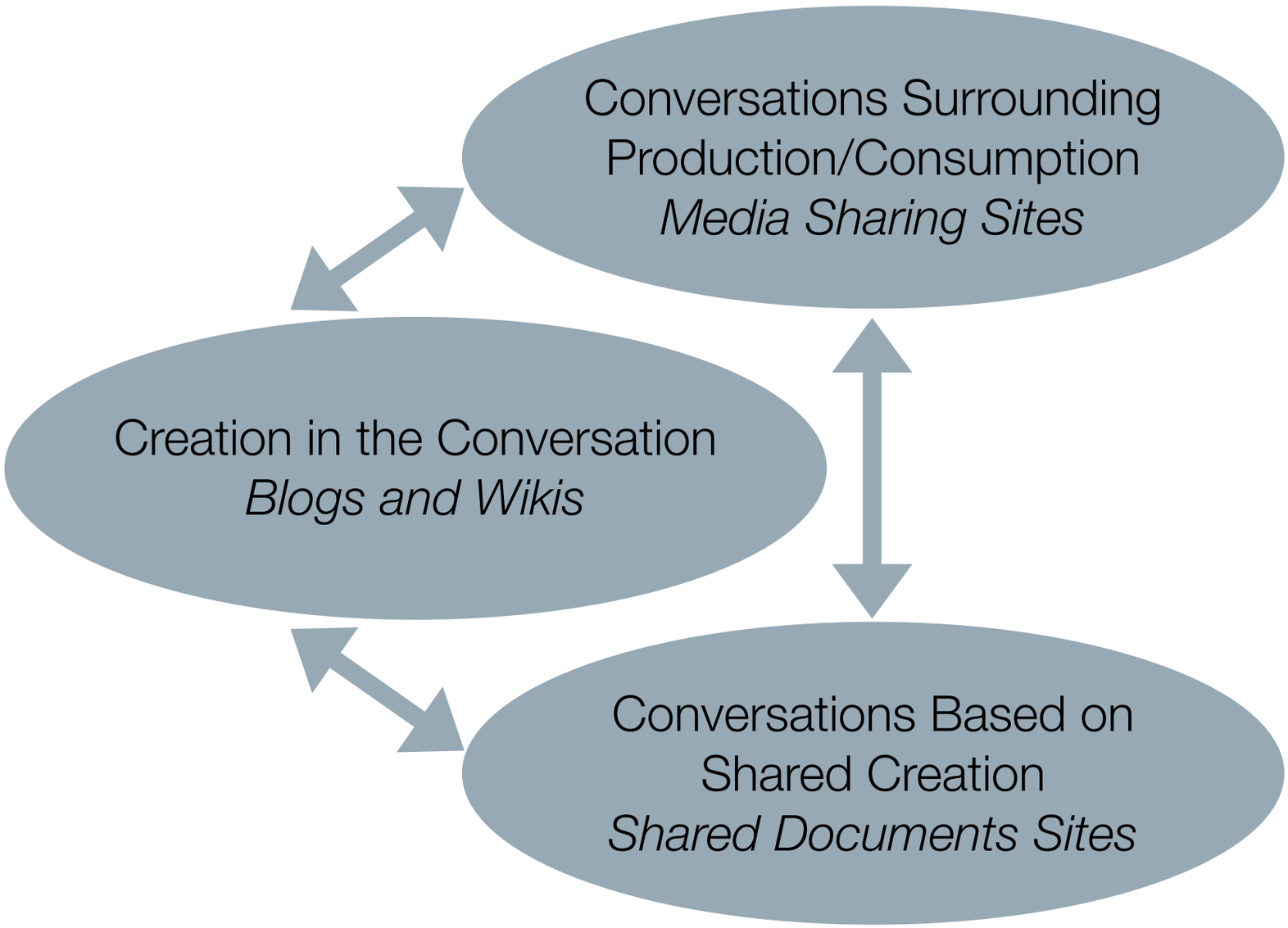
Visual

Play

Visualization and Simulation

Educational Gaming

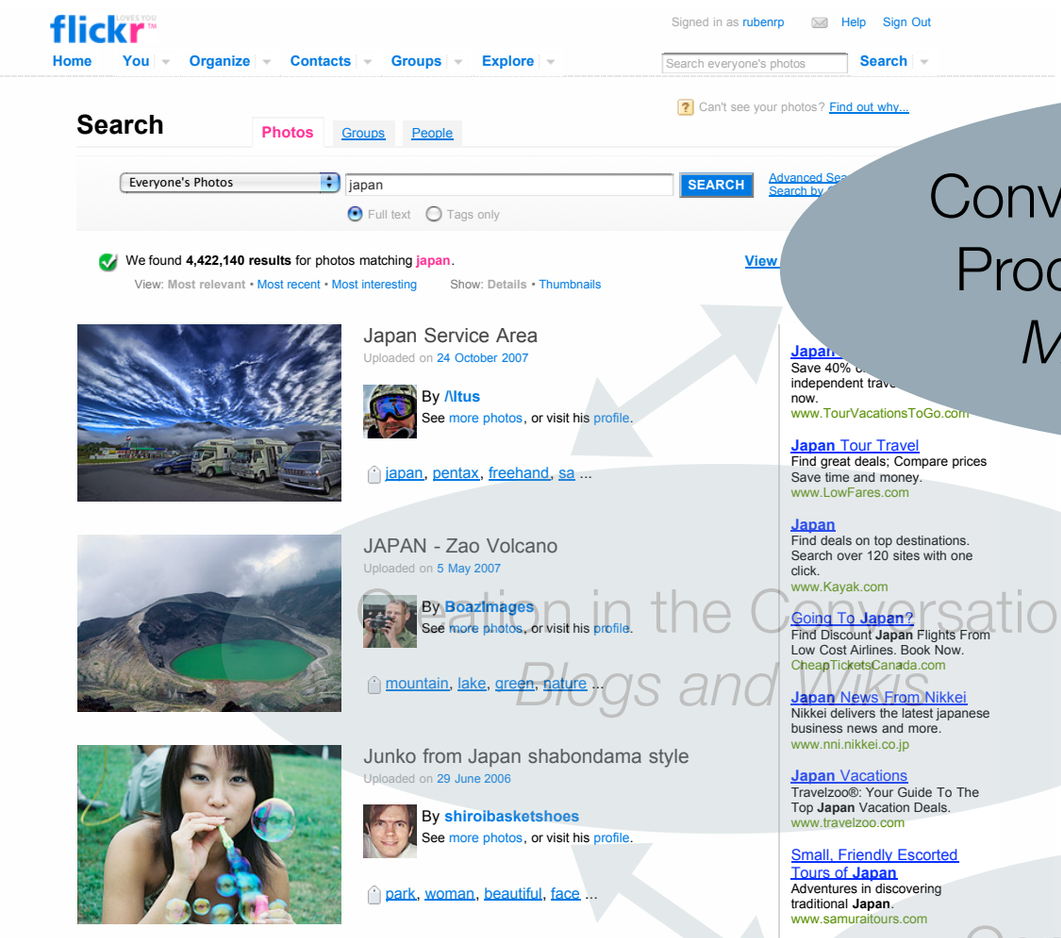
Social Computing

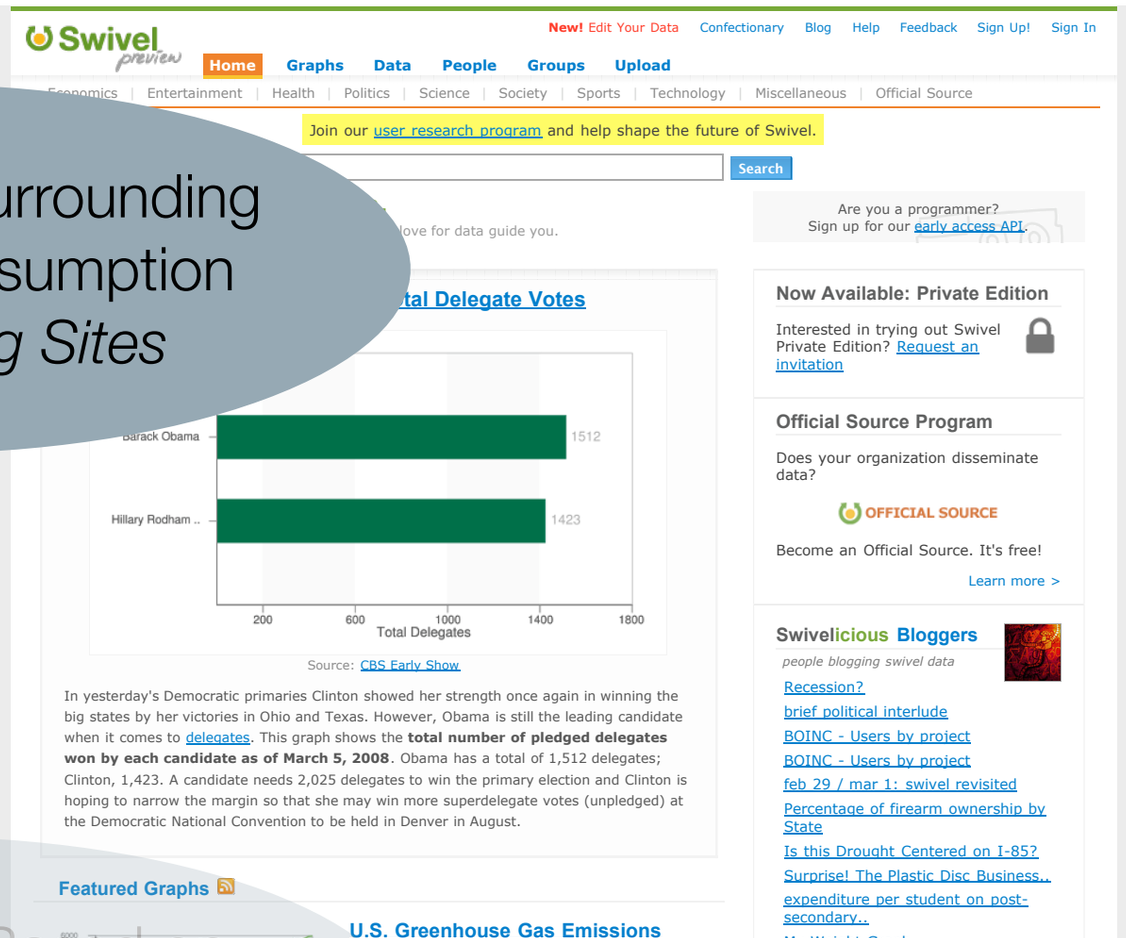

Conversations Surrounding
Production/Consumption
Media Sharing Sites
Creation in the Conversation
Blogs and Wikis
Conversations Based on
Shared Creation
Shared Documents Sites

Conversations Surrounding Production/Consumption *Media Sharing Sites*

Participation in the Conversation *Blogs and Wikis*

Conversations Based on Shared Creation *Shared Documents Sites*

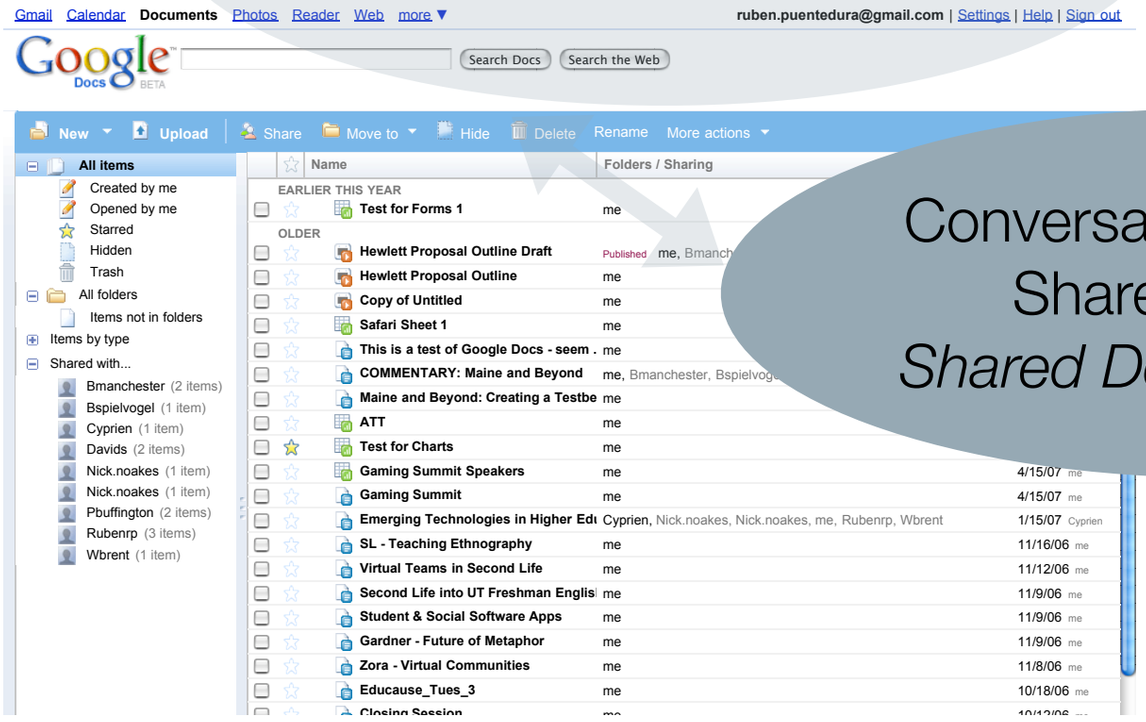


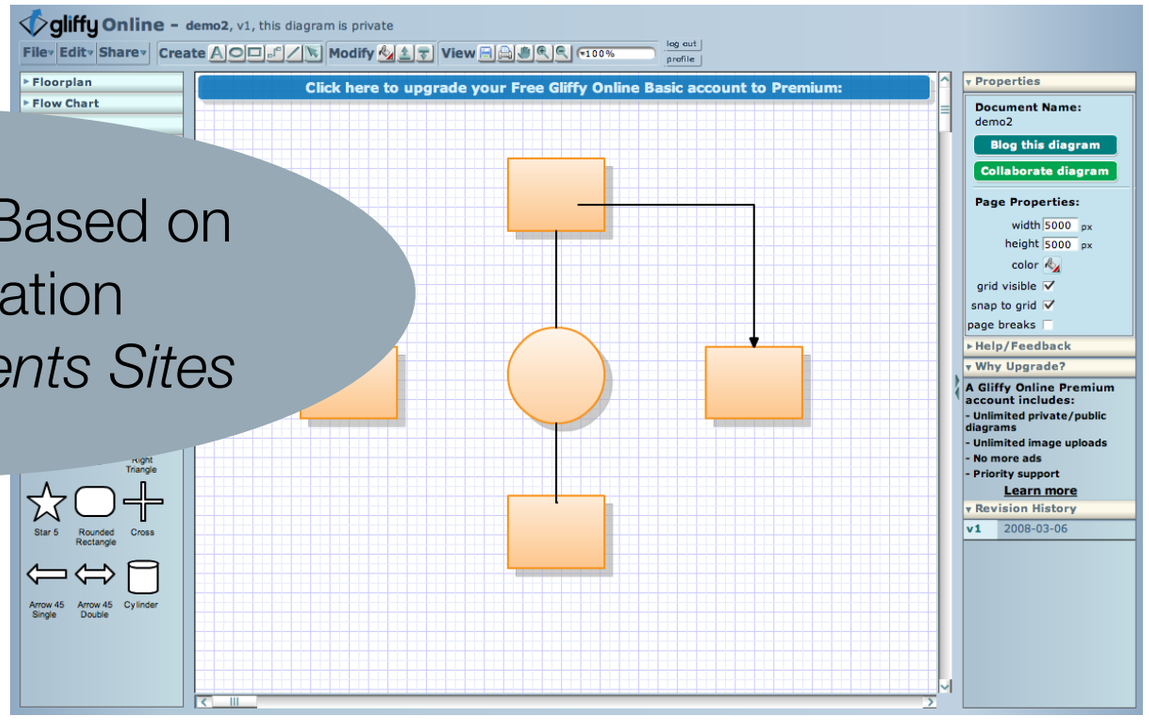


Conversations Surrounding
Production/Consumption
Media Sharing Sites

Creation in the Conversation
Blogs and Wikis

Conversations Based on Shared Creation
Shared Documents Sites





Samuel Taylor Coleridge

March 3rd, 2008

I was privi
part of the
series. The idea
read thirty minutes
mostly just great verse.
Symposium fame) started the series
was a great accomplishment. My colleague (and fellow
lover) Eric Lorentzen has kept the tradition going with panache, and with deep devotion.

Search

Subscribe with Bloglines

Author

Gardner Campbell is a Professor of English at the University of Mary Washington in Fredericksburg, Virginia, where he teaches literature of the English Renaissance, film studies, new media studies, and writing. He's worked in teaching and learning technologies for over a decade, at the University of Mary Washington and the University of Richmond, and currently serves on the Advisory Board of the EDUCAUSE Learning Initiative, the Electronic Campus of Virginia, and the Virginia
Technology Advisory
also a Fellow of
te. class

re Easily |

JamStudio.com – The online music factory – Jam, remix, arrange chords and loops – free guitar – via scmorgan

» 2MM :: A GLOBAL EXAMINATION –

Creation in the Conversation
Blogs and Wikis

Conversations Surrounding Production/Consumption in *Media Sharing Sites*

Conversations Based on Shared Creation in *Shared Documents Sites*

navigation
- Main Page
- Contents
- Featured content
- Current events
- Random article

interaction
- About Wikipedia
- Community portal
- Recent changes
- Contact Wikipedia
- Donate to Wikipedia
- Help

search

Go Search

toolbox
- What links here
- Related changes
- Upload file
- Special pages
- Printable version
- Permanent link
- Cite this page

languages
- Česky
- Deutsch
- Español
- Français
- Galego
- Italiano
- עברית
- Magyar

article discussion edit this page history

Log in / create account

Wave function collapse

From Wikipedia, the free encyclopedia

In certain interpretations of quantum mechanics, **wave function collapse** is one of two processes by which quantum systems apparently evolve according to the laws of quantum mechanics. It is also called *collapse of the state vector* or *reduction of the wave packet*. The reality of wave function collapse has always been debated, i.e., whether it is a fundamental physical phenomenon in its own right (which may yet emerge from a theory of everything) or just an epiphenomenon of another process, such as quantum decoherence. In recent decades the quantum decoherence view has gained popularity.

Contents [hide]

Outline [edit]

The state or wave function of physical system, at some time, can be expressed in Dirac or bra-ket notation as:

$$|\psi\rangle = \sum_i |i\rangle\psi_i$$

where the $|i\rangle$s specify the different quantum "alternatives" available (technically, they form an orthonormal eigenvector basis which implies $\langle i|j\rangle = \delta_{ij}$). An observable or measurable parameter of the system is associated with each eigenbasis, with each quantum alternative having a specific value or eigenvalue, e_i, of the observable.

The $\psi_i = \langle i|\psi\rangle$ are the probability amplitude coefficients, which are complex numbers. For simplicity we shall assume that our wave function is normalised: $\langle\psi|\psi\rangle = 1$, which implies that

$$\langle\psi|\psi\rangle = \sum_i |\psi_i|^2 = 1.$$

With these definitions it is easy to describe the process of collapse:

When an external agency measures the observable associated with the eigenbasis then the state of the wave function changes from $|\psi\rangle$ to just *one* of the $|i\rangle$s with Born probability $|\psi_i|^2$. This is called collapse because all the other terms in the expansion of the wave function have vanished or collapsed into nothing.

If a more general measurement is made to detect if the system is in a state $|\phi\rangle$ then the system makes a "jump" or quantum leap from the original state $|\psi\rangle$ to the final state $|\phi\rangle$ with probability of $|\langle\psi|\phi\rangle|^2$. Quantum leaps and wave function collapse are therefore opposite sides of the same coin.

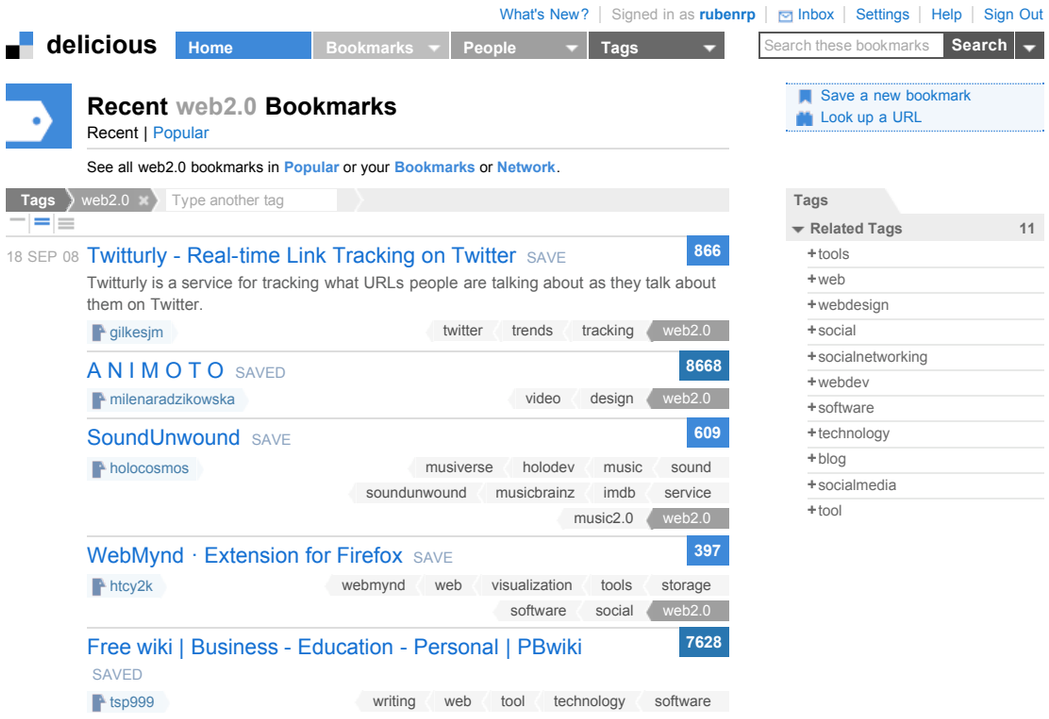
History and context [edit]

Conversations About Conversations
Social Network Sites

Conversations Mapping the Terrain
Shared Bookmark Sites

Conversation as Continuous Partial Attention
Distributed IM

Conversations About
Conversations
Social Network Sites



Conversations Mapping the
Terrain
Shared Bookmark Sites

Conversation as Continuous
Partial Attention
Distributed IM

Conversations About Conversations
Social Network Sites

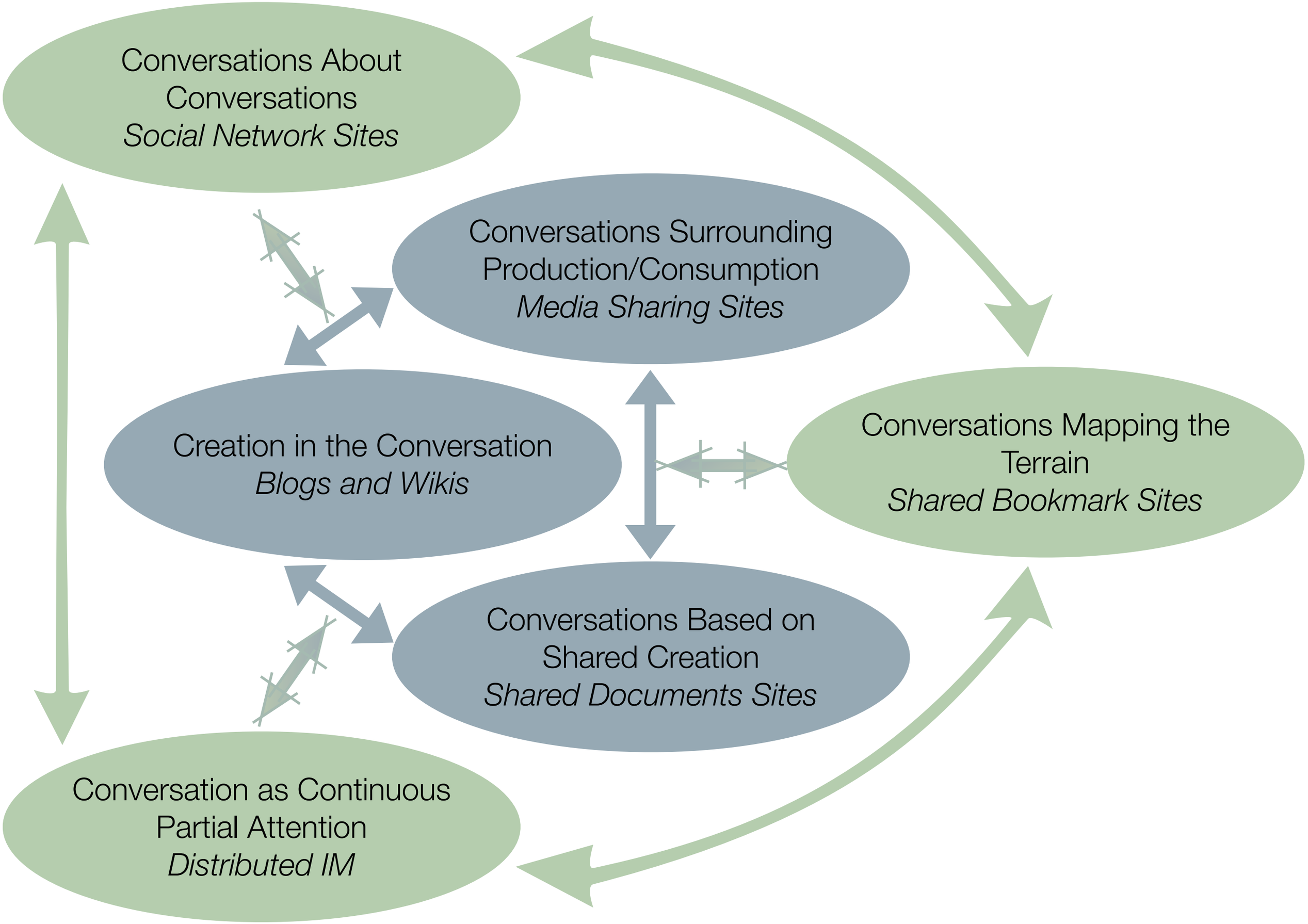
Conversations Mapping the Terrain
Shared Bookmark Sites

Conversation as Continuous Partial Attention
Distributed IM

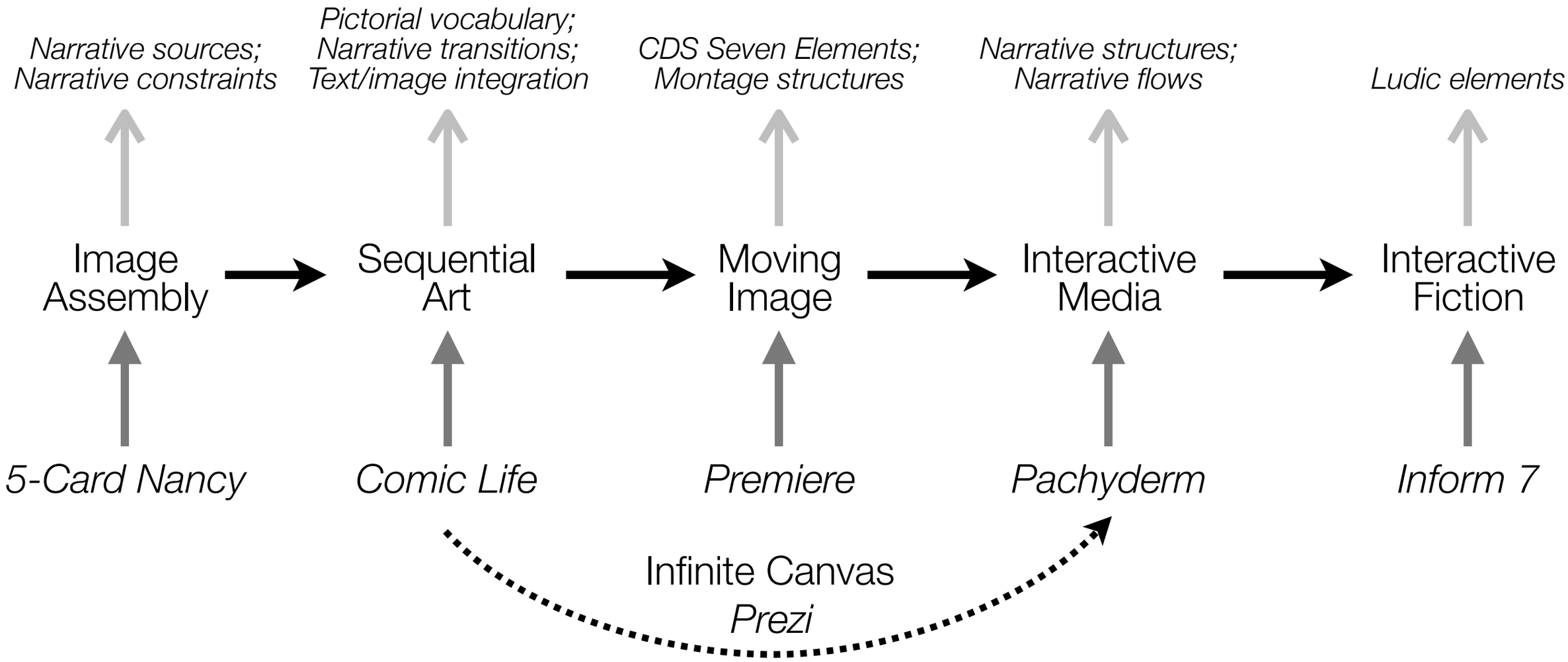
Conversations About Conversations
Social Network Sites

Conversations Mapping the Terrain
Shared Bookmark Sites

Conversation as Continuous Partial Attention
Distributed IM


Conversations About
Conversations
Social Network Sites
Conversations Surrounding
Production/Consumption
Media Sharing Sites
Creation in the Conversation
Blogs and Wikis
Conversations Mapping the
Terrain
Shared Bookmark Sites
Conversations Based on
Shared Creation
Shared Documents Sites
Conversation as Continuous
Partial Attention
Distributed IM

Digital Storytelling


Narrative sources;
Narrative constraints
Pictorial vocabulary;
Narrative transitions;
Text/image integration
CDS Seven Elements;
Montage structures
Narrative structures;
Narrative flows
Ludic elements
Image Assembly
Sequential Art
Moving Image
Interactive Media
Interactive Fiction
5-Card Nancy
Comic Life
Premiere
Pachyderm
Inform 7
Infinite Canvas
Prezi

SEPT 2002

APPROVED BY THE COMICS CODE AUTHORITY

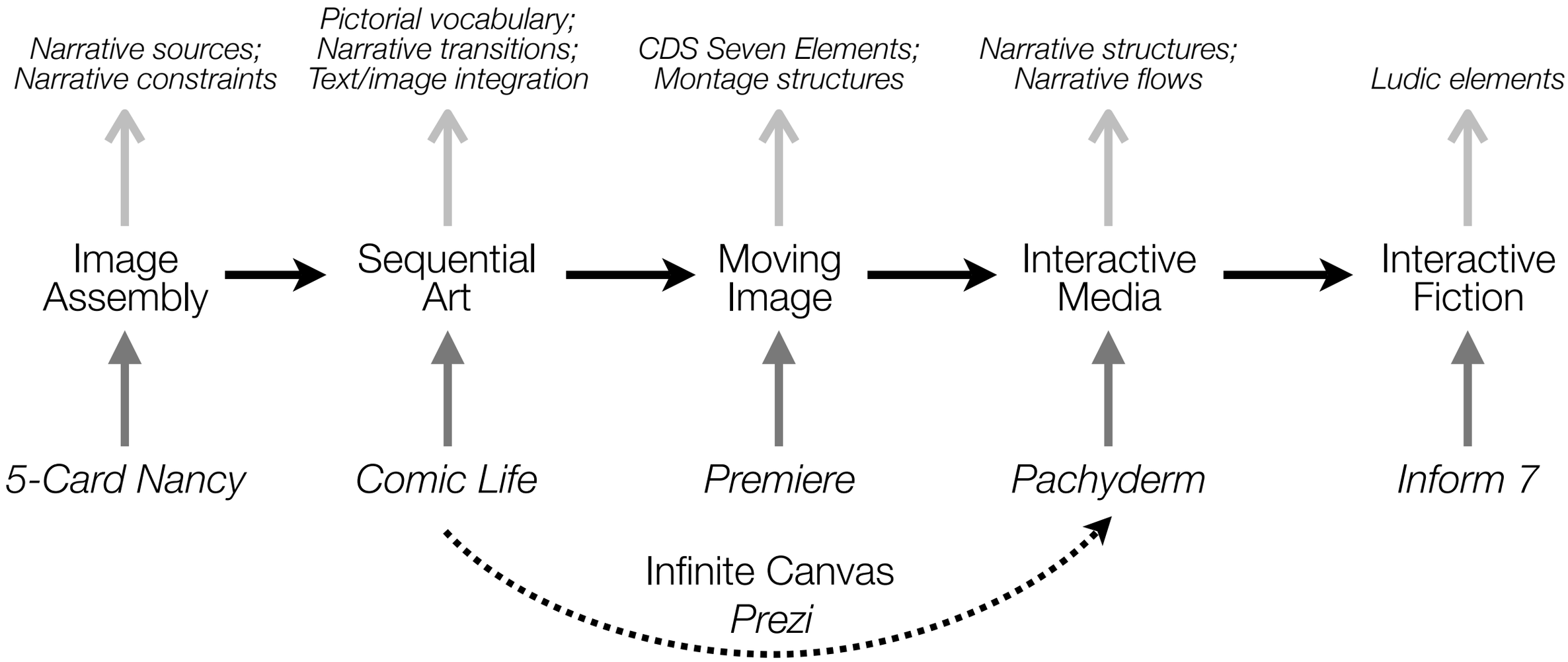
741.5 COMICS PRESENTS

five card nancy

The Game

The sequence so far:

Click on a panel to add it to the sequence:


Narrative sources;
Narrative constraints
Pictorial vocabulary;
Narrative transitions;
Text/image integration
CDS Seven Elements;
Montage structures
Narrative structures;
Narrative flows
Ludic elements
Image Assembly
Sequential Art
Moving Image
Interactive Media
Interactive Fiction
5-Card Nancy
Comic Life
Premiere
Pachyderm
Inform 7
Infinite Canvas
Prezi

FIRST, WE HAVE THE **WORD SPECIFIC** COMBINATIONS, WHERE PICTURES *ILLUSTRATE*, BUT DON'T SIGNIFICANTLY *ADD* TO A LARGELY *COMPLETE* TEXT.

WE STUMBLED BACK TO THE APARTMENT SHORTLY BEFORE DAWN, *VOMITING* EVERY 20 YARDS.

JUDY GAVE ME HER KEYS AND SMILED.

THE *UNITED STATES CONSTITUTION* WAS ADOPTED BY THE *SECOND CONTINENTAL CONGRESS* IN 1787 AND PUT INTO EFFECT IN 1789.

THEN THERE ARE **PICTURE SPECIFIC** COMBINATIONS WHERE WORDS DO LITTLE MORE THAN ADD A *SOUNDTRACK* TO A VISUALLY TOLD SEQUENCE.

HE DID IT!

mmmm... mmmm...

AND, OF COURSE, **DUO-SPECIFIC** PANELS IN WHICH BOTH WORDS AND PICTURES SEND ESSENTIALLY THE *SAME MESSAGE*.

GRIM-FACED, GEORGE LIFTED HIS LOLLYPOP.

BUT THE CAPTAIN'S MIGHTY BLOW **MISSES** ITS INTENDED TARGET!

BLAST! HE *DODGED* MY PUNCH AND I STRUCK THIS **BRICK WALL!**

HA! I DODGED YO...

I FEEL SO *SAD!*

...THOUGHT AMY.

ANOTHER TYPE IS THE **ADDITIVE** COMBINATION WHERE WORDS *AMPLIFY* OR *ELABORATE* ON AN IMAGE OR *VICE VERSA*.

MY HEAD FEELS LIKE A *SMASHED PUMPKIN!*

HOW D'YA LIKE MY *NEW THREADS*, BABE?

IS THIS THE SAME *JUPITER* OF MY YOUTH?

IN **PARALLEL** COMBINATIONS, WORDS AND PICTURES SEEM TO FOLLOW VERY DIFFERENT COURSES -- WITHOUT *INTERSECTING*.

"TALKED TO *BILL* YET?"

"*SALLY* DID. *WHY?*"

"THE *TEST RESULTS* CAME BACK. ALL *NEGATIVE*."

"*REALLY!* THAT'S *GREAT!*"

WELL...

PEPPER. CEREAL.

MILK. BUTTER. LIGHT BULBS.

STILL ANOTHER OPTION IS THE **MONTAGE** WHERE WORDS ARE TREATED AS INTEGRAL *PARTS* OF THE PICTURE.

CASH FLOW BOTTOM LINE ANNUAL REPORT

H P P Y!

PERHAPS THE MOST *COMMON* TYPE OF WORD/PICTURE COMBINATION IS THE **INTER-DEPENDENT**, WHERE WORDS AND PICTURES GO *HAND IN HAND* TO CONVEY AN IDEA THAT NEITHER COULD CONVEY *ALONE*.

MEANWHILE...

DID ANYONE *SEE* YOU?

THIS IS ALL I NEED TO *STOP HIM!*

I ASK YOU, DOES THIS GUY LOOK LIKE A *C.E.O.* TO *YOU?*?

"AND JUST **GUESS** WHO DROVE UP IN BOB'S TRUCK AN HOUR LATER!"

HEY, MARGE!

OH, MY GOD!

HE'S LYING.

UH-HUH.

"AFTER COLLEGE, I PURSUED A CAREER IN *HIGH FINANCE*."

HURRY UP, WILLYA?!?

INTERDEPENDENT COMBINATIONS AREN'T ALWAYS AN *EQUAL BALANCE* THOUGH AND MAY FALL *ANYWHERE* ON A SCALE BETWEEN TYPES ONE AND TWO.

P / W

P W

GENERALLY SPEAKING, THE MORE IS SAID WITH *WORDS*, THE MORE THE PICTURES CAN BE FREED TO GO EXPLORING AND *VICE VERSA*.

W / P

Educational Gaming

Formal Definition of **Play** (Salen & Zimmerman)

“Play is free movement within a more rigid structure.”

Formal Definition of **Game** (Salen & Zimmerman)

"A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome."

Narrative

IF

Graphic Adv.

Action/Adv.

RPGs

MMOGs

ARGs

Board

Traditional

Puzzle

Other

Narrative

Other

Simulation

Action

Sims

RTS

Mil. TBS Wld. TBS

Simulation

Shmups

Platformers

FPS

Fighting

Sports

Vehicle

Rhythm

Action

Active Learning

Gamers Learn From:

1. Doing and reflecting critically

Symbolic Systems

2. Appreciating good design and its principles

3. Seeing interrelations within and across symbolic systems

4. Mastering game symbolic systems

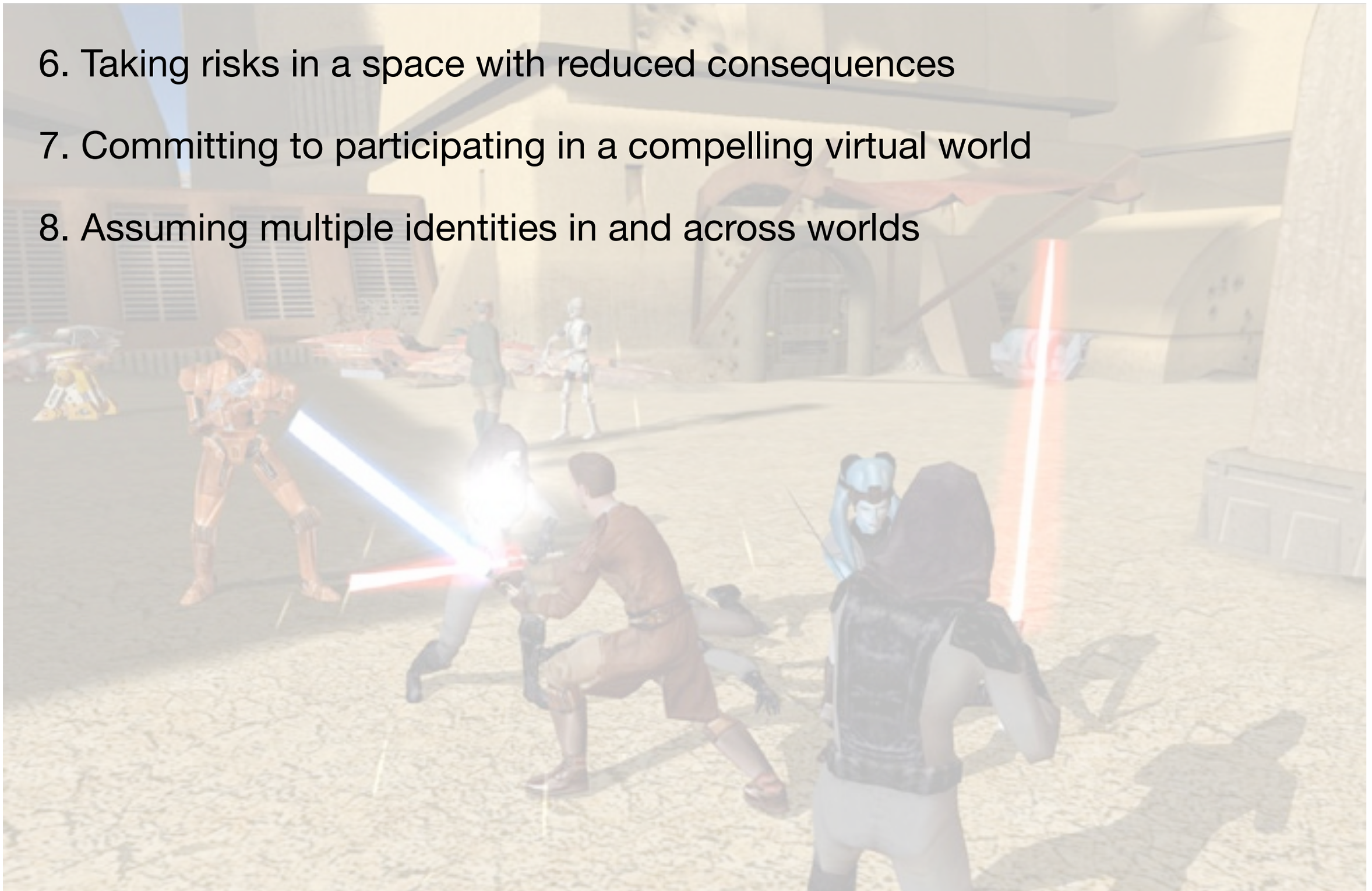
5. Relating the game world to other worlds

Worlds and Identities

6. Taking risks in a space with reduced consequences

7. Committing to participating in a compelling virtual world

8. Assuming multiple identities in and across worlds



Development of Capabilities

9. Observing the evolution of their own capabilities

10. Getting more out than they put in

11. Being rewarded for achievement at every level of expertise

12. Extensive practice in a rewarding context

13. Learning new skills at each level of expertise

14. Operating at the outer edge of their capabilities at each level of expertise

Experiential Learning

15. Interacting experimentally with the game world

16. Finding multiple approaches to a solution

17. Discovering meaning from experience

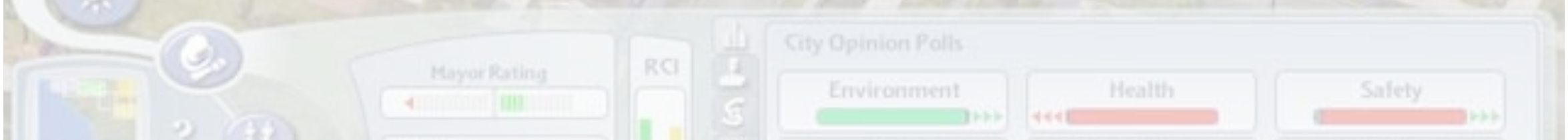
18. Understanding texts experientially and contextually

19. Understanding the interconnections among texts that define them as a family

20. Constructing meaning from the intersection of multiple media

21. Understanding how information and knowledge are stored in the game environment

22. Leveraging intuitive and tacit knowledge



Developing Skills

23. Practicing in simplified game subdomains

24. Tackling later problems via generalizations of earlier ones

25. Seeing early on concentrated samples of generalizable skill sets

26. Acquiring basic skills that apply to a range of games

27. Receiving information on-demand and just-in-time

28. Experimenting with only a minimum of explicit instruction

29. Transferring, modifying, and adapting earlier learning to later problems

Cultural Models

30. Reflecting safely about their cultural models and assumptions about the world

31. Reflecting safely about their cultural models and assumptions about their learning processes

32. Reflecting safely about their cultural models and assumptions about the workings of a symbolic domain

33. Searching for knowledge in all aspects of the game, in themselves, and in their interaction with the game

Community

34. Sharing their knowledge with other players

35. Forming a distinct community via shared interests in the gaming world

36. Teaching others and modifying the game experience

Effectiveness of Games in Education (Mayo 2009)

Table 1. Learning outcomes of several games compared to lecture on same material.

Game	Topic	Audience	N (study size)	Learning outcome over lecture	Reference
Dimenxian/ Evolver	Algebra	High school	193	7.2%	(*37–39*)
Geography Explorer	Geography	College	273	15 to 40%	(*40*)
NIU Torcs	Numerical methods	College	86	2× more time spent on homework, much more detailed concept maps	(*10–11*)
River City	Ecology/ biology	Middle/high school	≈2000	15 to 18%, on average	(*13*)
Supercharged!	Electrostatics	Middle school	90	+8%	(*41*)
Virtual Cell	Cell biology	College	238	40%, on average	(*40*)

Visualization and Simulation

No. 1.

16th Century | 17th Century | 18th Century | 19th Century

Elizabeth | James I. | Charles I. | Cromwell | Charles II. | James II. | William and Mary | Anne | George I. | George II. | George III. | Geo. IV.

CHART,

Shewing at One View

The Price of The Quarter of Wheat,

& Wages of Labour by the Week,

from

The Year 1565 to 1821,

by

WILLIAM PLAYFAIR.

Weekly Wages of a Good Mechanic

Weekly Wages of a Good Mechanic

1565 | 70 | 80 | 90 | 1600 | 10 | 20 | 30 | 40 | 1650 | 60 | 70 | 80 | 90 | 1700 | 10 | 20 | 30 | 40 | 1750 | 60 | 70 | 80 | 90 | 1800 | 5 | 10 | 15 | 20 | 25 | 30

5 Years each division.

5 Years each division.

Price of the Quarter of Wheat in Shillings.

100 Shillings. 95 90 85 80 75 70 65 60 55 50 Shillings. 45 40 35 30 25 20 15 10 5 Shillings.

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 zônes colorées à raison d'un millimètre pour dix mille hommes ; ils sont de plus écrits en travers des zônes. 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 MM. Thiers, 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 Mobilow et ont rejoint vers Orscha et Witebsk, avaient toujours marché avec l'armée.

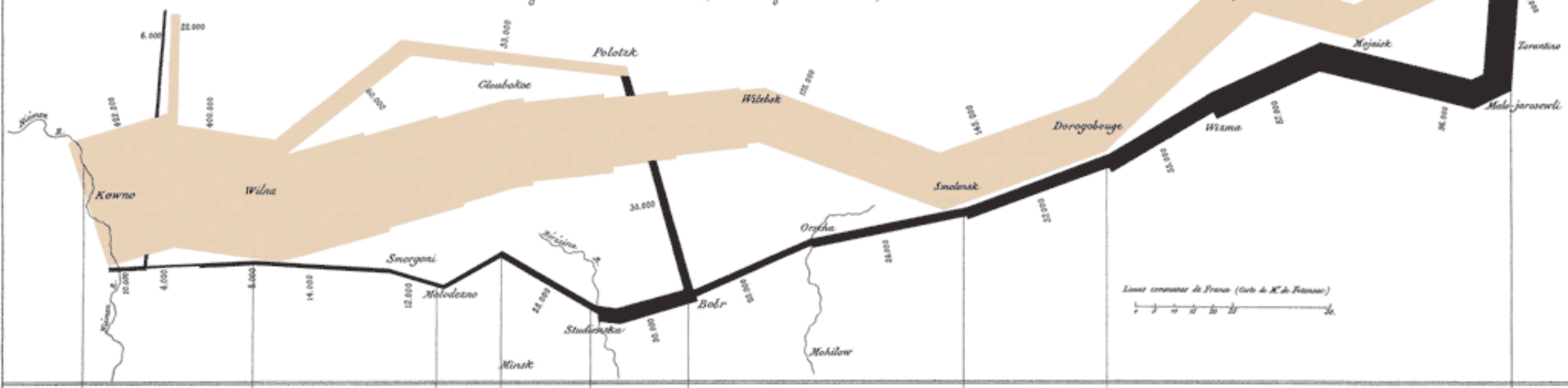
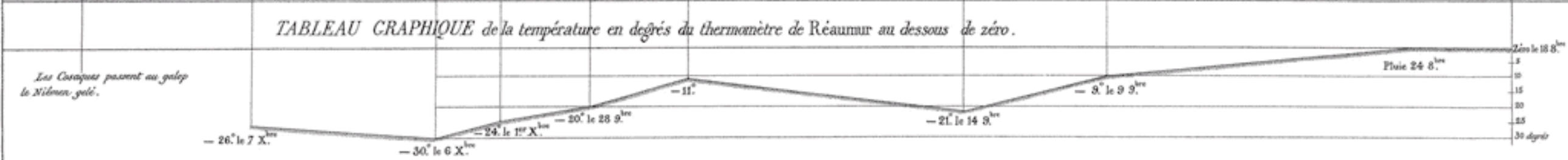


TABLEAU GRAPHIQUE de la température en degrés du thermomètre de Réaumur au dessous de zéro.

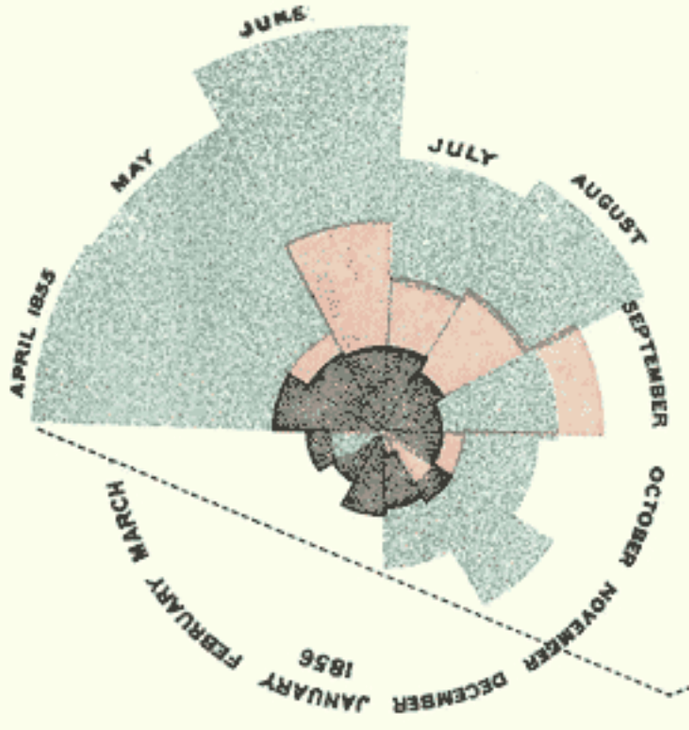


Autog. par Regnier, 8 Pas. St Marie St Gilles à Paris.

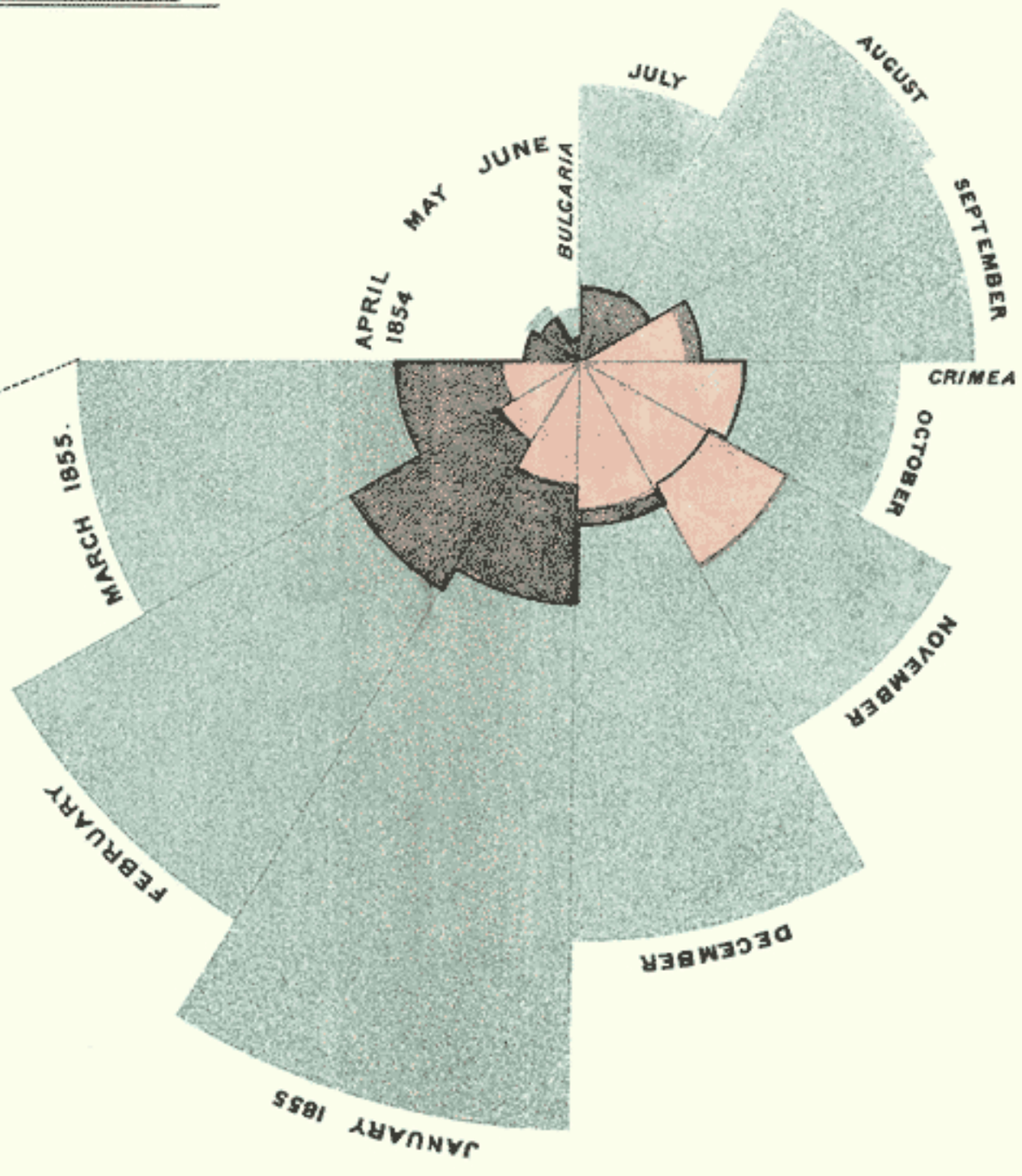
Imp. Lith. Regnier et Dourdet.

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.r 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.


Molodezno
Date: December 6
Troops: 12,000
Temperature: -35°F
Directions: To here - From here
Latvia
Kowno
Lithuan
Wil
Witebsk
Smolensk
Orscha
Molodezno
Bobr
Studienska
Minsk
Belarus
Mohilow
Moscou
Mojaisk
Chjat
Wixma
Tarantino
Malo-Jarosewli
Dorogobouge
© 2010 Geocentre Consulting
© 2010 Europa Technologies
© 2010 Tele Atlas
© 2010 Transnavicom Ltd
©2010 Google
lat 55.749494° lon 23.115429° elev 46 m
Eye alt 897.46 km

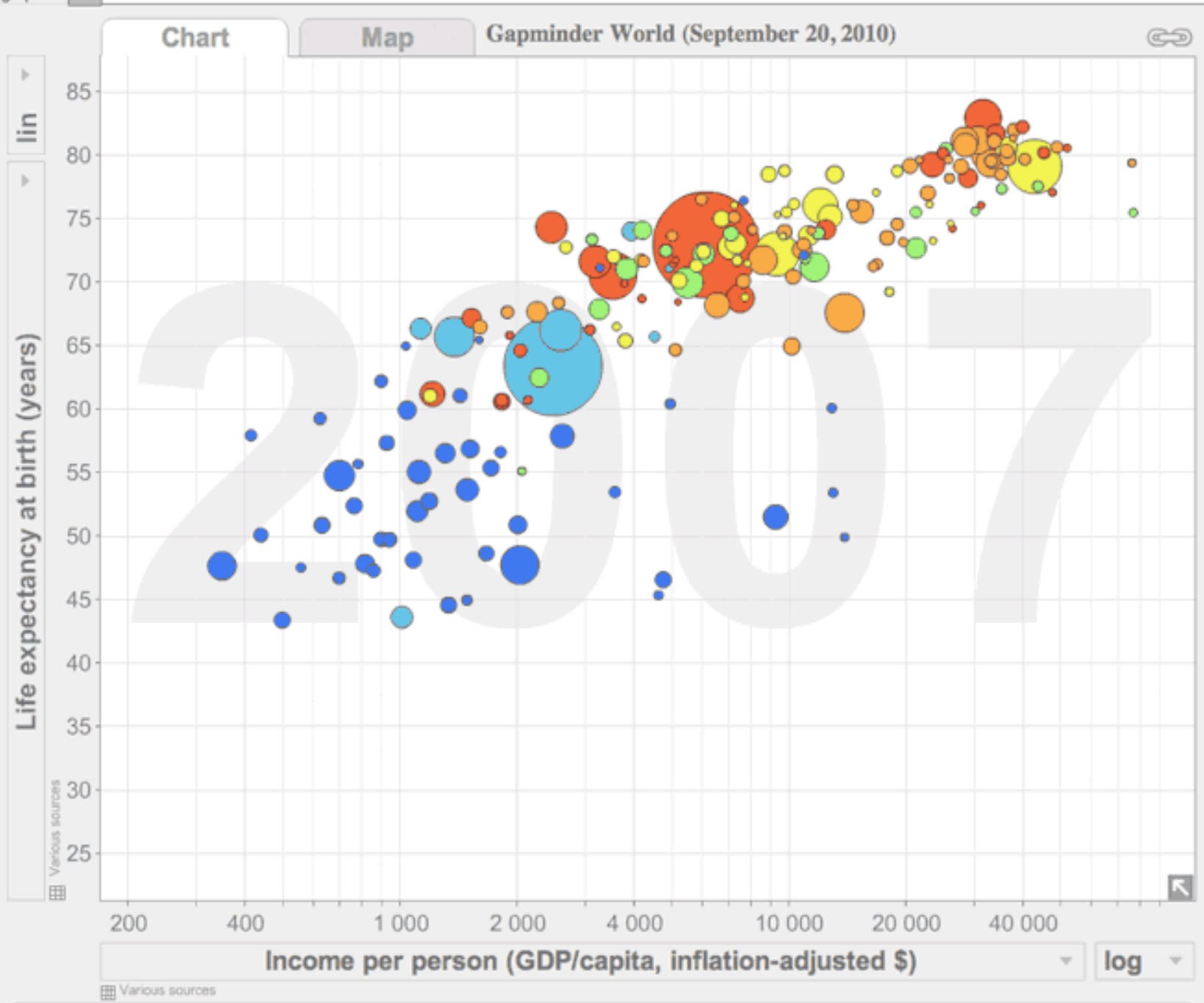

timerime
bubbl.us
Banquo
blood
fear
king
lord
Macbeth
make
time
Cawdor
death
heart
night
thane
WolframAlpha

Reset graph | Open list of graphs | Bookmark graph | How to use | Exit full screen

Basic Gapminder World graph*

Chart | Map

Gapminder World (September 20, 2010)



Color — Gapminder Geogra...

Geographic regions

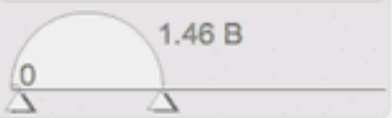
Select

- Afghanistan
- Albania
- Algeria
- Angola
- Argentina
- Armenia
- Aruba
- Australia
- Austria
- Azerbaijan
- Bahamas
- Bahrain
- Bangladesh

Deselect all

Size — Various sources

Population, total

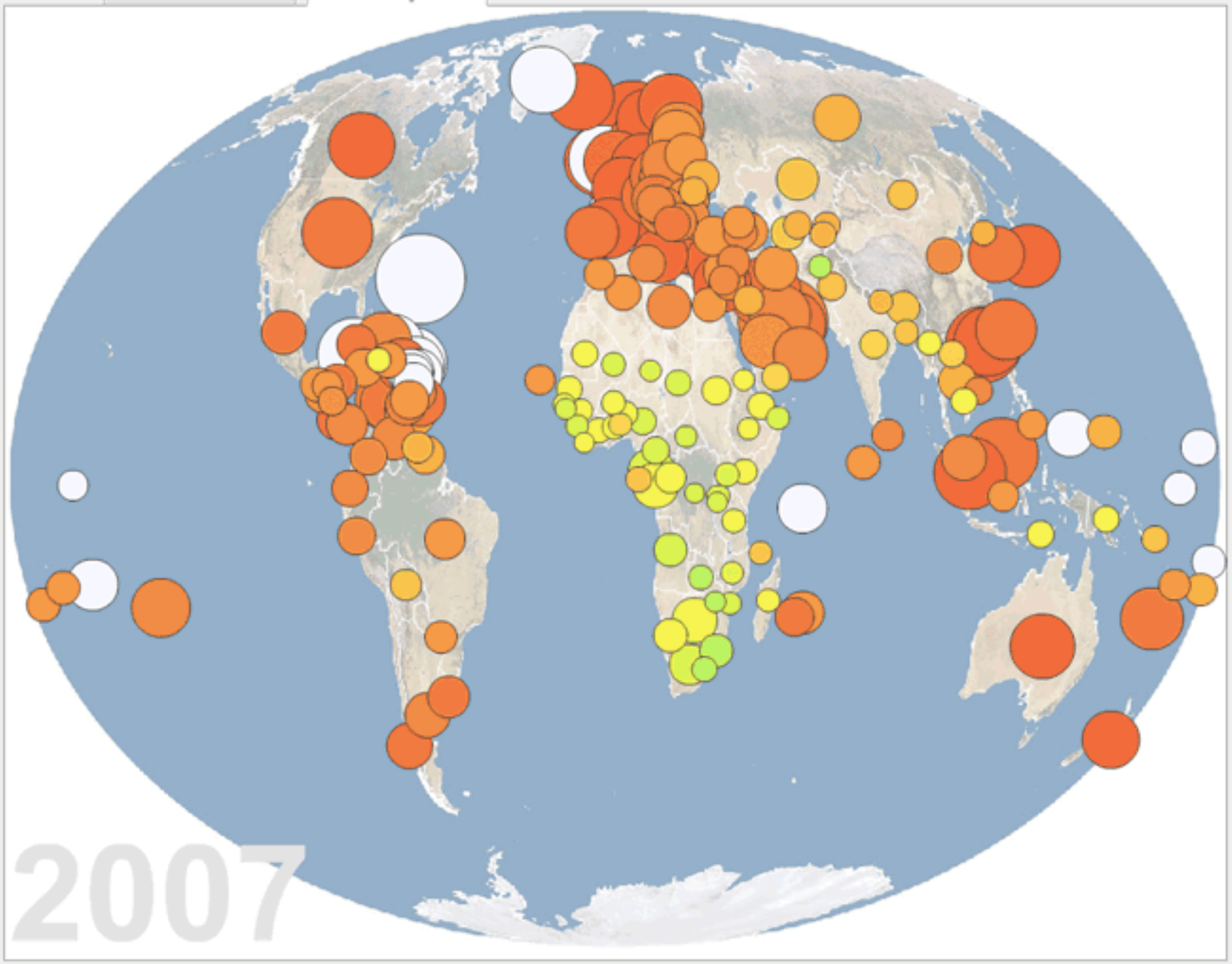


Reset graph | Open list of graphs | Bookmark graph | How to use | Exit full screen

[New example] +

Chart | Map

Gapminder World (September 20, 2010)



Play

1800 1820 1840 1860 1880 1900 1920 1940 1960 1980 2000

Trails

Color Various sources

Life expectancy at bir...

80
60
40
20

Select

- Afghanistan
- Albania
- Algeria
- American Samoa
- Andorra
- Angola
- Anguilla
- Antigua and Barbu...
- Argentina
- Armenia
- Aruba
- Australia
- Austria

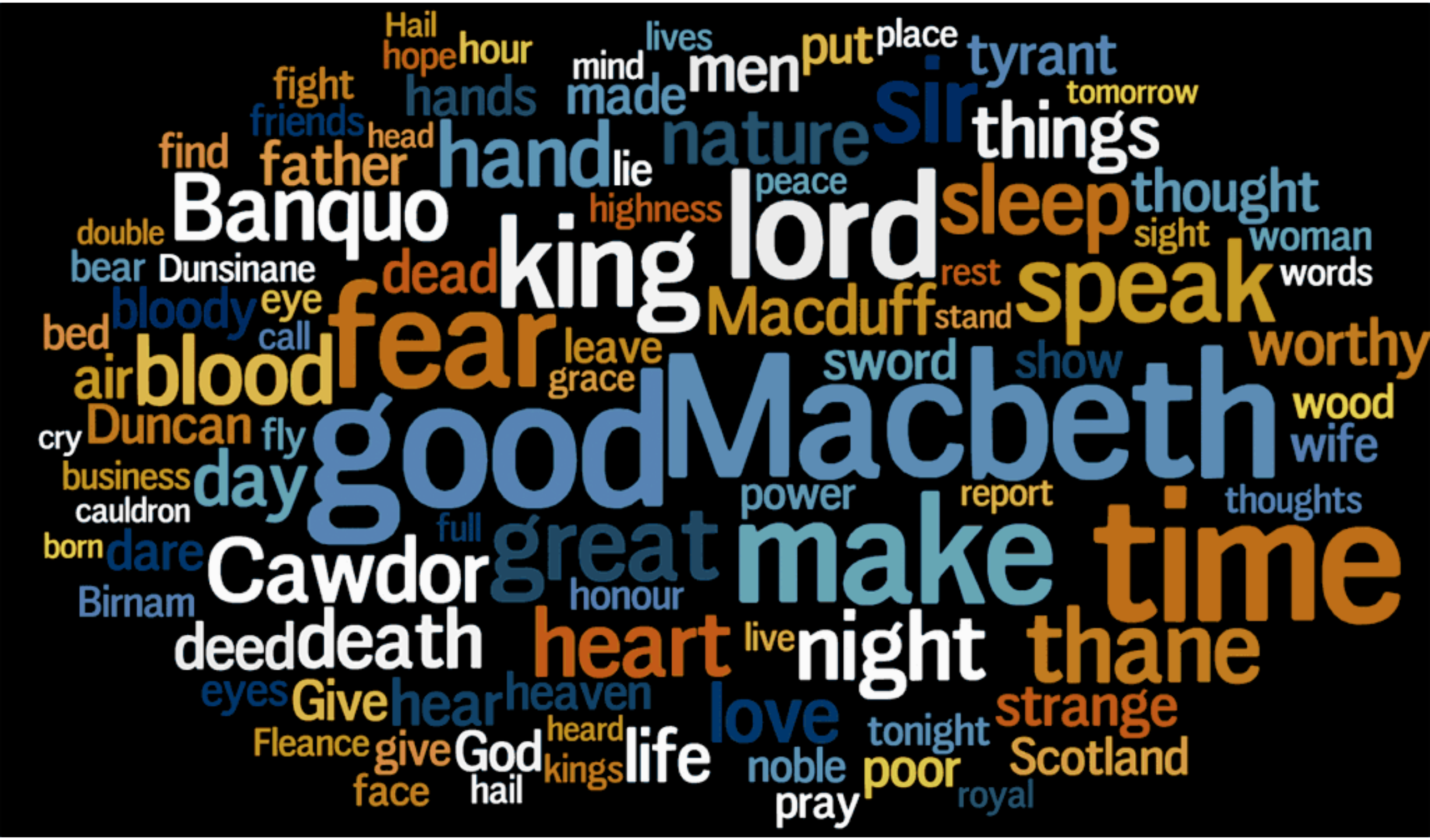
Deselect all

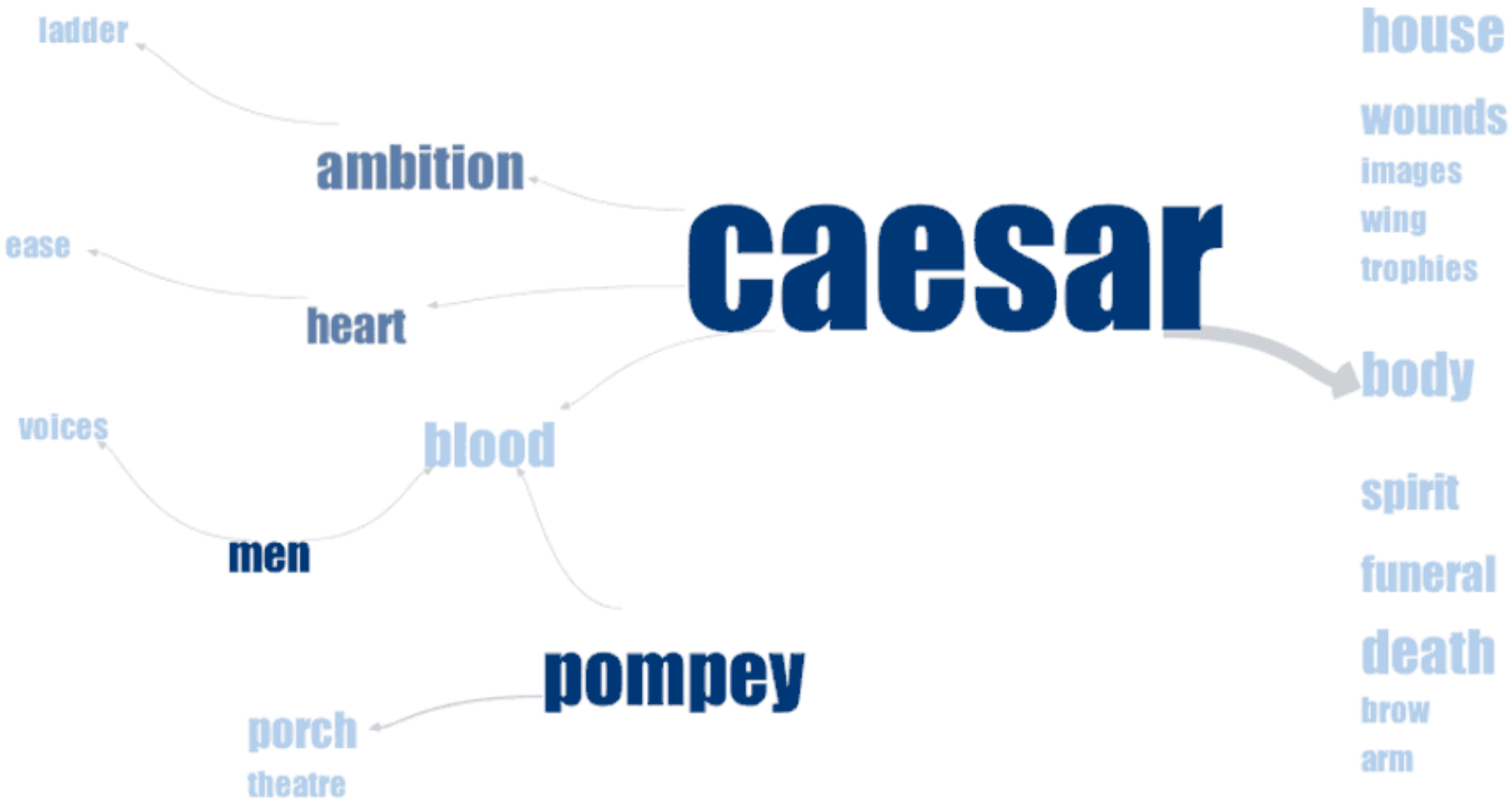
Size Various sources

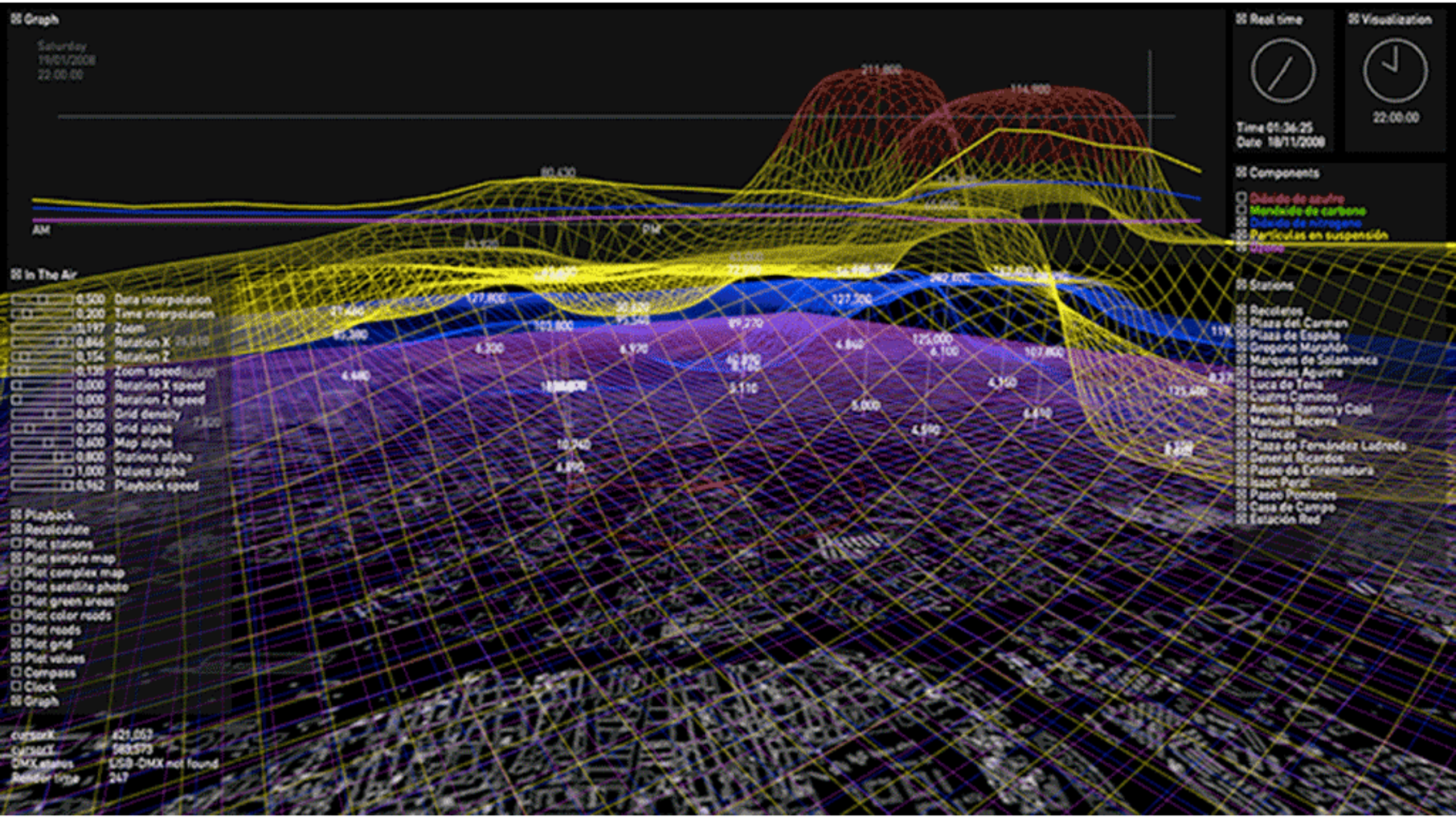
Income per person (...

119 849
282

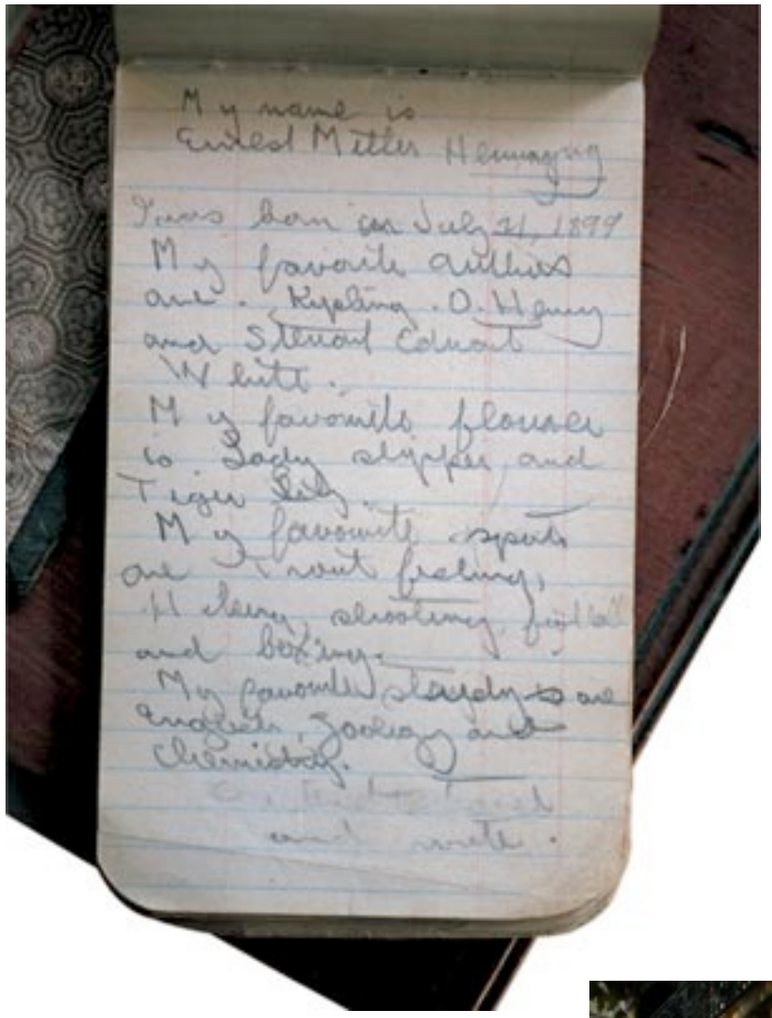
Terms of use

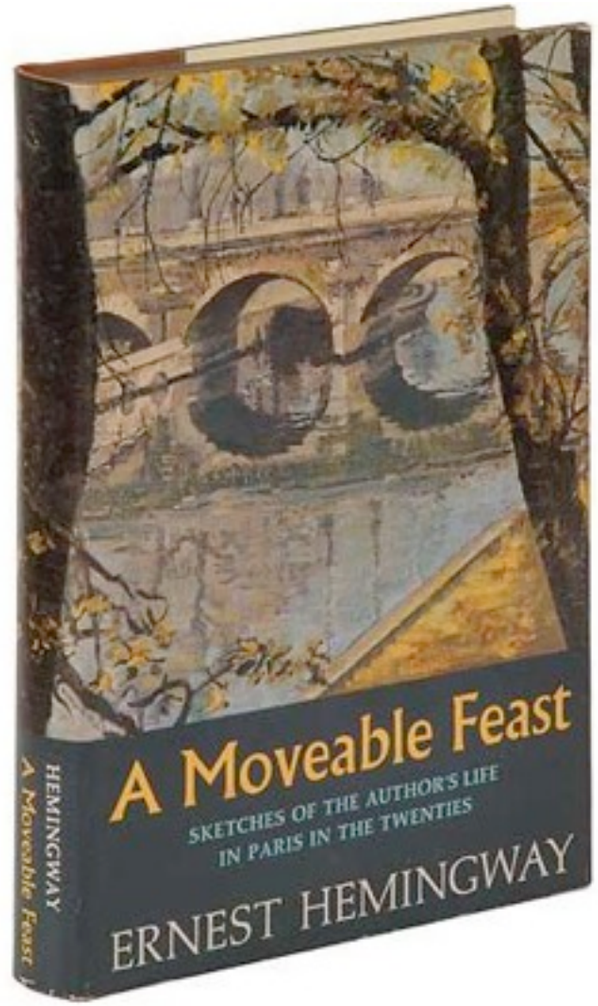

Hail
hope
hour
lives
mind
men
put
place
tyrant
fight
hands
made
sir
tomorrow
friends
head
nature
things
find
father
hand
lie
peace
Banquo
highness
lord
sleep
thought
double
sight
woman
bear
Dunsinane
dead
king
rest
speak
words
bloody
eye
Macduff
stand
bed
call
fear
worthy
air
blood
leave
grace
sword
show
Macbeth
wood
Duncan
fly
wife
cry
business
day
good
power
report
thoughts
cauldron
full
great
make
time
born
dare
Cawdor
honour
Birnam
deed
death
heart
live
night
thane
eyes
Give
hear
heaven
love
strange
heard
tonight
Fleance
give
God
kings
life
noble
poor
Scotland
face
hail
pray
royal




Graph
Saturday
19/01/2008
22:00:00
AM
PM
211.800
114.900
80.630
Real time
Time 01:36:25
Date 18/11/2008
Visualization
22:00:00
Components
Dióxido de azufre
Monóxido de carbono
Dióxido de nitrógeno
Partículas en suspensión
Ozono
Stations
Recoletos
Plaza del Carmen
Plaza de España
Gregorio Marañón
Marqués de Salamanca
Escuelas Aguirre
Luca de Tena
Cuatro Caminos
Avenida Ramón y Cajal
Manuel Becerra
Ydlecas
Plaza de Fernández Ladreda
General Ricardos
Paseo de Extremadura
Isaac Peral
Paseo Pontones
Casa de Campo
Estación Red
In The Air
0,500 Data interpolation
0,200 Time interpolation
0,197 Zoom
0,846 Rotation X
0,154 Rotation Z
0,135 Zoom speed
0,000 Rotation X speed
0,000 Rotation Z speed
0,635 Grid density
0,250 Grid alpha
0,600 Map alpha
0,800 Stations alpha
1,000 Values alpha
0,162 Playback speed
Playback
Recalculate
Plot stations
Plot simple map
Plot complex map
Plot satellite photo
Plot green areas
Plot color roads
Plot roads
Plot grid
Plot values
Compass
Clock
Graph
cursorX 421.063
cursorX 583.573
DMX status USB-DMX not found
Render time 247

Postscript: The Lively Sketchbook


My name is
Ernest Miller Hemingway
I was born on July 21, 1899
My favorite authors
are. Kipling. O. Henry
and Stewart Edward
White.
My favourite flowers
is Lady slipper and
Tiger lily.
My favourite sports
are trout fishing,
ski skeet shooting, football
and boxing.
My favourite studys are
english, Zoology and
Chemistry.
and write.



Carrier 8:03 AM

My RSS Feed

WEDNESDAY, JUNE 9, 2010

Media Fluency?: NITLE Sum...
In late March of this year I was privileged to speak...

Assessment in a Web 2.0 Envi...
I agree in principle that we who work in education ...

Gratitude and clarifications
First, my thanks to everyone who responded to my...

Changing lives
I keep running into the same wall from different di...

Another bootstrapping experi...
Today's the second day we'll meet. Already the acti...

A happy birthday
Today the father of interactive computing, the thin...

"In Our Time" podcast series o...
There's a new set of four episodes from BBC Radio...

Carrier 10:19 AM

Browser

Acadia

Acadia

Maine, USA

The scenery in Acadia is amazing this time of year!

- Ubiquity
- Intimacy
- Embeddedness


Writing Apps
Evernote
aNote
Quickoffice
MyWiki
Analysis Apps
WordPress
Instaviz
ProStats
SpaceTime
Image Apps
AutoStitch
PS Mobile
Flickr
SketchBook
SketchPad
PhotoForge
Strip Design
POW!


Audio Apps
Recorder
NLogFree
Free
MultiTrack
1.1
MusicStudio
Video Apps
Storyrobe
Slideshow
Storyboard
ReelDirector
Utility Apps
Broadcaster
USTREAM
Viewer
Pastebot
DRAGON
Dictation
Air Sharing
box
Box.net
Jaadu VNC


Current Location
Nov 25, 2010 06:14:54 PM
Uranus
Jupiter
Neptune
S
SW
Search
Info
Settings
Time
Scope
Help

Resources

Preface:
- Discovery of Neptune. In *Wikipedia*. Retrieved November 15, 2010, from http://en.wikipedia.org/wiki/Discovery_of_Neptune
- Alan Kay, “A Personal Computer for Children of All Ages”. *Proceedings of the ACM National Conference*. Boston (August 1972) Online at: http://www.mprove.de/diplom/gui/Kay72a.pdf
- Ruben R. Puentedura, *As We May Teach: Educational Technology, From Theory Into Practice*. (2009) Online at: http://tinyurl.com/aswemayteach

Social Computing:
- Note: all Social Computing websites are linked directly from the screenshot on their respective slides.

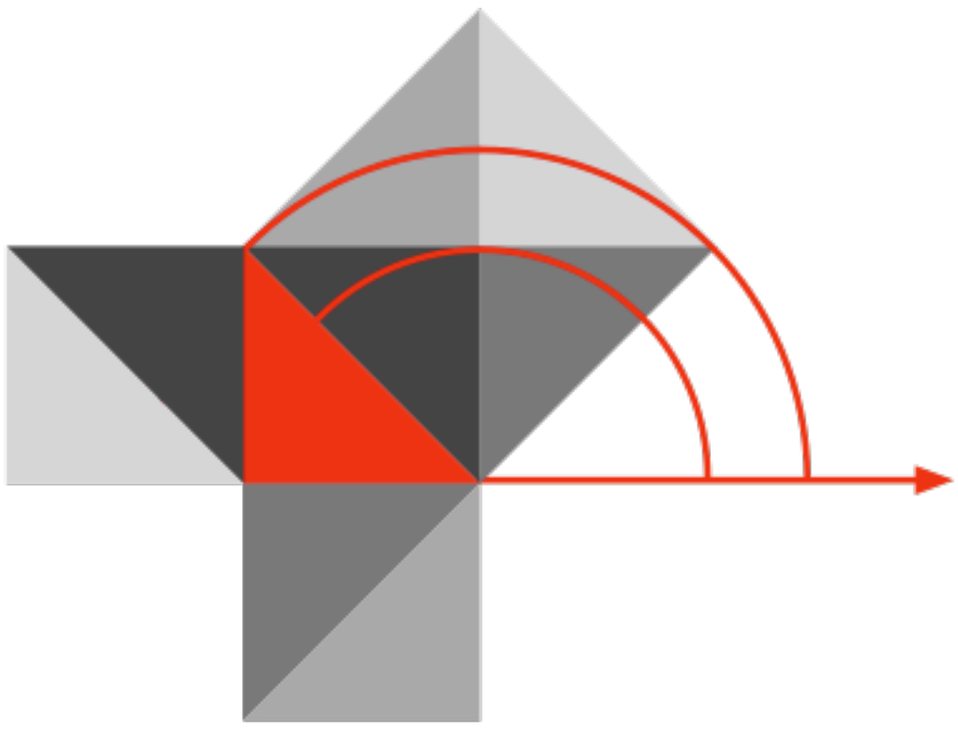
Digital Storytelling:
- David Whitehouse, “Ice Age Star Map Discovered”. (2000) Online at: http://news.bbc.co.uk/2/hi/science/nature/871930.stm
- Laurent Laveder, “Night Shinings”. (2008) Online at: http://antwrp.gsfc.nasa.gov/apod/ap080702.html
- Pilar Utrilla *et al.*, “A palaeolithic map from 13,660 calBP: engraved stone blocks from the Late Magdalenian in Abauntz Cave (Navarra, Spain)”. *Journal of Human Evolution* 57.2: 99-111. (2009)
- *Five-Card Nancy*: http://www.7415comics.com/nancy/
- Scott McCloud. *Understanding Comics*. New York: HarperCollins. (1993)

Educational Gaming:
- Salen, K. and E. Zimmerman. *Rules of Play: Game Design Fundamentals*. The MIT Press. (2003)
- *Young Chimps Play*, by Jonny White: http://www.flickr.com/photos/jonnyw/282283374/
- Koerper, H.C. and N.A. Whitney-Desautels. “Astragalus Bones: Artifacts or Ecofacts?” *Pacific Coast Archaeological Society Quarterly*, 35(2&3). (1999)
- Gee, J.P., *What Video Games Have to Teach Us About Learning and Literacy*. Palgrave Macmillan. (2003)
- Mayo, M.J. “Video Games: A Route to Large-Scale STEM Education?” *Science*, Vol. 323, No. 5910 (2 January 2009)
- Ruben R. Puentedura. *Game and Learn: An Introduction to Educational Gaming*. (2009) Online at: http://tinyurl.com/gameandlearn

Visualization and Simulation:
- César A. Hidalgo. Graphical Statistical Methods for the Representation of the Human Development Index and its Components. United Nations Development Programme Human Development Reports Research Paper. (September 2010) Online at: http://hdr.undp.org/en/reports/global/hdr2010/papers/HDRP_2010_39.pdf
- *Gapminder Desktop*. Online at: http://www.gapminder.org/
- *Many Eyes*. Online at: http://www-958.ibm.com/software/data/cognos/manyeyes/
- *In the Air*. Online at: http://www.intheair.es/

Postscript: The Lively Sketchbook:
- Ruben R. Puentedura. *The Lively Sketchbook*. (January 2010) Online at: http://www.hippasus.com/rrpweblog/archives/000043.html
- Ruben R. Puentedura. *A Mobile Platform for Creativity: The Lively Sketchbook*. (April 2010) Online at: http://www.nmc.org/connect/2010/april/16
- *SkySafari*. Online at: http://www.southernstars.com/products/skysafari/index.html

Hippasus



http://hippasus.com/rrpweblog/
rubenrp@hippasus.com