

Vocabulary building

- Quixotic
- Ubiquitous
- Perspicuous
- Reify
- Constitutive
- Ostensive
- Endogenous
- **Agonistic**
- **Hagiographic**
- Credulity
- Deictic
- Juxtapose
- Dialectic

Visualization and Cognition

Thinking with the Eyes and Hands
Bruno Latour

Cognitive Ethnography Hall of Fame

- **Bruno Latour**

- Ethnographies of
 - scientific labs
 - technological enterprises
 - French supreme court



Some background ideas

- Science creates new knowledge
- Knowing is a form of cognition
- Science is a form of cognition
- Science changed dramatically in a four-hundred year period 1600 - 2000
- This creates a great divide between the haves (have science) and the have nots.



What creates the great divide?

- Between
 - Pre-scientific/scientific
 - modern/primitive
 - us/them

Explanations for the great divide

- Economic forces
- Evolution of the human brains
- A lucky run of scientific geniuses
 - These explanations assume commensurability of cause and effect
- The production and circulation of inscriptions? **What!?**

One of Goodwin's conclusions

The ability to build and interpret a material cognitive artifact, such as an archaeological map, is embedded within a web of socially articulated discourse. Talk between co-workers, the lines they are drawing, measurement tools, and the ability to **see** relevant events in the dirt all mutually inform each other within a single coherent activity.

Goodwin's deflationary move

- Simultaneously, **the practices** clustered around the production, distribution, and interpretation of such representations **provide** the material and cognitive **infrastructure** that **make** archaeological **theory possible**.

Latour claims...

- A laboratory is a device for turning everything and anything into inscriptions.
- Scientists start seeing something when they stop looking at nature and look exclusively and obsessively at prints and flat inscriptions.

Need to keep two things in focus

1. Properties of inscriptions
 2. The role of inscriptions in **agonistic** encounters.
 - "...the way in which people argue with one another using paper, signs, prints, and diagrams."
 - It's contested vision!
- "We have to hold the two eyepieces together so that we turn it into a real binocular; it takes time to focus, but the spectacle, I hope, is worth the waiting." p5.

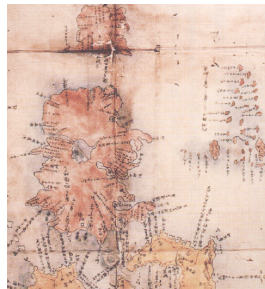
In 1785 the King of France sent La Pérouse on a voyage of exploration in the Pacific. One of the questions he was able to answer was: Is Sakhalin an Island or a Peninsula ?



What's at stake?

- Who controls this part of the world and its resources? England? France? Holland?
- An **agonistic** encounter. Contested Vision!
- How does a nation assert and defend its claims?
- How does a nation know what to claim?

"The most oldest (1644) existing map describing that part of the world. Big rectangle at center of the map is Hokkaido while Sakhalin is represented by a small rectangle on its north. Heap of tiny islands on east of



Hokkaido represents Kurils up to Kamchatka Peninsula. The forms are quite different from the reality but the geographic localities such as villages, caps and rivers appear in the correct order so this map should have been drawn from true

explorations of the region."

<http://www.karafuto.com/>

During two trips to Sakhalin, 1806, Mamiya Rinzo made a precise map by using scientific instruments. The form of the

island appeared for the first time correctly drawn excepting the north eastern coast where he has never been. The information inside the island such as mountains and the form of rivers has been got from the information coming from aborigines.



<http://www.karafuto.com/>

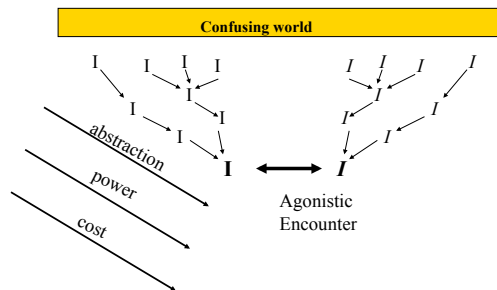
Properties of the Maps that make them useful in this context

- Mobile - gathered in one place, delivered to people in other places
- Immutable - not corrupted by the journey
- Presentable - others can see (sense) them
- Readable - can make meaning
- Combinable - relations of depicted objects can be controlled

The agonistic encounter

- "...the way in which someone convinces someone else to take up a statement, pass it along, to make it more of a fact."
- "...force dissenters into believing new facts and behaving in new ways."

Cascades of Inscriptions



The importance of perspective (optical consistency) in art

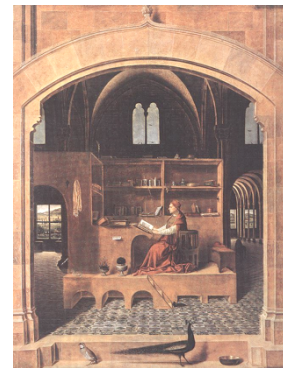
- Combining depiction of the world with geometry
- Linear perspective preserves invariances
- Allow translation without corruption

Byzantine Icon Painting *St. John the Evangelist*

11th Century



Antonello de Messina: *St. Jerome in his Study* (c. 1460)



<http://www.kfki.hu/~arthp/html/a/antonell/stjerome.html>



Canaletto- Square of St. Marks, Venice -- "Canaletto transformed his realistic and historically accurate paintings of Venice into a commercial business that tourists from all over Europe came to see."

<http://www.ilstu.edu/~jjochil/italy.htm>

Dürer: *Adoration of the Magi* (1504)

Fiction drawn as nature

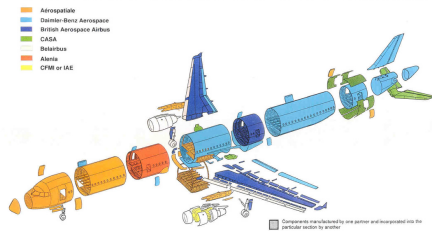
"Religious... themes drawn with the same perspective as that used for rendering nature."



<http://www.abcgallery.com/D/durer/durer34.html>

Nature drawn as fiction

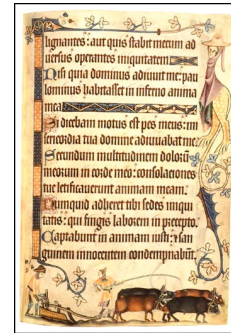
A321 production sharing



Geoffrey Luttrell

Psalter (c. 1325)

Combining graphics and text



<http://www.spartacus.schoolnet.co.uk/MEDmanupainting.htm>

A typical medieval figure in an early **printed** book.

"This is 'Fate' from *Ship of Fools* from the 16th century. It is a cartoon, meant to show how people's lives go up and down. Note that it shows life and fortune as a circle. In the modern world, we would more likely plot the vagaries of existence on a graph."



<http://communication.ucsd.edu/bjones/Books/printech.html>

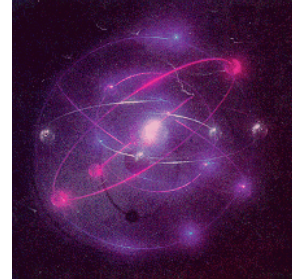
- Why do the first books contain medieval figures, and not more realistic pictures?
- "The displacement of many immutable mobiles comes first; the old texts are spread everywhere and can be gathered more cheaply in one place. But then the contradictions among them become visible in the most literal sense." (Latour, 1984:12)

- "A new interest in "Truth" does not come from a new vision, but from the same old vision applying itself to new visible objects that mobilize space and time differently."
- "The printing press does not add anything to the mind, to the scientific method, to the brain. It simply conserves and spreads everything no matter how wrong, strange or wild."

- *Anything* that will accelerate the mobility of the traces that a location may obtain about another place, or *anything* that will allow these traces to move without transformation from one place to another, will be favored.

- The main difference between us and the savages (Fabian argues) is not in the culture, in the mind, or in the brain, but in the way we visualize them. An asymmetry is created because we create a space and a time in which we place the other cultures but they do not do the same.

Bohr's Model of the Atom



http://www.cnde.instate.edu/nccc/PT_CC/Sec4.1.4.1.html

Copernican Solar System

Copernicus and Tycho Brahe did not see the sky differently, they saw a different and more complete set of inscriptions describing the motions of the planets. Brahe was the first "to look simultaneously at all the former predictions and his own, written down together in the same form."

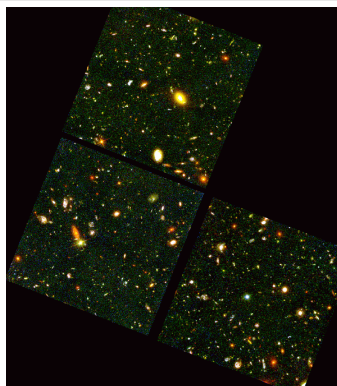


http://es.rice.edu/ES/humsoc/Galileo/Things/copernican_system.html

M31, The Andromeda Galaxy

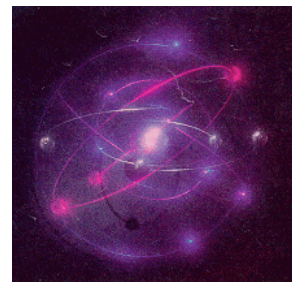


Hubble telescope deep field



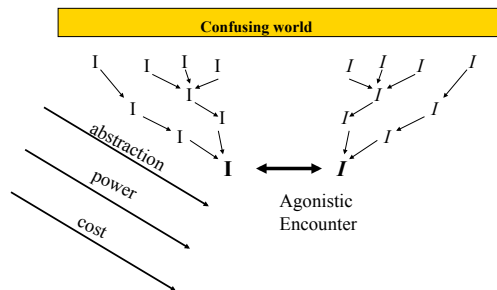
<http://www.ifa.hawaii.edu/~cowie/ts/ts.html>

Bohr's Model of the Atom

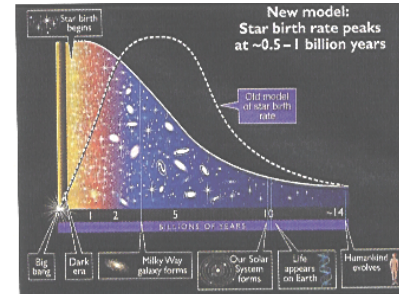


http://www.cnde.instate.edu/nccc/PT_CC/Sec4.1.4.1.html

Cascades of Inscriptions



An inscription from late in the cascade



Aviation Week and Space Technology, Jan 21, 2002 pg 56

- Scientists start “seeing” something once they stop looking at nature and look exclusively and obsessively at prints and flat inscriptions.
- Defining the act of seeing inscriptions. Professional vision

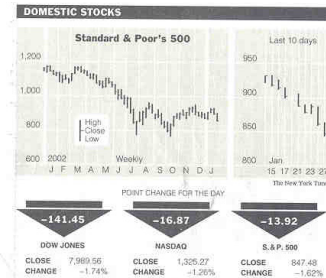
Properties of inscriptions

- Mobile
- immutable
- flat
- scalable
- reproducible
- combinable
- superimposable
- merge with written text
- merge with geometry

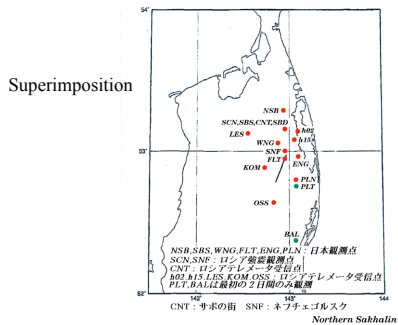
Reading the Business Page



Stock performance graph

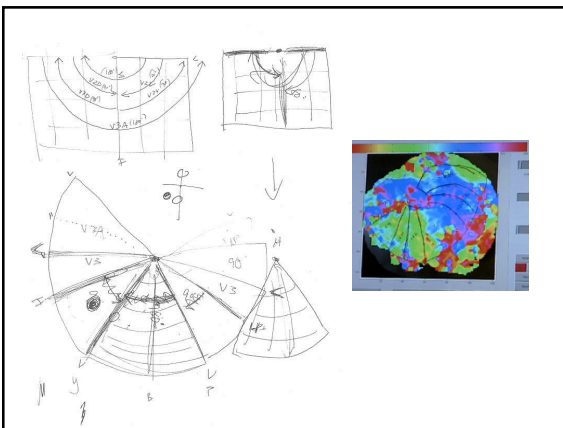
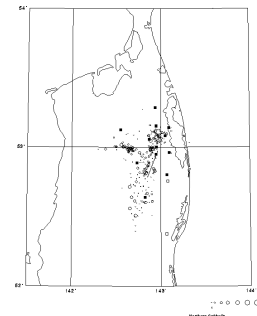


Sakhalin Seismic Stations



Sakhalin aftershock epicenters

Combining inscriptions



- “An average mind or an average man, with the same perceptual abilities, within normal social conditions, will generate totally different output depending on whether his or her average skills apply to the confusing world or to inscriptions.” (Latour, p.22)

The power of bureaucracy

- “a man whose eye dominates records through which some sort of connections are established with millions of others may be said to dominate.”

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Does Latour's hypothesis work?

