Information work

Wednesday
Oct 10
2007
4-5:30

Paul Duguid
203a South Hall
510 643 3894
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ORIGIN Old English Wöndesdæg, named after the Germanic god Ódin; translation of late Latin Mercurii dies; compare with Dutch woensdag.
information economy

Solow Paradox

"We see computers everywhere but in the productivity statistics"
c. 1988
Solow solved?

determinism with lag time?

"techno-economic regimes formed around general purpose engines"

"regime transition"

"diffusion lags"
alternatively

towards an information society
a long-term, sedimentary process

process of abstraction
time, time keeping

money, balancing
time is money

the spirit of capitalism?

Remember that TIME is Money. He that can earn Ten Shillings a Day by his Labour, and goes abroad, or sits idle one half of that Day, tho' he spends but Sixpence during his Diversion or Idleness, ought not to reckon That the only Expence; he has really spent or rather thrown away Five Shillings besides.

Benjamin Franklin, Advice to A Young Tradesman Written by An Old One. 1748
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Benjamin Franklin, *Advice to A Young Tradesman Written by An Old One.* 1748
1309: An indulgence to pardon a year's worth of sin costs one penny. Clement V.
the long then

C 3100 BCE
dividing the year

Julius Caesar (100 - 44 bce)
Julian Calendar

troublesome equinox

46 bce: 445 days

45 bce: 365-1/4

Augustus (63 bce - 14 ce)

8 bce: a further course correction
"The 1118th year AD, the 21st year of Pope Alexander III, the 27th regnal year of King Henry II of the English, the 11th regnal year of King Henry the son of the king, the 18th year that time has passed since the translation of Bishop Gilbert Foliot from Hereford to London, when this inquest was made by Ralf de Diceto, dean of London, in the first year of his deanship."

**AD:** Dionysius Exiguus (c470-c544)
Venerable Bede (c672-c735)
*Historia Ecclesiastica Gentis Anglorum, 731*
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**AD:** Dionysius Exiguus (c470-c544)  
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beginning again

New Year
January 1 or March 25 (ab incarnatione)?

the struggle for Easter

1582: Gregory XIII
recalibrating: leap years & centurial years

cutting time:
Thursday October 4 to Friday October 15
beginning again

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recalibrating: leap years & centurial years

Ah, got some light:
if I change

Calendar cal = GregorianCalendar.getInstance();

to

Calendar cal = new GregorianCalendar(
    TimeZone.getTimeZone("CEST"), new Locale("DE"));

I get better results:

Gregorian Calendar
Orthodox & Protestants unchanged
Feb 1/12; Feb 1 [OS] 1694/5

1752: Anglo-American course correction
"give us back our eleven days"

revolution
year 1 again [1792]
Vendémiaire, Brumaire, Frimaire, Nivôse, Pluviôse, Ventose, Germinal, Floréal, Prairial, Messidor, Thermidor, Fructidor
dividing the day

the holy hours
"seven times a day I praise Thee"
Psalms 119: 64

matins, prime, tierce, sext
none, vespers, compline
dividing the day

accordion hours
"are there not twelve hours in the day?"
John 6.6.

equal hours
1330 (Germany)
1370 (England)
14

and the technology

- **3500 BCE**: sundials
- **700 CE**: hourglasses
- **1086**: Su Sung's water clock
- **1300**: mechanical clocks
- **1580...**: Chinese trading with West; looking for ways to fix calendar
- **1656**: Huygens pendulum clock
- **1761**: Harrison's nautical clock
- **c1850**: telegraph time
- **1852**: Greenwich mean time
- **1884**: Meridian Conference, Washington DC
absolute time

"Absolute, true, and mathematical time, of itself, and from its own nature, flows equably without relation to anything external."

Isaac Newton, *Principia Mathematica*, 1687

mundane time

"looking upon her Watch, I accidentally discovered the Figure of a Coronet on the back Part of it?"

--Addison, *Spectator* 8, March 1711

by 1800, "recorded time (one suspects) belonged in the mid-[18th] century still to the gentry, the masters, the farmers, and the tradesmen"  

Thompson
time control

bell tolling
1335, Amiens start of work, lunch, end of the day controlled by bell rung by the city --decree of Phillip VI

1664 "that as many as might live within the sound might be thereby induced to a timely going to rest in the evening, and early arising in the morning to the labours and duties of their several callings"
"England's was the first industrial revolution, and there were not Cadillacs, steel mills, or television sets to serve as demonstrations as to the object of the operation"  

Thompson

**fields to factories**

**task orienting to time orienting**

"the industrial revolution demanded a greater synchronization of labour"

"a vigorous and licensed popular culture had evolved, which the propagandists of discipline regarded with dismay"

Wedgwood ... 'the first recorded system of clocking-in"

schools "a spectacle or order and regularity"

"fight, not against time, but about it"
The Guide, the Wardens of our faculties
And Stewards of our labour, watchful men
And skilful in the usury of time,
Sages, who in their prescience would controul
All accidents, and to the very road
Which they have fashion'd would confine us down
Like engines.
accounting for time

work and leisure

How longe tyme wol ye rekene and caste
Youre somme, and your bookes, and your thynges?
The devel have part on all swich rekenynge

Geoffrey Chaucer, The Shipman's Tale

"January 1st [1668]. Up, and all morning in my chamber making up some accounts against this beginning of the new year."

Pepys

"What can there great and noble be expected from him whose attention is ever fixed upon balancing his books, and watching over his expenses?"

Joseph Addison, Spectator
determinism again?

[is it true that]
"Scientific bookkeeping was causal, or at least a predisposing factor in the emergence and development of capitalism"
Basil Yamey, 1949

Max Weber (1864-1920)
"a rationalistic capitalistic establishment ... one with capital accounting, that is, an establishment which determines its income yielding power by calculation according to the methods of modern bookkeeping and the striking of a balance"

Werner Sombart (1863-1941)
"abstraction of profit [leads to] economic calculation ... systemic organization ... depersonalization."
from accounts to accounting

Sumerian tablets

Roman *membrana, tabulari*

monastic cartularies

pipe rolls

merchant accounts, double entry

the bottom line

about 15,900,000 for "bottom line"
the Italian method

1211: proto double entry, Florence

1340: double entry in Genoa

1366: The Merchant of Prato (Francesco di Marco Datini)

"Arabic" numerals

1494: Luca Pacioli, *Summa de Arithmetica*
"On this day, we have (or I have) bought from Filippo de Ruffoni of Brescia, twenty pieces of white Bresciani cloth. They are stored in Stefano Tagliapietra's vault and are of so many arm lengths apiece, as agreed upon. They cost twelve ducats each and are marked with a certain number. Mention if the cloth is made of triple warpcord, four to five arm lengths square, wide or narrow, fine or medium, whether Bergamene, Vicenzan, Veronese, Paudan, Florentine, or Manuan. State whether the transaction was made entirely for cash, or
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abstraction
"after the form of Venice"

"the three principall bookes"

memorial
journal
ledger
19
October 9th, bought two pipes of wine @ £30 each from Joseph Smith, paid £20 cash with balance to be paid January 1.

27
October 30, sent two pipes of wine to England for sale there; cost £10.

30
November 1, sold two pipes of wine to B&H @ £50 ea.
"This Journal ought to bee signed and marked with the same marks or letter as the memorial. And also the leaves numbered."
October 9

19. **Wine** owes cash £20 for deposit on two pipes of wine bought of **Joseph Smith**


October 30th, wine owes transport £10 for carriage of two pipes of wine to England.

November 20, B&H owes wine £100 for two pipes of wine sold them.
"every one parcell that is sette in your Journall ought to bee made two parcels in your ledger."

## Wine Account

<table>
<thead>
<tr>
<th></th>
<th>To</th>
<th>20</th>
<th>19</th>
<th>From B&amp;H</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>to cash</td>
<td>20</td>
<td>19</td>
<td>from B&amp;H</td>
<td>100</td>
</tr>
<tr>
<td>11</td>
<td>to Joseph Smith</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>to transport</td>
<td>10</td>
<td></td>
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</tr>
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<td></td>
<td></td>
<td>70</td>
<td></td>
<td></td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>To profit &amp; loss</td>
<td>30</td>
<td></td>
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wine account

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<td>40</td>
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<td></td>
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</table>
## Double Entry

### Joseph Smith

<table>
<thead>
<tr>
<th></th>
<th>19</th>
<th>for 2 pipes of wine</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>39 from cash</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>from wine</td>
<td>60</td>
<td></td>
<td>60</td>
</tr>
</tbody>
</table>
accounting for

interlinked accounts
a debit in one set is a credit in another
linking money and merchandize

proto hypertext?

balancing the books
"In the past seven centuries bookkeeping has done more to shape the perceptions of more bright minds than any single innovation in philosophy or science. While a few people pondered the words of René Descartes and Immanuel Kant, millions of others of yeasty and industrious inclination wrote entries in neat books and then rationalized the world to fit their books."

Alfred Crosby, *The Measure of Reality*
information workers

telling times and counting coins
rise of numeracy

bottom up?

Graunt: shopkeeper's arithmetic

Pepys

"Up by five o'clock... Comes Mr. Cooper, mate of the Royal Charles, of whom I intend to learn mathematiques... Up by four o'clock and at my multiplication-table hard"

July 4 & 9, 1662

Hofl07_InfoWork- 33
balancing nations

Treaty of Utrecht, 1713
War of the Spanish Succession

the commercial treaty
free trade with France

the balance of trade
mercantilism and national interest
science, statistics & the public sphere

rousing the wool interest

Mercator vs British Merchant
science, statistics & the public sphere

rousing the wool interest

Mercator

vs

British Merchant
science, statistics & the public sphere

rousing the wool interest

Mercator
vs
British Merchant
Charles Davenant
*An Essay upon the Probable Methods of Making a People Gainers in the Ballance of Trade* 1699

vs

Paul Methuen
**1990 - 1996**

<table>
<thead>
<tr>
<th>Period</th>
<th>Mexico Exports to U.S.</th>
<th>Mexico Imports from U.S.</th>
<th>Mexico Trade Surplus U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>$18,456.180</td>
<td>$20,521.430</td>
<td>-$2,064</td>
</tr>
<tr>
<td>1991</td>
<td>$33,952.548</td>
<td>$36,867.648</td>
<td>-$2,915</td>
</tr>
<tr>
<td>1992</td>
<td>$37,468.032</td>
<td>$44,278.592</td>
<td>-$6,810</td>
</tr>
<tr>
<td>1993</td>
<td>$43,116.192</td>
<td>$46,539.800</td>
<td>-$3,428</td>
</tr>
<tr>
<td>1994</td>
<td>$51,943.048</td>
<td>$57,008.632</td>
<td>-$5,065</td>
</tr>
<tr>
<td>1995</td>
<td>$66,472.408</td>
<td>$53,994.560</td>
<td>$12,478</td>
</tr>
<tr>
<td>1996</td>
<td>$31,762.440</td>
<td>$26,318.440</td>
<td>$5,444</td>
</tr>
</tbody>
</table>

Note: Data for 1996 is for January-June. All Trade Data is FOB

Source: INEGI, Banco de Datos, 1996
"apprehension of the wrong balance of trade, appears of such a nature, that it discovers itself wherever one is out of humour with the ministry, or is in low spirits."

David Hume,
"Of the Balance of Trade," 1752
in sum

time is money

technological developments

social agreements

standards and interdependencies