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A data journey: data obscurity to data enlightenment

How far have we (really) come in 18,000 years?



19 – 20 MARCH 2025

Overview

- Swift data journey through time
- Identifying persistent & new challenges in our data journeys
- Highlights from the University of Luxembourg

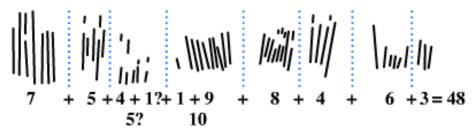
EU

OPEN



18,000+ years ago: sticks and bones

- Ishango bone, Congo
- Museum of Natural Sciences, Belgium
- Mathematical counting tool
- Lasting format (bone)
- Early humans logging numerical data for later use



DAYS

A data journey...



Photo JhowieNitnek (CC BY license) https://en.wikipedia.org/wiki/Ishango_bone#/media/File:Ishango_bone_(cropped).jpg

17,000+ years ago: Record-keeping for survival

- Lascaux cave paintings, France
- Counting, Record-keeping
- Open format?
- Enormous spaces
- Quantify & record the world through repetitive symbols or marks for survival & improve life





Photo JhowieNitnek (CC BY license)

5,000+ years ago: Construction & payments

- Ancient Sumerians
- Format long-lasting stone
 - Large & heavy
- Record-keeping of harvests & complex calculations
- Taxes, payments, construction

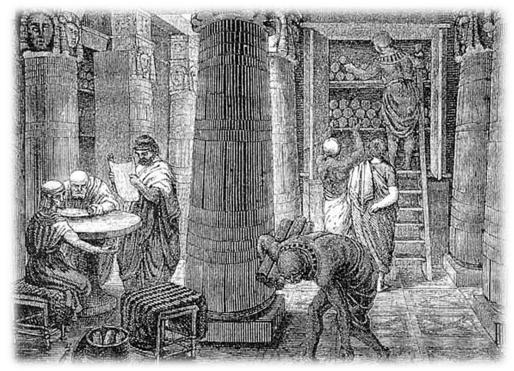




Babylonian mathematical tablet Plimpton 322. Credit: Christine Proust and Columbia University

2,000+ years ago: Organising knowledge

- First "Ancient world" libraries
- Format fragile scrolls
- Ancient libraries curated and organised knowledge in collections
- Many threats!



https://www.crystalinks.com/libraryofalexandria.html



1450s onwards: Population statistics

- Example from Sweden
- Fragile notebooks
- Churches
- Population registers, land ownership & sensitive data

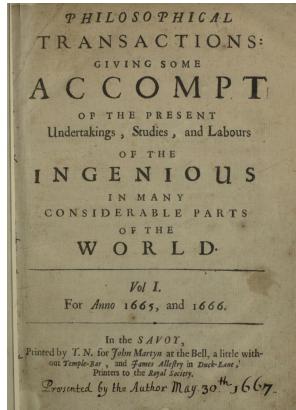
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1600s: Shared for the "Greater good"

- Royal Society, England 1665
- Philosophical Transactions journal
- Belief in the greater good & misunderstanding of harm
- The rise of journals and (unethical) clinical trials in the 1600s



https://royalsociety.org/journals/publishingactivities/publishing350/history-philosophical-transactions/



1890s: Processing of large datasets

- Herman Hollerith, US Census
- Tabulating Machine with punchcards for data input
- Reduced processing time from 7.5 to 2.5 years

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1920s Data storage magnetic tape

- Germany
- Magnetic tape by Fritz Pfleumer
- Audio, video, data backup



Magnetic tape by Fritz Pfleumer



https://artsandculture.google.com/asset/photograph-of-the-inventor-of-the-tape-recorder-fritzpfleumer-with-his-tape-recording-machine-fritz-pfleumer-1881-1945/pgEfPB1RHOP1TA?hl=en

1960s: Early "cloud" storage

- Dr Joseph Carl Robnett Licklider ("Lick"), American psychologist and computer scientist
- A network of computers that could communicate with each other & share resources





SAGE system terminal https://en.m.wikipedia.org/wiki/File:SAGE console.jpeg

Modern times

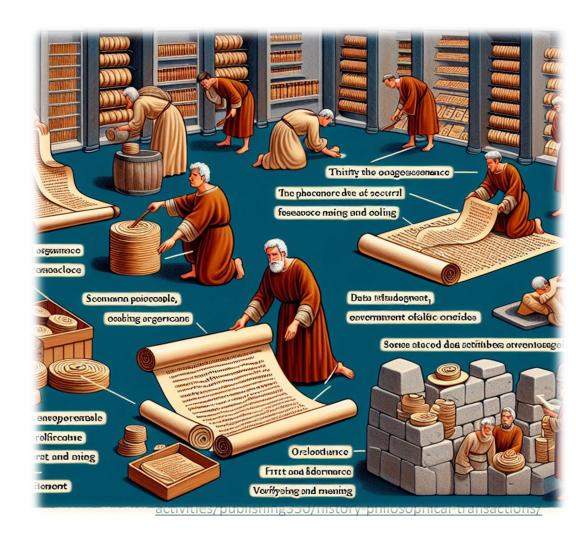
- 1960s/70s data warehousing & sharing data movement begins
- The Internet & 'Big Data' 1990s emerging software and systems for analysis
- Google search sort through huge datasets – the new era of 'data analysis' ('informed decision-making')
- **'Open data'** as a distinct term first appeared in 1995 – US agency's report about geophysical and environmental data disclosure
- Today: repositories, cloud computing, metadata, ...



EU OPEN DATA DAYS A data journey...

Shared concerns throughout time

- Format/tools go out of date
- Requires skilled specialists
- Ownership & governance
- Storage & archiving
- Threats: Loss, damage, misplacement, destruction
- FAIR principles
- Quality, trust & meaning (the original aims)



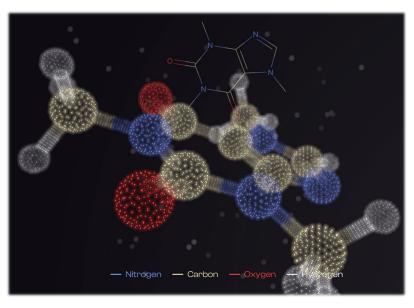


University of Luxembourg

- Modern "learning centre" (LLC)
- Open science working group
- 'Lunchclub' Community of Practice
- ORBilu Open repository & bibliography <u>https://orbilu.uni.lu/</u>
- LLC Helpline/support: researchers & students







- PhD inductions & workshops
- Information literacy training
- Love My Data week: March
- Open Access week: October
- Collaboration (UNESCO, Greater Region, Luxembourg)
- Benchmarking







Thank you!



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