

# Historic machines from 'prams' to 'Parliament': new avenues for collaborative linguistic research

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Thanks to the wider Living with Machines team

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# The *Living with Machines* project

How did the wider introduction of machines change ordinary lives in 19th century Britain?

*LwM* looks at mechanisation from 1780 - 1920 via digitised newspapers, books, maps and other historical sources.

It's a collaboration between curators, data scientists, linguists, historians and other specialists - and the public

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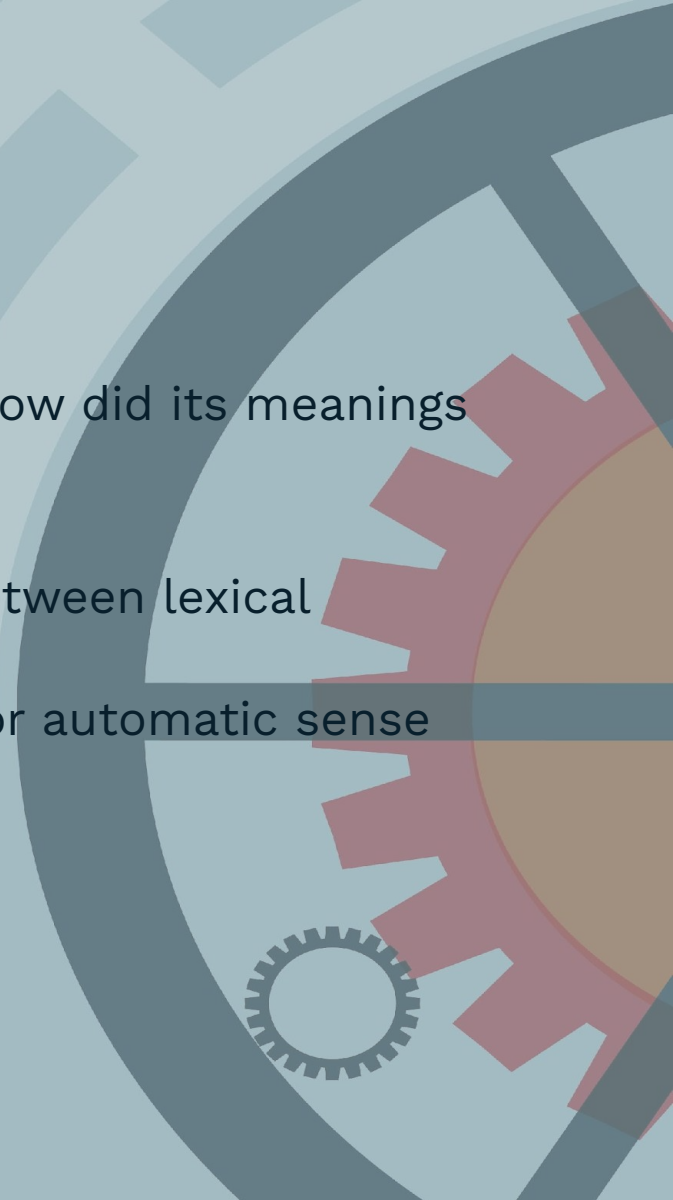
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# Context

What did *machine* mean in the 19th century? How did its meanings change over time?

- Relevant question for historical research
- Interesting challenge at the intersection between lexical semantics and historical linguistics
- Computational goal: create a training set for automatic sense disambiguation for historical texts



# Public participation via crowdsourcing in *LwM*: a chance to see history for yourself

...while also:

- Classifying and annotating articles to build datasets for research and analysis
- Creating engaging tasks to introduce the project and explore practical applications of AI
- Contributing findings to our exhibition and publications

there have been fourteen casualties, arising from year persons accidentally getting into the water. Among them were three perambulator cases, in which boys and girls, having been intrusted with these vehicles containing little children securely strapped in, have run races on the banks of the lake, and in the final grand push to be first, the machine has been capsized in the water, turning bottom upwards, but in each case the children were providentially rescued. Two of the total of 14 were drowned through the swamping of a sailing boat in a sudden squall. Not a single death from suicide has occurred during the year—a very

# New questions from crowdsourcing: what was a machine?

**EXCITING SCENE.**—A few days since, as a bricklayer and his labourer were at work on the chimney of a new foundry in course of erection at Heywood, near Manchester, the triangle on the top of the scaffolding gave way and fell over the side. A rope connected with the **machine** dragged the labourer off by the leg, but as the other end was fast to a support, he hung in mid air, head downwards, a few yards from the top, and about 50 feet from the ground. His leg was broken by the jerk. As no assistance could be rendered from below, his comrade contrived to hook him by the braces, but as he was drawing him up they **broke**, and he again fell the same distance. After about half an hour's suspension, he was rescued by his comrade throwing down the brickwork until he reached him. He was removed to Manchester Infirmary.

**READY-MADE CLOTHING.**—Wanted, a man accustomed to **REPAIRING** and **FITTING** in a machine room. Also good **STOCK**

TASK

TUTORIAL

## Classify the machine

Look for the outlined 'machine' phrase. Does the image contain readable and relevant text for you to classify a physical or metaphorical machine? Choose the best option below.

No - the image is too hard to read

No - the image doesn't contain enough information to classify the type or purpose of the 'machine', or it is not about a physical or metaphorical machine

No - the highlighted text is a reference to a place such as a workshop or office

Yes - the image includes enough information to describe or classify the machine

NEED SOME HELP WITH THIS TASK?

Done

FIELD GUIDE

# OED machine entry analysis

## machine, n.

**Pronunciation:** <sup>?</sup> Brit.  /məʃiːn/, U.S.  /məʃɪn/

**Forms:** 1500s *machyne*, 1500s–1700s *machin*, 1500s– *machine*, 1600s *macheen*.

**Frequency (in current use):** ●●●●●●●●●●

**Origin:** A borrowing from French. **Etymon:** French *machine*.

**Etymology:** < Middle French, French *machine* < classical Latin *māchina* (compare *MACRO* ancient Greek (Attic) *μηχανή*: see *MECHANIC* *adj.* and *n.*), probably related to *μηχος* ‘means, European base of *MAY v.*<sup>1</sup> Compare Spanish *máquina* (1444), Italian *macchina* (15th cent.); are all 17th-cent. borrowings from French.



Classification for nonverse task	definition (FROM OED)	oed_reference	part_of_speech
Specific type of machine	+ bathing-machine n. at bathing n. compounds . Obsolete.	machine, n, sense III.5c	NN
Specific type of machine	Used contextually for the particular kind of machine which the speaker or writer intends, as: i machine, n, sense IV.6c	machine, n, sense IV.6c	NN
Figurative: human body	A living body, esp. the human body considered in general or individually. Now chiefly figurative	machine, n, sense I.2	NN
Specific type of machine	Theatre. A (usually movable) contrivance for the production of stage-effects; (in plural) stage	machine, n, sense II.4a	NN
Figurative: plot device	Theatre. A (usually movable) contrivance for the production of stage-effects; (in plural) stage	machine, n, sense II.4a	NN
Figurative: plot device	In literature, etc.: a contrivance for the sake of effect; a supernatural agency, personage, or in	machine, n, sense II.4b	NN
-	figurative in general use.	machine, n, sense V.8a	NN
Figurative: human or animal moving automatically	figurative. A living being considered to move or act automatically or mechanically, rather than	machine, n, sense V.8b	NN
Figurative: human body	slang. The penis; the female genitals (rare). Also: A condom (obsolete).	machine, n, sense V.9	NN
Other	Figurative machine for living (m): a house or other habitation considered as a functional entity	machine, n, sense V.8c	NN
Figurative: an immaterial structure	A material or immaterial structure, esp. the fabric of the world or of the universe; a construct	machine, n, sense I.1a	NN
Figurative: a material construction or edifice	A material or immaterial structure, esp. the fabric of the world or of the universe; a construct	machine, n, sense I.1a	NN
-	In general use: an apparatus, device, instrument, or implement (now archaic and Canadian re	machine, n, sense IV.6a	NN
Specific type of machine	A complex device, consisting of a number of interrelated parts, each having a definite funct	machine, n, sense IV.6b	NN
Simple mechanics	Mechanics. Anything that transmits force or directs its application.	machine, n, sense IV.7	NN
-	spec. A scheme or plot. Obsolete.	machine, n, sense I.1b	NN
Specific type of machine	U.S. colloquial. A fire engine. Obsolete.	machine, n, sense III.5e	NN
Figurative: an immaterial structure	Originally U.S. The controlling organization of a political party or similar body; any organizatio	machine, n, sense V.10	NN
Other	A box or case in which fresh fish are sold wholesale. Cf. trunk n. 8b. Obsolete.	machine, n, sense III.5f	NN
Specific type of machine	Australian and New Zealand colloquial. A tatalizator	machine, n, sense VI.6d	NN
Other	Painting. A painting of large size, esp. one whose subject matter and composition are complic	machine, n, sense V.11	NN
Figurative: conceptual computing machine	A conceptual, abstract, or theoretical mechanism or device; spec. a model or a mathematical	machine, n, sense IV.6e	NN
Form of transport	A ship or other vessel. Now colloquial: a boat.	machine, n, sense III.5a	NN
Form of transport	A (usually wheeled) vehicle or conveyance, esp. one drawn by a horse or horses, or other dra	machine, n, sense III.5b	NN
Form of transport	A bicycle or tricycle; a motorcycle. Formerly also: a dandy-horse or velocipede (now historica	machine, n, sense III.5d	NN
Form of transport	An aircraft or airship. Cf. sense 6b.	machine, n, sense III.5g	NN
Form of transport	Originally and chiefly U.S. A motor vehicle, esp. a car.	machine, n, sense III.5h	NN
Specific type of machine	A military engine or siege-tower. Cf. war machine n. (a) at war n.1 compounds 4. Now histor	machine, n, sense II.3	NN

# Classify It!

**FINISHED!**

It is "remarkably easy to work."—*Vide Gardeners' Magazine*, "The quickest, most simple, and most efficient Mower ever used."—*Vide Gardeners' Chronicle*. And "far superior to any of ours."—*Vide The Field*. Owing to the unprecedented success this Mower met with last year, increased facilities for manufacture have been required, also many important improvements in the machine have been made, and the prices for 1871 greatly reduced. Send for Catalogue. Williams and Co., Manufacturers and Patentees, 1, City Road, John G. Rollins, Old Swan Wharf, London, E.C., Sole Wholesale Agent for England. 304

MARAVILLA COCOA.—*No breakfast table is complete without this delicious beverage.*—*The Globe* says: "Taylor

TASK TUTORIAL

Select the classification that best matches the highlighted 'machine'. If there are several relevant options, choose the most specific classification.

War and military - machines specialised for use in war

Figurative - descriptive, poetical or metaphorical uses; e.g. comparing machines and something else, or vice versa

Transport - includes ships, planes and wheeled vehicles whose primary purpose is transport

Mechanical apparatus - a complex device that performs a certain kind of work

Other

# Describe It!

sted stream is sown. The rollers move along the indles, so that the different grooves can be ought to act on the centre of the hoppers; and, en necessary to empty them, it is done by aply shifting the rollers from under the hoppers, the same time holding a bag under the delivery oe. This machine has three speeds, and can be own out of gear at the headlands by a movcable tch. The advantages claimed for it are sim- city, strength, non-cutting of the seeds, and the ular and continuous delivery. Messrs. M'Kenzie owed a large number of ploughs of almost every aginable description, which all seemed of excel

TASK TUTORIAL

Read the text and type in words that name or describe the highlighted 'machine'

unclear

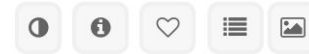
NEED SOME HELP WITH THIS TASK?

Back Done

## ... discoveries!

olid for strength's sake, or hollowed for the sake of lightness, ticity, fumigatory use, or packing space. It may be jointed, eslescopic, or of a single piece, or made with compartments, se walls screw into one another. It may be fitted with a -knife, paper, ink, drawing materials, corkscrew, sun dial, ger, bayonet, pistol, bullets, and gunpowder. A person who ld set up an umbrella, thus furnished for enterprises of war he pursuit of peaceful arts, should buy Henry William Van-Kleft's walking stick in nine compartments, and equip it l Alfred Sandoz's sun-dial, and an ordinary canopy. The

treaty has caused silk to be much more generally used for umbrella-canopies; and recent years have produced some new composite fabrics that are said to equal silk in glossiness and surpass it in durability. In the meantime our trade in umbrellas of the cheaper and less modish sorts has not languished, and the firm which in 1851 introduced alpaca, the fabric made of the wool of Peruvian and Chilian sheep, which has almost entirely superseded the old gingham, have sold nearly four millions of umbrellas covered with that material.

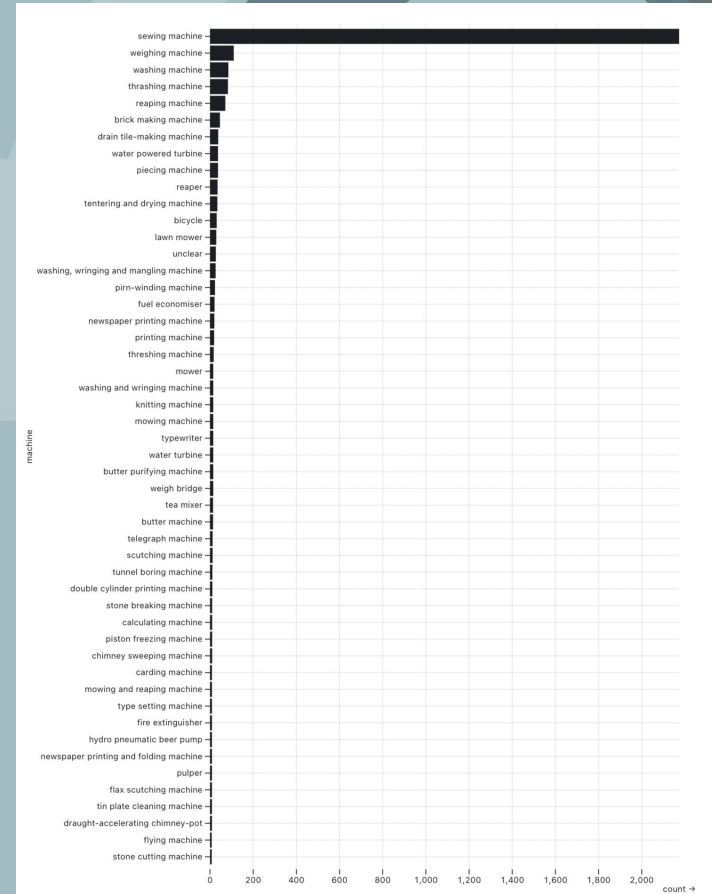
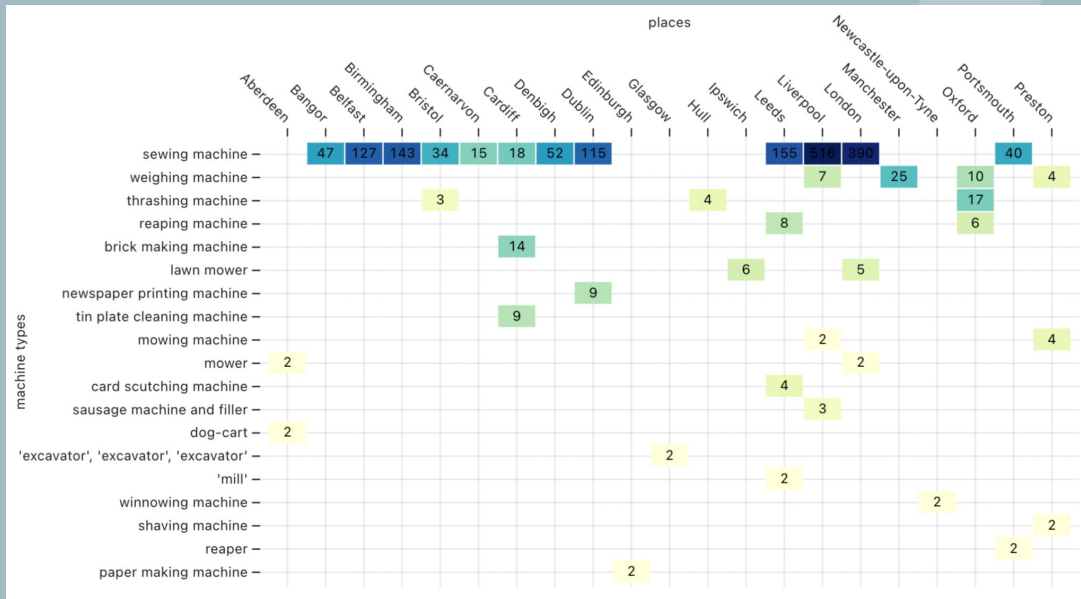


Thought this one was interesting. On top of the right side column is the reference to "The Machine" but the article talks about different types of umbrellas, but the really interesting bit imo, starts in the bottom of the left column where it describes the different types of umbrellas, but more specifically that umbrella sticks may be fitted with an assortment of items, including drawing materials, paper, corkscrew, sun dial, bayonet, pistol, bullets and gunpowder, and then in the second column even mentions putting a needle gun in one! Sounds like umbrellas in the 1860s were a lot more exciting than our current ones.

All my umbrella does is keep me dry. lol



# Too many sewing machines? Get rid of the ads!



# Ads and machine compounds

Ads are an integral part of 19th century newspapers

Detect machine compounds preemptively (e.g. via `gensim.model.phrases` or `nlk.collocations`)

Automatically-extracted collocates can inform new crowdsourcing tasks

Collocations with *machine* are singled out

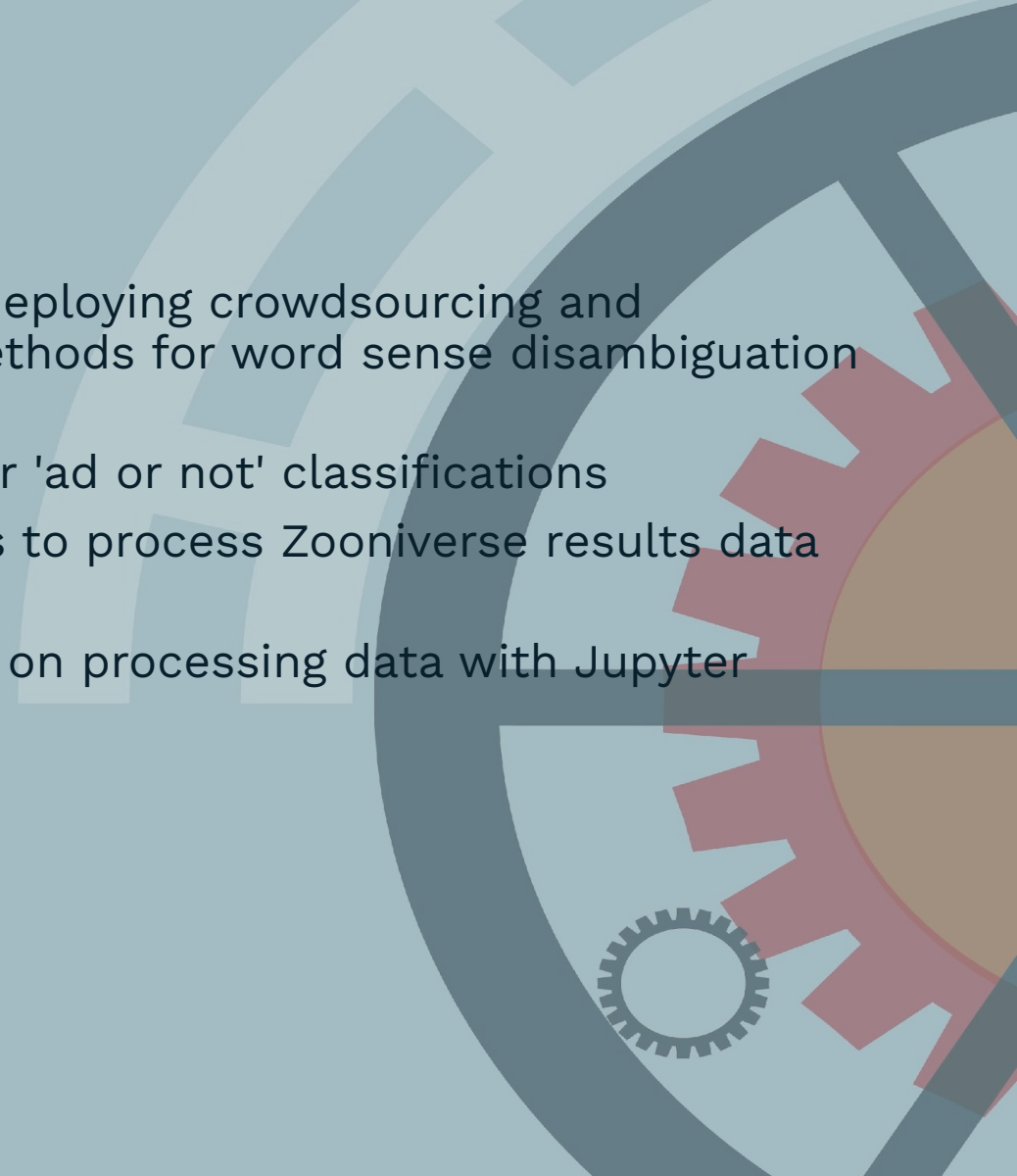
Specific types of machines can be studied separately

# Benefits of interdisciplinary and transdisciplinary collaboration

- Producing annotations useful for a lexicon or training machine learning
- Sharing an open-source end-to-end pipeline  
selecting newspaper articles > producing and downloading annotations > post-processing > re-using
- Reflection on sampling tools and procedures that fit project research parameters
- Rich visualisations in Living with Machines exhibition
- A concrete opportunity for public engagement with lexical work.
  - Describe it: 940 volunteers
  - Classify It: 503 volunteers
  - Classify It II: 734 volunteers

# Future work

- Building on lessons about deploying crowdsourcing and computational linguistic methods for word sense disambiguation on historical texts
- Machine learning models for 'ad or not' classifications
- Publishing Colab Notebooks to process Zooniverse results data for wider use
- Workshops for Library staff on processing data with Jupyter Notebooks



# Thanks for listening!

Find out more:

<https://livingwithmachines.ac.uk>

<https://www.github.com/Living-with-machines>

<https://www.zooniverse.org/projects/bldigital/living-with-machines>

We look forward to your questions:

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