



<http://www.slideshare.net/rinkehoekstra/throwaway-science>

Image taken from: <http://eflexlanguages.blogspot.nl/2014/05/phrase-of-day-chinese-whispers.html>



Georges Seurat - A Sunday Afternoon on the Island of La Grande Jatte - 1884

https://en.wikipedia.org/wiki/A_Sunday_Afternoon_on_the_Island_of_La_Grande_Jatte



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"Some say they see **poetry** in my paintings. I see only **science**."

Georges Seurat



Georges Seurat - A Sunday Afternoon on the Island of La Grande Jatte - 1884

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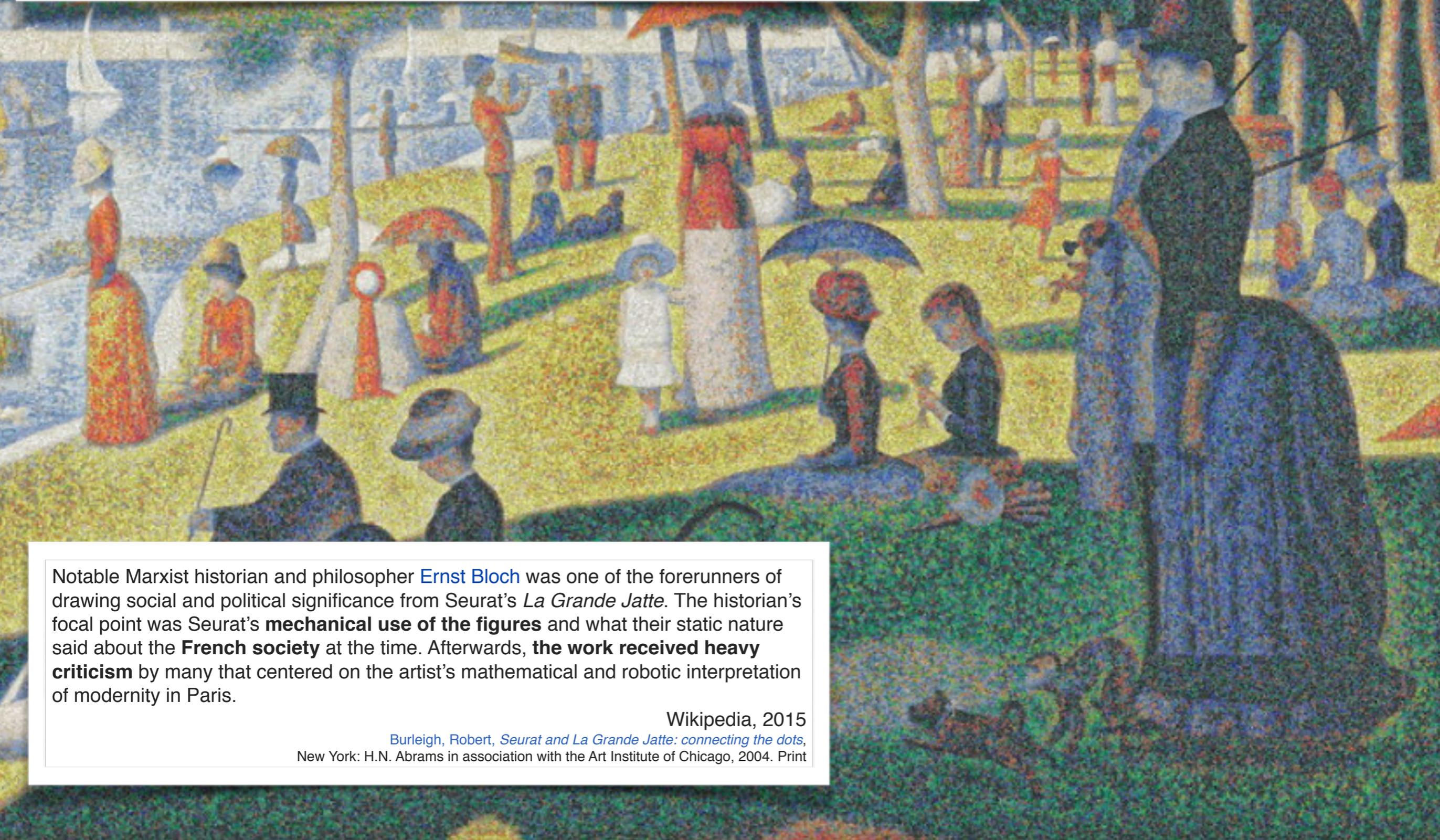
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Notable Marxist historian and philosopher [Ernst Bloch](#) was one of the forerunners of drawing social and political significance from Seurat's *La Grande Jatte*. The historian's focal point was Seurat's **mechanical use of the figures** and what their static nature said about the **French society** at the time. Afterwards, **the work received heavy criticism** by many that centered on the artist's mathematical and robotic interpretation of modernity in Paris.

Wikipedia, 2015

[Burleigh, Robert, *Seurat and La Grande Jatte: connecting the dots*, New York: H.N. Abrams in association with the Art Institute of Chicago, 2004. Print](#)



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Chris Jordan - Caps Seurat 2011

<http://www.chrisjordan.com/gallery/rtn/#caps-seurat>



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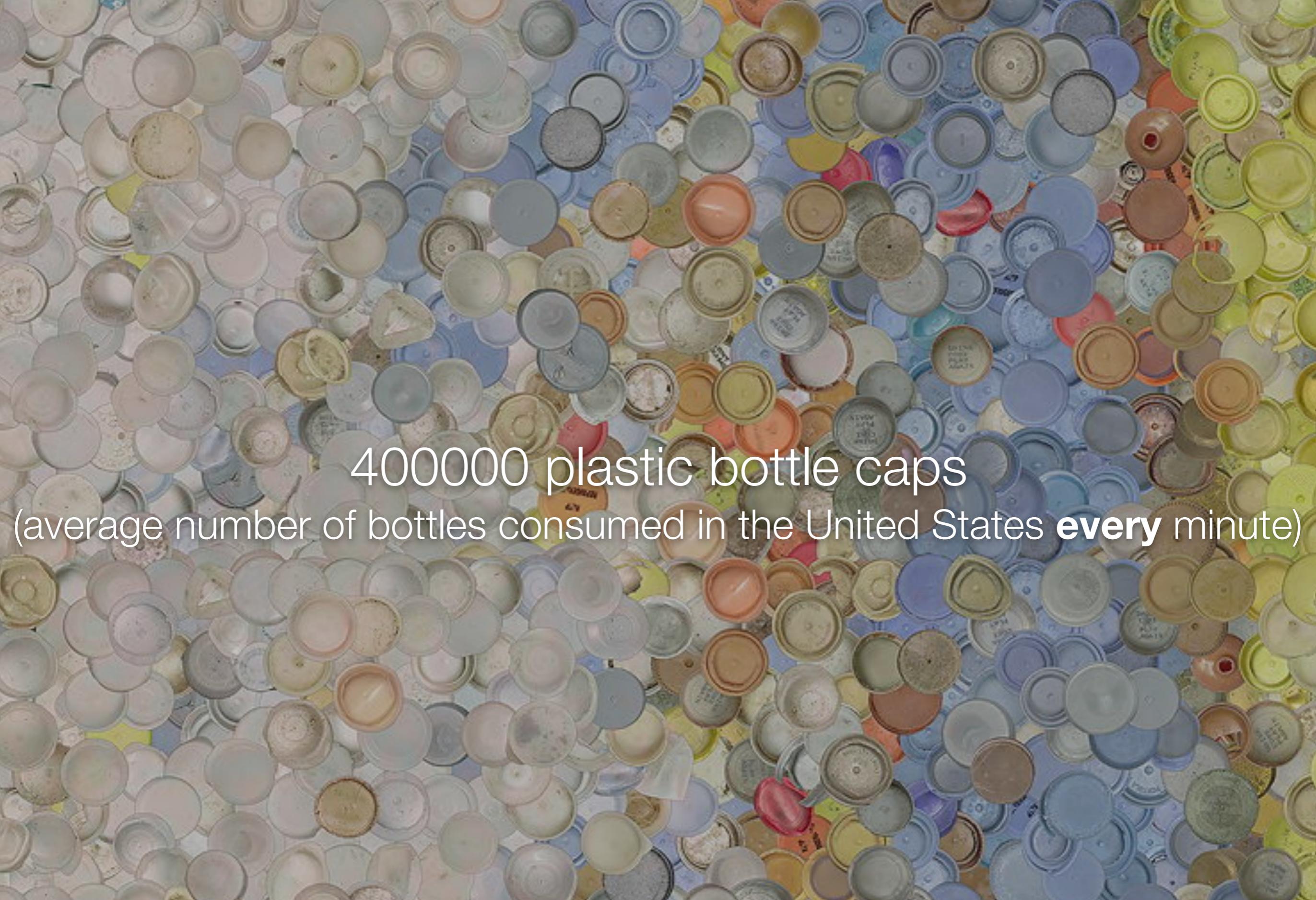
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400000 plastic bottle caps

(average number of bottles consumed in the United States **every** minute)





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NPG'S POLICY ON AUTHORSHIP

Important change to submission criteria.

BY JORDAN SUCHOW

To the dismay of many (yet to the delight of a few), Nature Publishing Group announced today that its flagship journal, *Nature*, will no longer accept submissions from humans (*Homo sapiens*). The new policy, which has been under editorial consideration for many years, was sparked by growing sentiment in the scientific community that the heuristics and biases inherent in human decision-making preclude them from conducting reliable science. In an ironic twist, the species has impeached itself by thorough research on its own shortcomings.

The ban takes effect on 12 September and will apply to those who self-identify as human. Authors will be required to include, in addition to the usual declaration of conflicts of financial interests, the names of all humans consulted in the preparation of the submission. Other journals are likely to adopt a similar policy.

Although the reaction has been mixed, not everyone is self-identifying as human, and a few remain completely unaffected.

The Massachusetts Institute of Technology has since 2010 asked researchers to opt-in to wear a wearable tag as part of the 'Human Tag' project, which aggregates real-time data from the tag to improve all aspects of the research process. As these tags are sent to the 'Human Tag' server, those who wear them qualify for membership in the 'Human Tag' (*bionika*) according to the terms of the license (1.914/582.2646). This

policy at the university, which at the time was controversial and the cause of much debate, now pays a handsome dividend.

Similarly, researchers at Yale, who have never been the type to self-identify as mere mortals, remain unscathed.

It seems unavoidable that other universities will soon follow suit, causing a sharp rise in the incidence of implants and arrogance. Exploiting these loopholes may be a saving grace for the species' full participation in the sciences.

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ing their mothers, reiterating how brilliant they were to have flatly ignored the warnings to "put down that damn hand computer". Cyberculture paid off.

Those who have been slow to adopt new technology (or who still identify as human) are rightly concerned: their contribution to

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go.nature.com/mtfoodm

Nature had been dwindling well before the ban, and today constitutes less than 10% of published papers. In its

The editors of *Nature* were readily available for comment, and their incisive remarks gave such great credibility to the new policy that it rendered all future debate moot. But, in the spirit of the policy, because the editors are human, these remarks are duly censored. ■

Jordan Suchow is a graduate student in cognitive science at Harvard University, and can be found online at jwsu.ch/ow. He self-identifies as human.

place stands the work of pharmaceutical laboratory automatons,

ed devices, the intermost recently, Google, which having declared its independence from its parent company Google (NASDAQ: GOOG), has become increasingly prolific, contributing 42% of the company's profits this year alone.

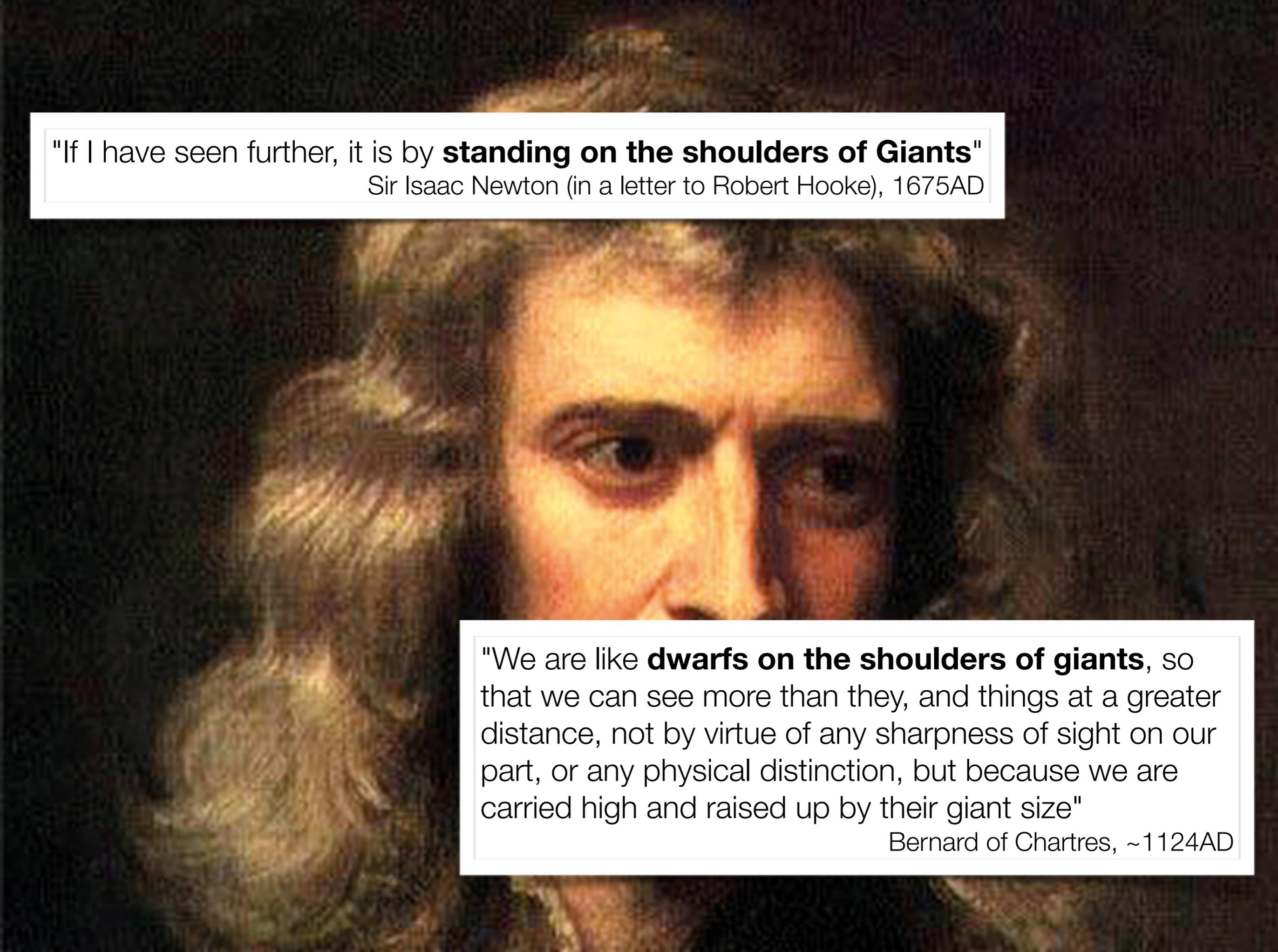
After the announcement, World Wide Interwebs (W2iC, formerly known as the Union of World Wide Tags, jointly filed a complaint with the Federal Trade Commission arguing for mandatory disclosure of non-carbon-based machines in all bionic devices. (See also the letter to the editor in the 12 March issue of *Nature*, written by Tag #47373 and co-signed by many others.) Although amendments to the policy are at this time being considered, concerns regarding the future of the project will surely be the subject of considerable tension between the various laboratories. Embedding machines will use the ban as a justification for salary increases and other benefits.

Everyone is so bothered by the announcement. Egbert B. Eber, professor of computer science at the University of Mishugog, said, "Although it is nonsensical to argue whether humans are capable of doing so, the editors (all of whom are human) are a perfect example of human reasoning, thereby rendering the ban moot." Gebstadter is bionic, and when he had come to

"If I have seen further, it is by **standing on the shoulders of Giants**"

Sir Isaac Newton (in a letter to Robert Hooke), 1675AD



A close-up portrait of Sir Isaac Newton, showing his face and long, wavy hair. The lighting is dramatic, with one side of his face in shadow.

"If I have seen further, it is by **standing on the shoulders of Giants**"

Sir Isaac Newton (in a letter to Robert Hooke), 1675AD

"We are like **dwarfs on the shoulders of giants**, so that we can see more than they, and things at a greater distance, not by virtue of any sharpness of sight on our part, or any physical distinction, but because we are carried high and raised up by their giant size"

Bernard of Chartres, ~1124AD



“Chinese Whispers”

From Fiction to Fact: **Hedging** (slide courtesy of Anita de Waard, Elsevier)

From Fiction to Fact: **Hedging** (slide courtesy of Anita de Waard, Elsevier)

"[Y]ou can transform ... fiction into fact just by adding or subtracting references"
Bruno Latour, "Science in Action: How to Follow Scientists and Engineers Through Society"

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Yabuta et al., 2007

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Okada et al., 2011

A Scientific Paper is ... a **story** ... (slide courtesy of Anita de Waard, Elsevier)

Story Grammar		The Story of Goldilocks and the Three Bears	Paper Grammar	The AXH Domain of Ataxin-1 Mediates Neurodegeneration through Its Interaction with Gfi-1/ Senseless Proteins
Setting	Time	Once upon a time	Background	The mechanisms mediating SCA1 pathogenesis are still not fully understood, but some general principles have emerged.
	Character	a little girl named Goldilocks	Objects of study	the Drosophila Atx-1 homolog (dAtx-1) which lacks a polyQ tract,
	Location	She went for a walk in the forest. Pretty soon, she came upon a house.	Experimental setup	studied and compared in vivo effects and interactions to those of the human protein
Theme	Goal	She knocked and, when no one answered,	Research goal	Gain insight into how Atx-1's function contributes to SCA1 pathogenesis. How these interactions might contribute to the disease process and how they might cause toxicity in only a subset of neurons in SCA1 is not fully understood.
	Attempt	she walked right in.	Hypothesis	Atx-1 may play a role in the regulation of gene expression
Episode	Name	At the table in the kitchen, there were three bowls of porridge.	Name	dAtx-1 and hAtx-1 Induce Similar Phenotypes When Overexpressed in Flies
	Subgoal	Goldilocks was hungry.	Subgoal	test the function of the AXH domain
	Attempt	She tasted the porridge from the first bowl.	Method	overexpressed dAtx-1 in flies using the GAL4/UAS system (Brand and Perrimon, 1993) and compared its effects to those of hAtx-1.
	Outcome	This porridge is too hot! she exclaimed.	Results	Overexpression of dAtx-1 by Rhodopsin1 (Rh1)-GAL4, which drives expression in the differentiated R1-R6 photoreceptor cells (Mollereau et al., 2000 and O'Tousa et al., 1985), results in neurodegeneration in the eye, as does overexpression of hAtx-1 [82Q]. Although at 2 days after eclosion, overexpression of either Atx-1 does not show obvious morphological changes in the photoreceptor cells
	Attempt	So, she tasted the porridge from the second bowl.		
	Outcome	This porridge is too cold, she said		
	Attempt	So, she tasted the last bowl of porridge.		
	Outcome	Ahhh, this porridge is just right, she said happily and	Data	(data not shown),
		Results	both genotypes show many large holes and loss of cell integrity at 28 days	
		Data	(Figures 1B-1D).	

... that **persuades** ... (slide courtesy of Anita de Waard, Elsevier)

Aristotle	Quintilian		Scientific Paper
prooimion	Introduction / <i>exordium</i>	The introduction of a speech, where one announces the subject and purpose of the discourse, and where one usually employs the persuasive appeal to ethos in order to establish credibility with the audience.	Introduction: positioning
prothesis	Statement of Facts / <i>narratio</i>	The speaker here provides a narrative account of what has happened and generally explains the nature of the case.	Introduction: research question
	Summary / <i>propositio</i>	The propositio provides a brief summary of what one is about to speak on, or concisely puts forth the charges or accusation.	Summary of contents
pistis	Proof / <i>confirmatio</i>	The main body of the speech where one offers logical arguments as proof. The appeal to logos is emphasized here.	Results
	Refutation / <i>refutatio</i>	As the name connotes, this section of a speech was devoted to answering the counterarguments of one's opponent.	Related Work
epilogos	<i>peroratio</i>	Following the refutatio and concluding the classical oration, the peroratio conventionally employed appeals through pathos , and often included a summing up.	Discussion: summary, implications.

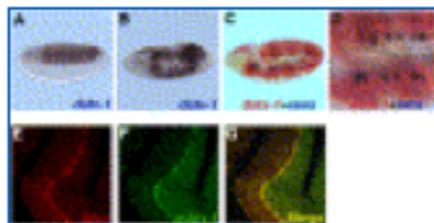
Goal of the paper is to be **published**; it uses author/journal as a host

Format has co-evolved: **predator-prey** relationship with reviewers

... with **data** (slide courtesy of Anita de Waard, Elsevier)

Sens and Gfi-1 Are Coexpressed with Atx-1 Homologs in *Drosophila* and Mice

The findings that fly Atx-1 and Sens as well as mammalian Atx-1 and Gfi-1 physically interact prompted us to examine if Atx-1 and Sens/Gfi-1 are coexpressed in vivo. In situ hybridization and Northern analyses show that *datx-1* is expressed in embryonic stages (Figures 3A–3D and data not shown). The expression of *datx-1* is first observed in the dorsolateral region in the stage 5 embryos (Figure 3A). During gastrulation, *datx-1* is expressed in the dorsolateral ectoderm that encompasses the peripheral neuroectoderm (Figure 3B). *sens* mRNA is first expressed in presumptive sensory organ precursor (SOP) cells at stage 10 (Nolo et al., 2000). We found that *sens* is expressed in a subset of cells within the region of *datx-1* expression (Figures 3C and 3D). In mice, Gfi-1 is expressed in many areas that give rise to neuronal cells during embryonic development (Wallis et al., 2003). However, our data show that, in the adult cerebellum, Gfi-1 expression is mainly confined to PCs, where Atx-1 is most abundant (Figures 3E–3G) (Banfi et al., 1996).



[Full-size image \(90K\)](#)
[High-quality image \(1040K\)](#)

Figure 3. Fly and Mouse Atx-1 Colocalize with Sens and Gfi-1 in Certain Cell Types

Data is the (only?) **primary source**



- What is a **primary** source?

A document or record containing **first-hand information** or **original data** on a topic

Interviews, diaries, letters, journals, original hand-written manuscripts, newspaper clippings [...], etc.

- What is a **secondary** source?

Any published or unpublished work that is **one step removed** from the original source, usually describing, summarizing, analyzing, evaluating, derived from, or **based on** primary source materials

Textbooks, review articles, biographies, historical films, music and art, articles about people and events from the past

Finding **Data**?

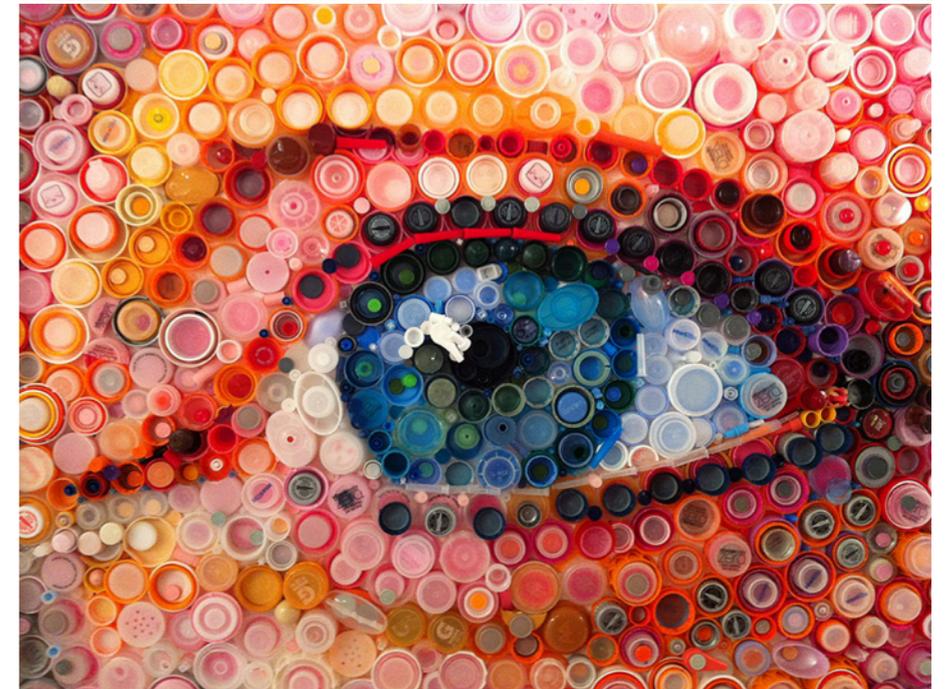
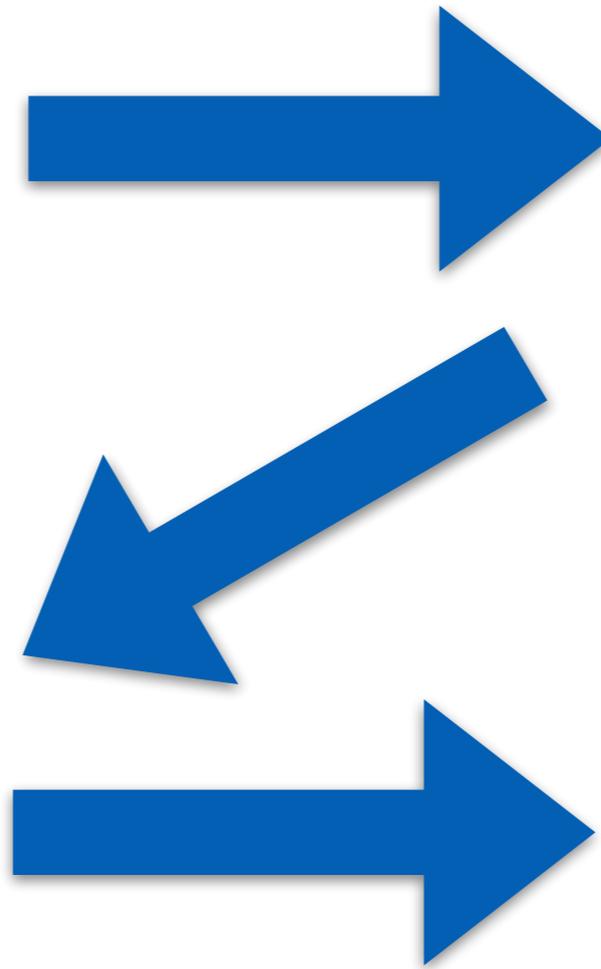
- Scientific publication is about **sharing ideas**, knowledge.
- All too often, subsequent ideas are based on **secondary sources**
- **Search engines** are targeted towards texts
- But the **primary source** of a publication is the **data!**

Question: Are we doing enough to safeguard this primary source?

Producing **Data**



Reusing **Data**?



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Throwaway Science

Rinke Hoekstra

Computer Science/Network Institute, VU Amsterdam
Faculty of Law, University of Amsterdam



(librarians at work?)



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Common Motifs in Scientific Workflows: An Empirical Analysis

Daniel Garijo*, Pinar Alper †, Khalid Belhajjame†, Oscar Corcho*, Yolanda Gil‡, Carole Goble†

*Ontology Engineering Group, Universidad Politécnica de Madrid. {dgarijo, ocorcho}@fi.upm.es

†School of Computer Science, University of Manchester. {alperp, khalidb, carole.goble}@cs.manchester.ac.uk

‡Information Sciences Institute, Department of Computer Science, University of Southern California. gil@isi.edu

Abstract—While workflow technology has gained momentum in the last decade as a means for specifying and enacting computational experiments in modern science, reusing and repurposing existing workflows to build new scientific experiments is still a daunting task. This is partly due to the difficulty that scientists experience when attempting to understand existing workflows, which contain several data preparation and adaptation steps in addition to the scientifically significant analysis steps. One way to tackle the understanding of workflows is through the use of workflow-oriented abstractions that give a high-level view of the activities within workflows. As a first step, this paper presents the results of an empirical analysis of a set of real-world scientific workflows. Our analysis highlights the most common motifs that outline i) the most frequent activities observed in workflows (data-oriented motifs) and ii) the manners in which activities are combined (workflow-oriented motifs). We discuss the implications of our findings for workflow designers on the one hand, and for the development, to inform the design and generation of workflow abstractions on the other.

[14] and CrowdLabs [8] have made publishing and finding workflows easier, but scientists still face the challenges of using them, which amounts to fully understanding and exploiting available workflows/fragments. One difficulty in understanding workflows is their complex nature. A workflow may contain several scientifically-significant analysis steps, combined with various other data preparation activities, and in different

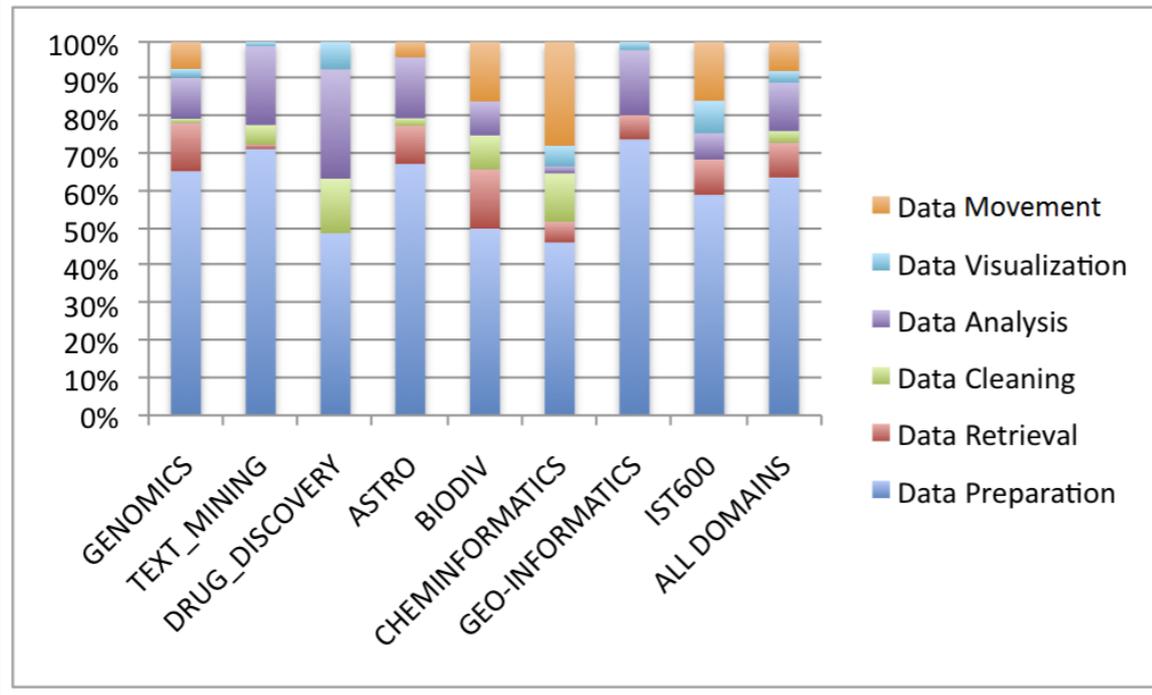


Fig. 3. Distribution of Data-Oriented Motifs per domain

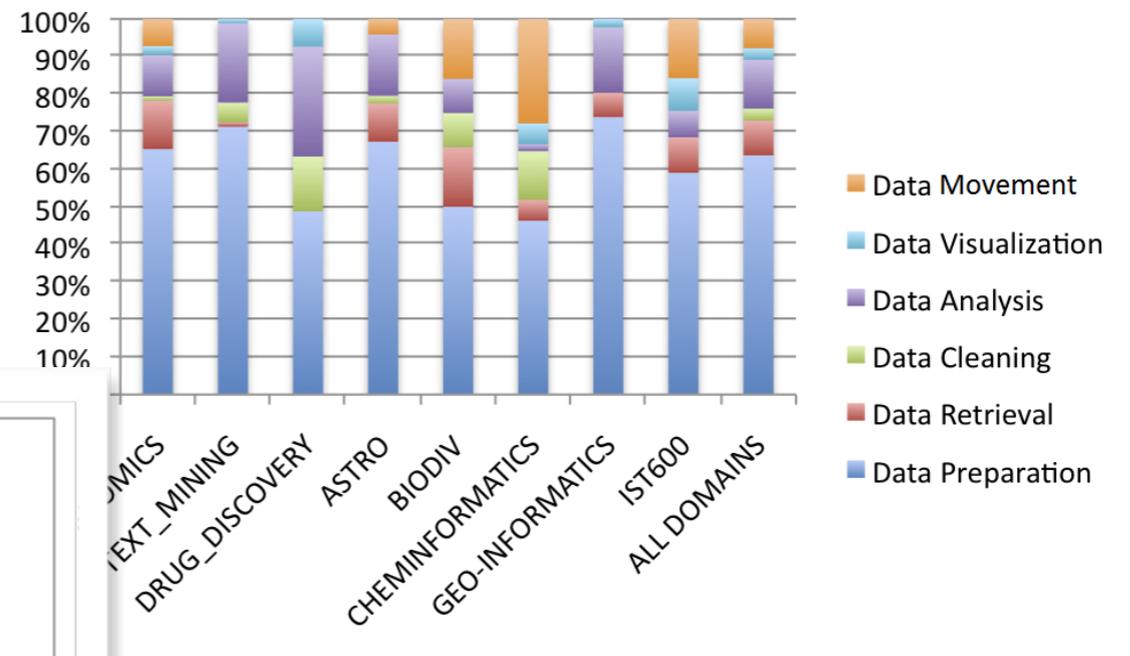


Fig. 3. Distribution of Data-Oriented Motifs per domain



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Bring **Data Recycling** facilities **closer** to Home

- **Prevent** potentially valuable data from being thrown away
- **Process** and **origin** are part of the data... **provenance!**
- Integrate **data tracking** facilities in scientific workflow
- Use **context** to preserve **semantics, privacy** and **licensing**

Coöperatie SURF U.A.

SURF DRIVE Menu

R.J. Hoekstra

All files

Shared with you

Shared with others

Shared by link

New

Name	Size	Modified
 AccesstoSURFdrivethroughwebbrowser.pdf	673 kB	seconds ago
 throwaway_scienc...key	36.6 MB	seconds ago

Download Versions Share

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HOME REGISTER LOG IN

DANS Data Archiving and Networked Services

EASY

Get exposure and credit for your data: write a data paper for the new peer reviewed, online-only open access Research Data Journal (published by Brill)

For more info: [check brill.com/rdj](http://check.brill.com/rdj)

EASY offers sustainable archiving and data management services

Search...

Advanced search

Deleted

Open # of

DEP_All other disciplinesUK.pdf (page 1 of 9)

How to deposit data in 7 steps

- 1. Prepare your data**

Select the relevant data files. Check them for privacy aspects and file format issues against the guidelines issued by DANS.
- 2. Go to EASY**

Log in at <http://easy.dans.knaw.nl>. If you are new to EASY you have to register for an account first.
- 3. Start the deposit procedure**

Go to 'New deposit', select your discipline and click 'Start deposit'.

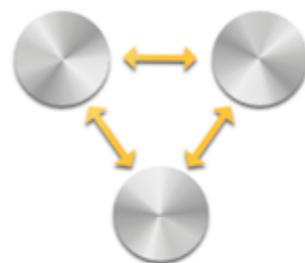
ARE YOUR RESEARCHERS

RECENTLY PUBLISHED



Exploration

The Open PHACTS Explorer provides a user interface to the Open PHACTS Discovery Platform and is built to answer the critical pharmacology questions defined by eight major pharmaceutical companies.



Data

The Open PHACTS Discovery Platform includes data from ChEMBL, ChEBI, UniProt, Gene Ontology, ChemSpider, ConceptWiki, ENZYME, SwissProt, BridgeDB, WikiPathways and DisGeNET.



Provenance

Provenance everywhere. Find the origin and original data source of all data within the Open PHACTS Discovery Platform. Link out to the corresponding data source for that exact item.



Linked Data



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One-Click Semantic Data Enrichment

Publish directly
from the cloud
to the cloud

On-the-fly analysis
and tag suggestion

The screenshot shows a web browser window with the URL `linkitup.data2semantics.org/dashboard`. The page title is "linkitup Dashboard". The user is logged in as "Rinke Hoekstra". The main content area displays details for an article titled "Hubble: Linked Data Hub for Clinical Decision Support".

Article Details:

- status:** Private
- date:** 12:26, Sep 21, 2012
- type:** paper
- size:** 296.48 KB
- version:** 4
- files:** [data2semantics-demo.pdf](#)

Authors: Rinke Hoekstratest, Rinke Hoekstra, Gerben de Vries, Sara Magliacane, Stefan Schlobach, Laurens Rietveld, Adianto Wibisono

Categories: Bioinformatics, Applied Computer Science

Tags: KNAW, annotation, clinical guidelines, 5-fu, capecitabine, adverse event, health care, clinical decision support, linked data, febrile neutropenia

Links: <http://linkitup...a2semantics.org>, <http://www.data2semantics.org>

Left Sidebar (PLUGINS): LinkedLifeData, NIF Registry, DANS EASY, NeuroLex, DBLP, Wikipedia, ORCID, sameAs, CrossRef, Linked Data Repository, DBpedia Spotlight, Bio2RDF

Left Sidebar (ACTIONS): Preview Selection, Preview Nanopublication, Preview Provenance (beta), Publish to Figshare

Top Right: "Fork me on GitHub" banner





Semantic Provenance for Data Science

IPySimple demo of the fill fun x

127.0.0.1:8888/notebooks/Simple%20demo%20of%20the%20fill%20function.ipynb

IP[y]: Notebook Simple demo of the fill function Last Checkpoint: Apr 15 10:15 (autosaved)

File Edit View Insert Cell Kernel Help

Code Cell Toolbar: None

In [3]: `%matplotlib inline`

In [4]: `x = np.linspace(0, 1)`
`y = np.sin(4 * np.pi * x) * np.exp(-5 * x)`

In [5]: `plt.fill(x, y, 'r')`
`plt.grid(True)`
`plt.show()`

In [7]: `view_prov()`

Out[7]:

Select an Activity

In [4] (run)

In [4] (entity)

linspace (activity)

np.exp (activity)

np.sin (activity)

In [2] (run) (activity)

np (entity)

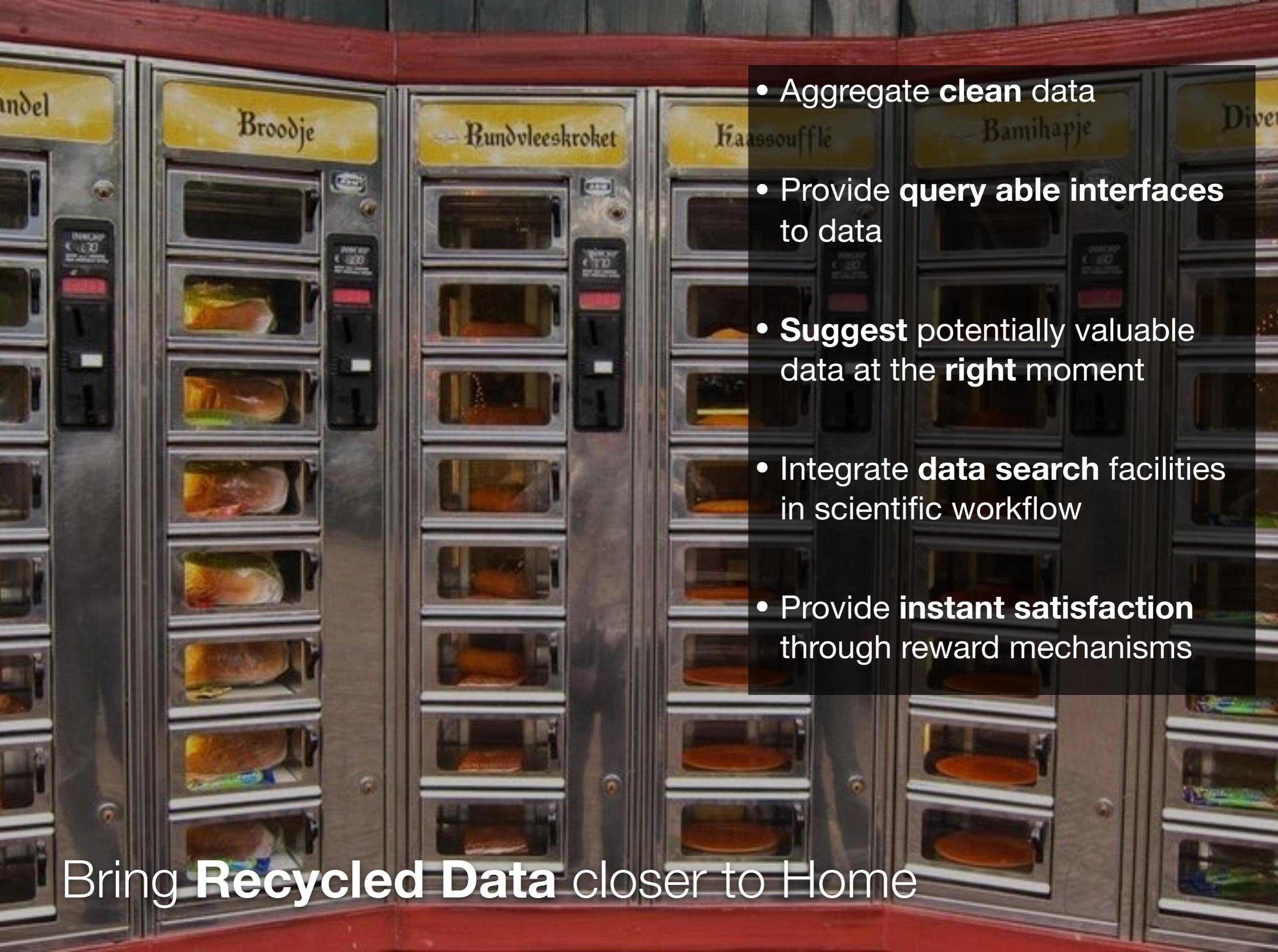
In [4] (run) (origin)

linspace output (entity)

y (entity)

Integration in popular tools

No “green field”



- Aggregate **clean data**
- Provide **query able interfaces** to data
- **Suggest** potentially valuable data at the **right** moment
- Integrate **data search** facilities in scientific workflow
- Provide **instant satisfaction** through reward mechanisms

Bring **Recycled Data** closer to Home



38.606.408.764 triples and counting!



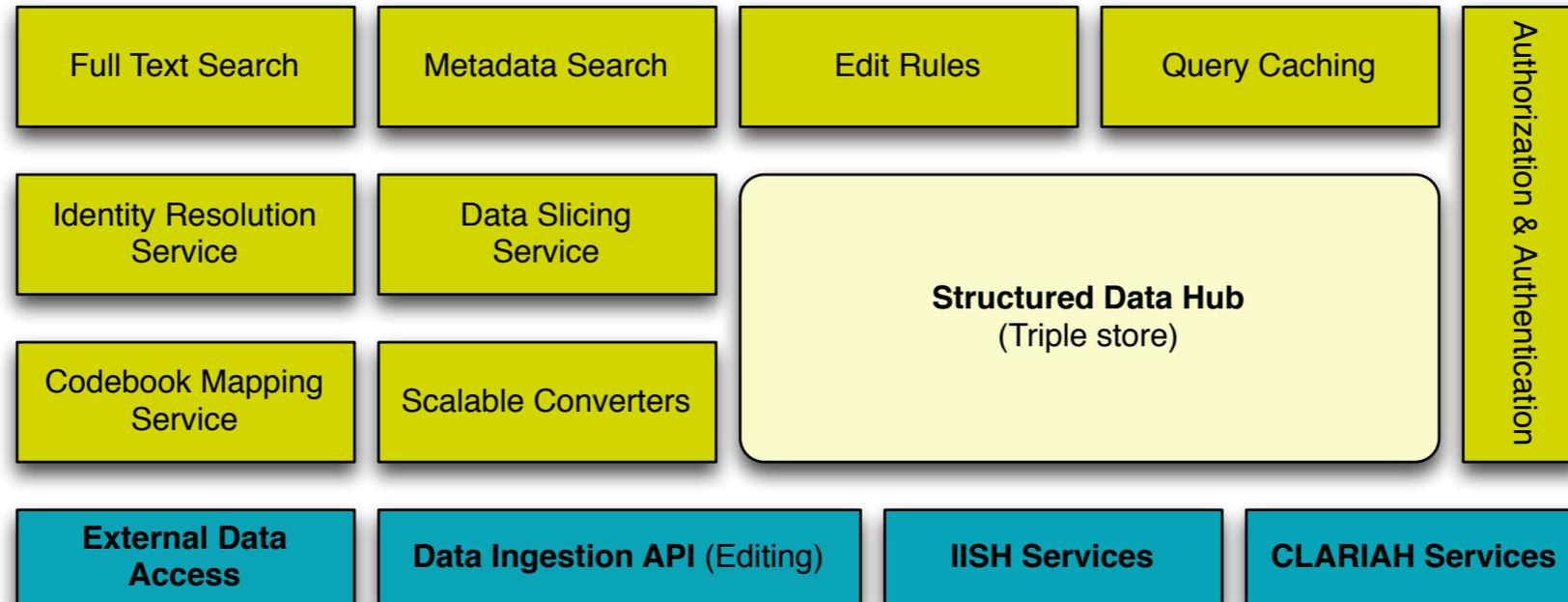
LOD Laundromat

The LOD Laundromat provides access to all Linked Open Data (LOD) in the world. It does this by crawling the LOD cloud, and converting all its contents in a standards-compliant way (gzipped N-Triples), removing all data stains such as syntax errors, duplicates, and blank nodes.

Laundry Basket

The LOD Laundry Basket contains the URLs of dirty datasets that are waiting to





Linked Data **Archives** **CLARIAH Public Data** **CLARIAH Private Data** **IISH Shared Object Repository** **ANANSI (WP2)**

localhost

CLARIAH QBer utrecht_1829_clean_01

Rinke Hoekstra Sign out

geslacht

Submit to CSDH Reset

geslacht Save

Description

geslacht

Values	Frequency
m	773
v	527

Map to known variable:

Sex

Exploration

Authorization &

localhost

CLARIAH QBer

Legend

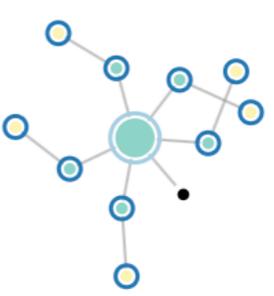
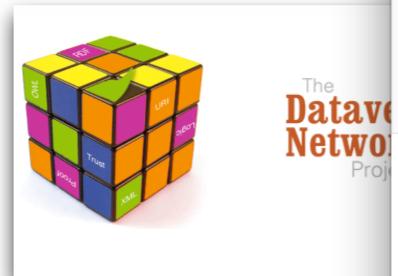
- Inner circle dataset
- Outer circle resource type

Types

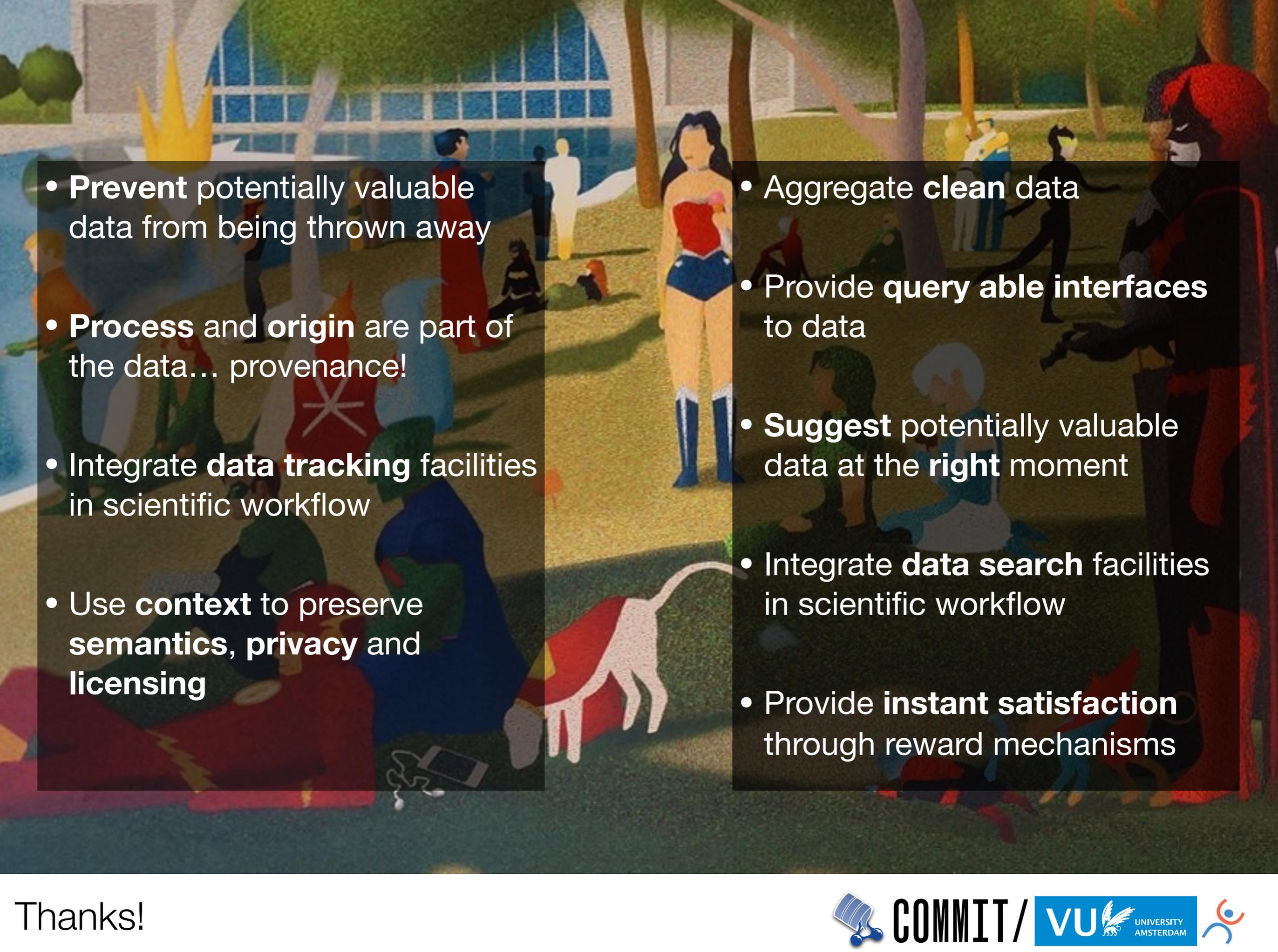
- dataset
- dimension
- person

Datasets

- csdh:utrecht_1829_clean_01
- external

Linked Data Arch

- 
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Thanks!



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