CODING FOR HUMANITIES

IMPORTANT DATA FORMATS AND DATA CLEANING, INTRODUCTION TO APIS, SHORT INTRODUCTION TO R

Dr. Thomas Köntges,
Digital Humanities, University of Leipzig

26 October 2015

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SOME ACRONYMS

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OCR, NER, NLP

OCR Optical Character Recognition

NER Named Entity Recognition

NLP Natural Language Processing

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DIGITISATION

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WHY DIGITISE?

Reasons given by the British Library

- Open up access to content in the British Library's collection for researchers
- Add value to, and open up previously unimagined areas for research
- Support innovative methods of research
- Facilitate the interpretation of our content by others for new audiences
- Preserve unique, rare and fragile heritage items by digital reproduction and protect vulnerable documents
- Reveal illegible and hidden text or images and permit non-intrusive testing of materials

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FORMATS

TIFF Tagged Image File Format by Adobe

TXT #iloveplaintxt

CSV Comma Separated Value

PDF Portable Document Format (Open Standard)

TSV Tab Seperated Value

XML Extensible Markup Language

JSON JavaScript Object Notation

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FORMATS

TXT

```
1834 November 1: to Coates
Sydney, New South Wales, Novr. 1, 1834.
To Dandeson Coates Esqr.
Dr. Sir,
By the blessing of God we are safely arrived at this “ha
I premise, that I need not enter into a detail of Incide
send you a full account of whatsoever he deems worthy yo
expected, thanks to the Almighty, the Society, and Capt.
I trust, Sir, that the Passengers who accompanied us, an
in her.—I am, I trust, thankful for His mercies, and I d
In a letter which I received from the C.M.H., bearing da
```

CSV

```
Collector 1,Collector 2,Date Collected,Identified By (1),Identified By (2),Identified By
(3),Identified (4),Identified (5),Identified Date (1),Identified Date (2),Identified Date
(3),Taxon,Location 1,IRN,Prefix Souce
```

Date	Date (year)	Addressee	Location
May 11, 187	1878	D. Black	Napier
May 11, 187	1878	J.McCulloch	Napier
May 21, 187	1878	Luff	Napier
Jun 12, 1878	1878	Luff	Napier
Jul 9, 1878	1878	Haast	Napier
Jul 18, 1878	1878	Luff	Napier
Aug 20, 187	1878	Balfour	Napier
Jan 1, 1878	1878	Balfour	Napier
Undated	Undated	Harding	Not named
Nov 23, 187	1878	Mantell	Not named

XML

```
<p><hi rend="i"><name type="work" key="http://wtap.vuw.ac.nz/eats/entity/331/">Poems o
    3997/">G. Robertson &amp;amp; Co.</name>, <name type="place" key="http://wtap.vuw.ac.n
    5250/">Sydney</name>, &amp;amp;c.</p>
</argument>
<p><hi rend="sc">A reproach</hi> has been removed from Australian literature by the pu
    4141/">Henry Clarence Kendall</name>. A generation hence, his works will probably b
    day, and <name type="person" key="http://wtap.vuw.ac.nz/eats/entity/4141/">Kendall
    name type="place" key="http://wtap.vuw.ac.nz/eats/entity/4201/">Australia</name> ha
    contemporaries the poet and his genius were alike matters of indifference. The tas
```

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1994 TEI

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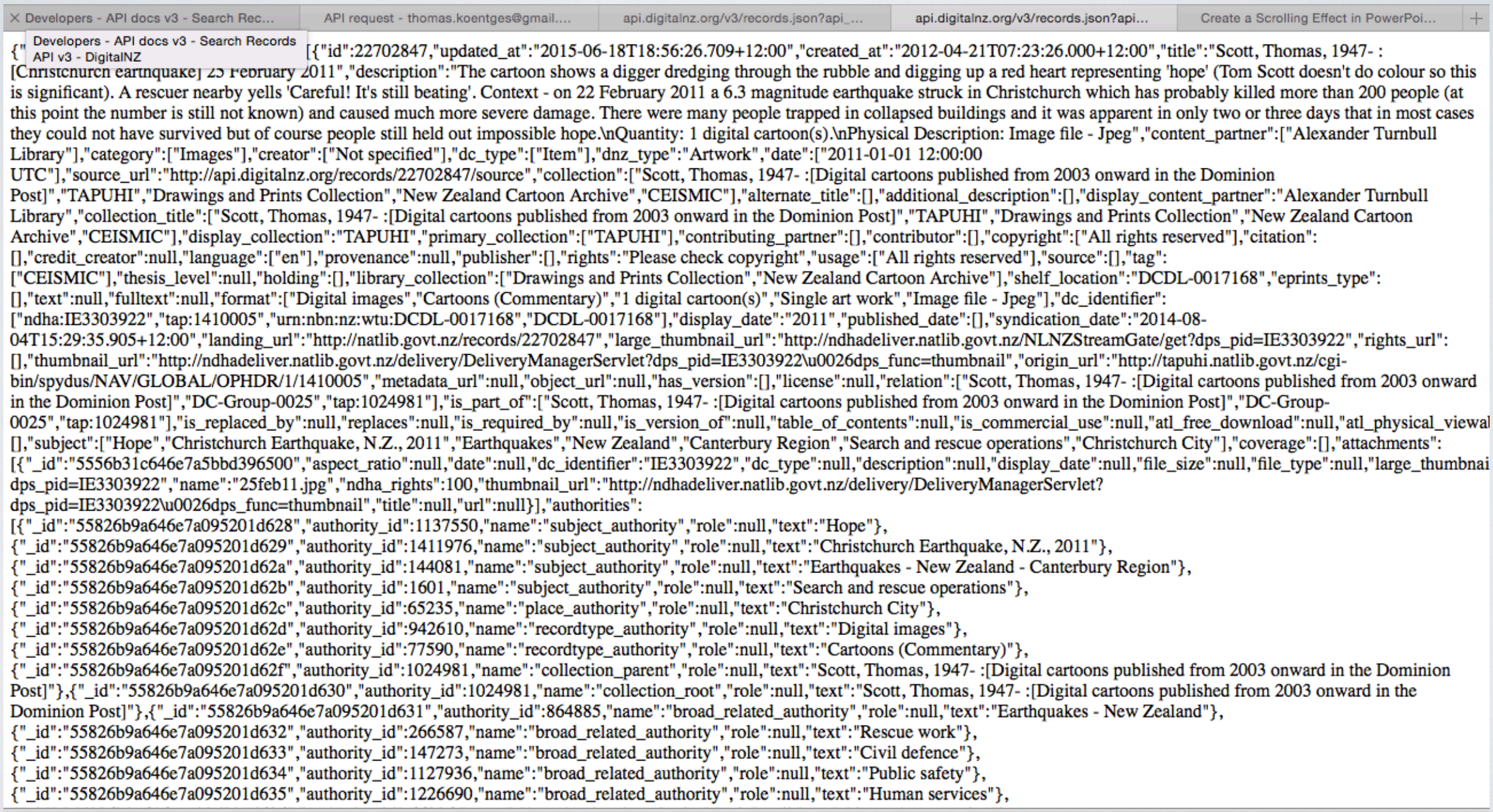
JSON



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GOLD-RUSH: MINING

Text-Mining vs. **Data-Mining**

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VISUALISATIONS

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VISUALISATIONS

- history, visualisations, ideas, wisdom
- ἱστορία, ἴδειν, videre, weisheit
- sapientia, sapere aude (Horace, Kant) -> dare to taste
- we are using telescopes and microscopes to create knowledge
- macroscopes

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MACROSCOPES

While microscopes help us to research objects that are too small for our eyes and telescopes things that are too far away, **macroscopes** will help us to **view and research things that are too big or complex** to comprehend.

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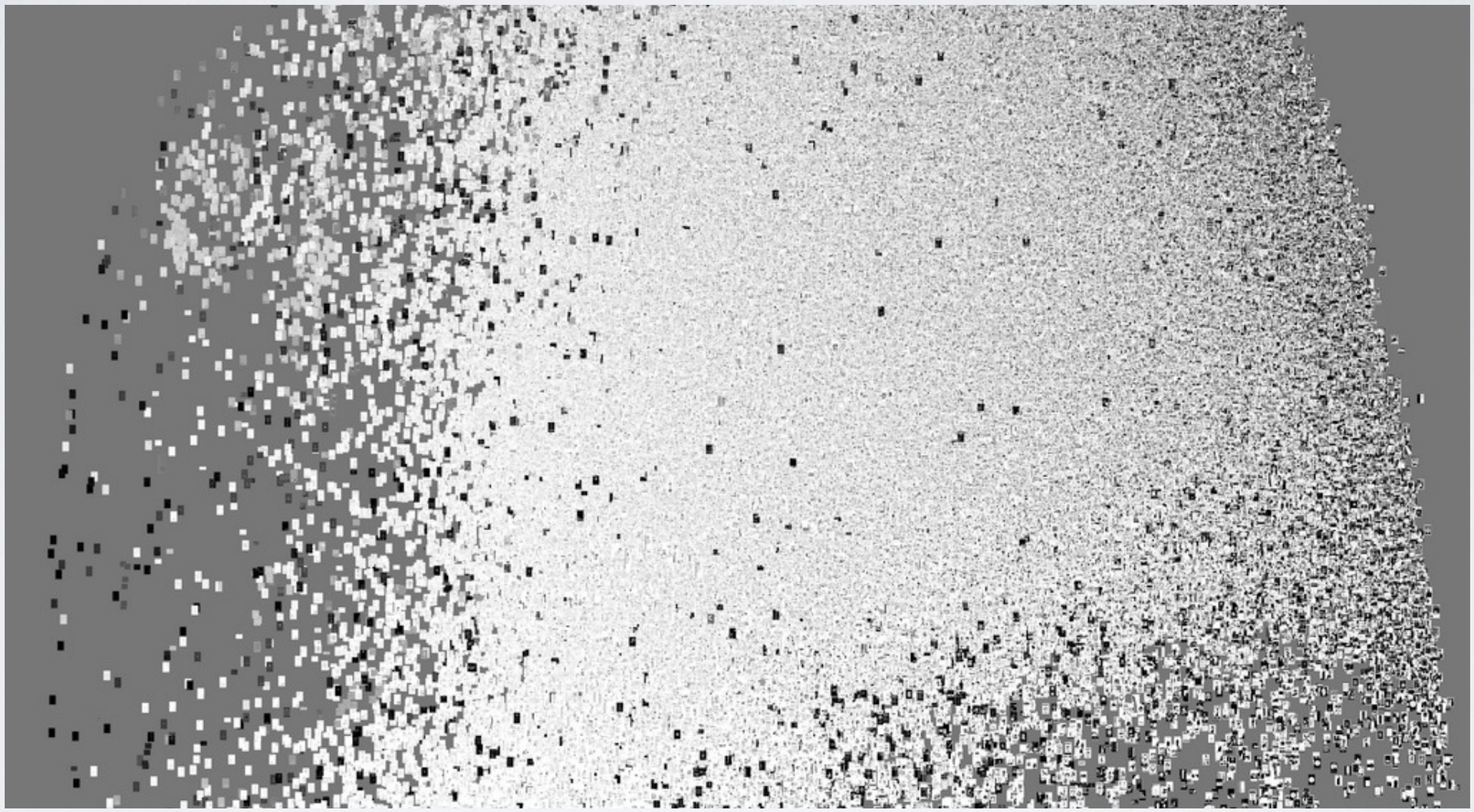
EXAMPLE

A Million Mangas: UCSD



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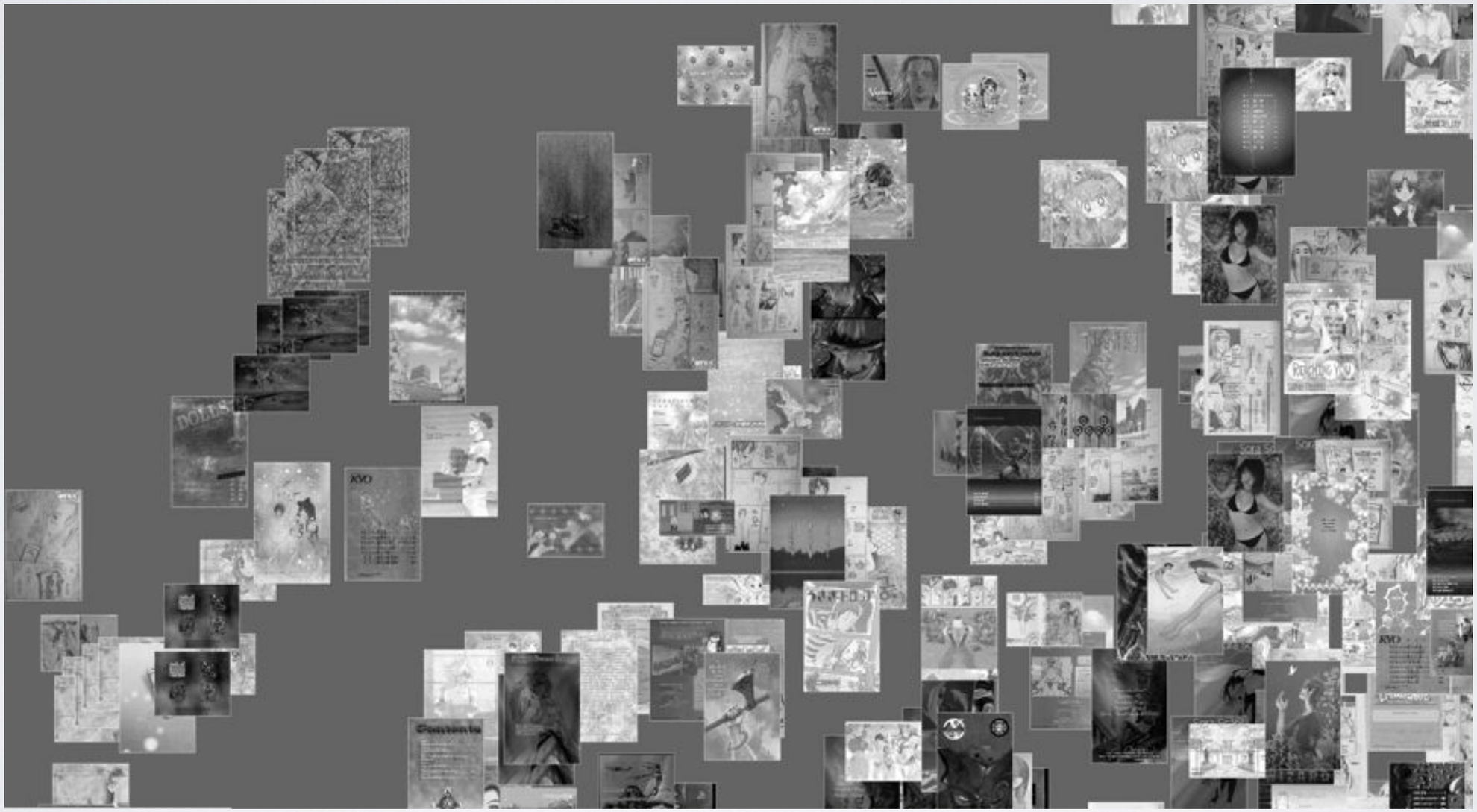
EXAMPLE

A Million Mangas: UCSD



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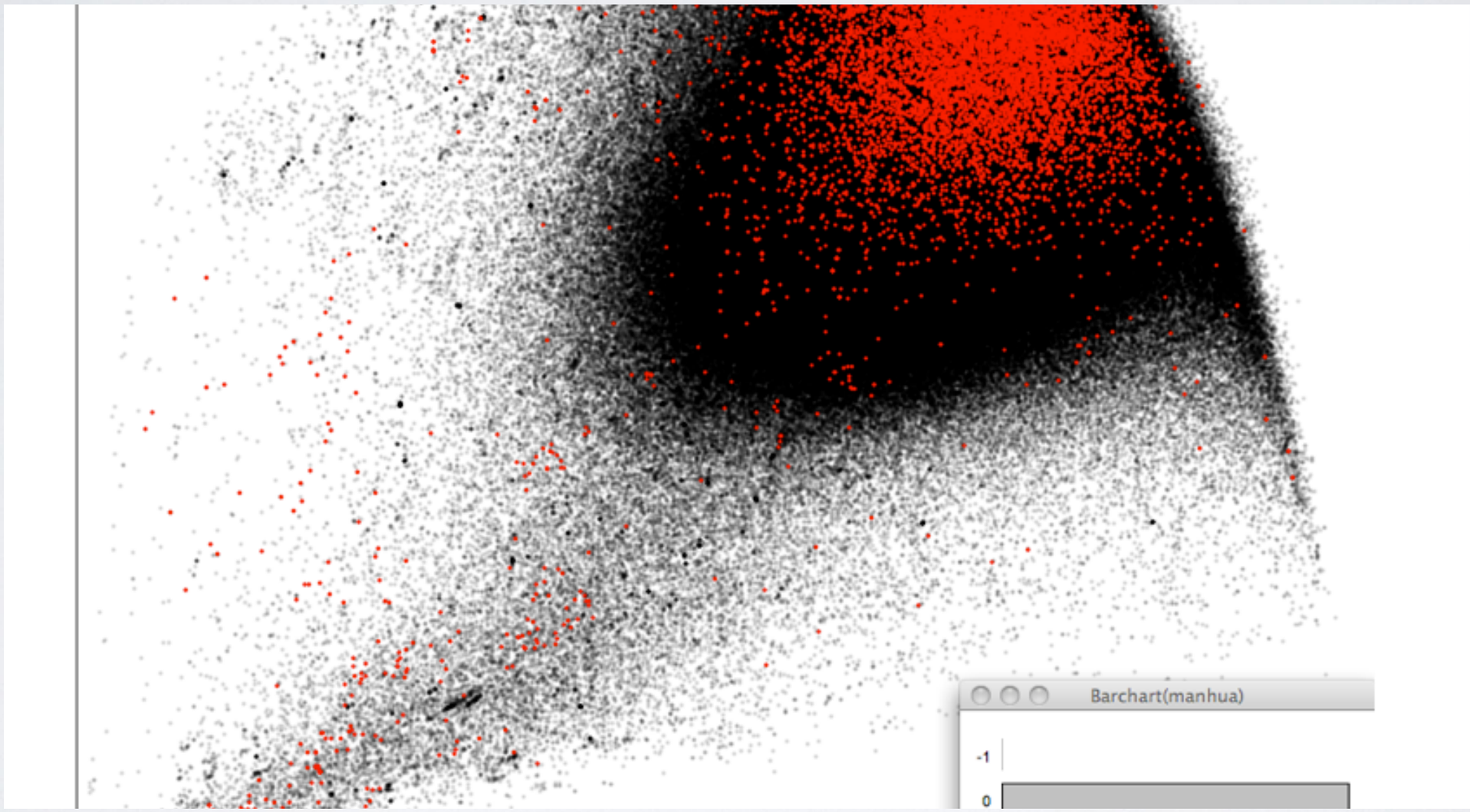
EXAMPLE

A Million Mangas: UCSD



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DIGITAL HUMANITIES RESEARCH

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DIGITAL HUMANITIES RESEARCH

- Research question
- **Data**
- **Data cleaning**
- Analysis, Research question
- Visualisation (internal)
- Analysis, Research question
- Analysis, Research outcomes
- Visualisation (external)
- Repeat

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DATA-CLEANING

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TOOLS FOR DATA-CLEANING

- Language of your choice (e.g. Python, R, Ruby)
- Data-cleaning supported by your OS (e.g. Shell scripts)
- Data-cleaning tools (e.g. TextWrangler, **OpenRefine, GoogleFusion**)

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OPENREFINE (GOOGLEREFINE)

Google refine Private letters by W Colenso edit TK 2 Permalink

Open... Export Help

Facet / Filter | Undo / Redo 28

Using facets and filters

Use facets and filters to select subsets of your data to act on. Choose facet and filter methods from the menus at the top of each data column.

Not sure how to get started?
Watch these screencasts

615 records

Extensions: Named-entity recognition | Freebase | RDF

Show as: rows **records** Show: 5 **10** 25 50 records

« first ‹ previous **1 - 10** next › last »

All			Date	Date (year)	Addressee	Location	Test 10	AlchemyAPI	DBpedia Spotlig	Zem
☆	👎	1.	May 11, 1878	1878	D. Black	Napier	| Mr D. Black | | Clyde, Wairoa, | | Dear Sir, On my return from the Country (from my last round as School Inspector) in the beginning of this month,I found your letter of 22nd. April here, with many others, awaiting me. I could not however find time to reply to it last Tuesday's Mail, and I will now try to do so. | | With reference to Mr Luff's piece of land there at Wairoa, you say it would have been more satisfactory if you had been informed (by me) what difference there was between you.and so, no doubt, it would, but I could not tell you any more: I do not know what price Mr Luff has set upon it. I know one thing, that he is a pretty good judge in all such matters, and that he is willing to sell it for what he considers a fair price. | | As you say,there is little chance (now that I am out of office) of my visiting Wairoa, otherwise I would go & look at the Land with you, & give you my opinion upon it,but, as that cannot be, I would recommend you to make a fair or good offer for it, and I will send it to Mr Luff: more than this I cannot say. I am &c | | (signed) W. Colenso | | P.S. I can well understand that while you are delaying about it, another may jump in & your chance is gone! W.C. | |	Mr Luff		Wairoa Choose ne
☆	👎			1878	D. Black	Napier		Wairoa Choose new match		Inspector Choose ne
☆	👎			1878	D. Black	Napier		Mr D. Black		Clyde F.C Choose ne
☆	👎			1878	D. Black	Napier		School Inspector		Fair valu Choose ne

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OPENREFINE (GOOGLEREFINE)

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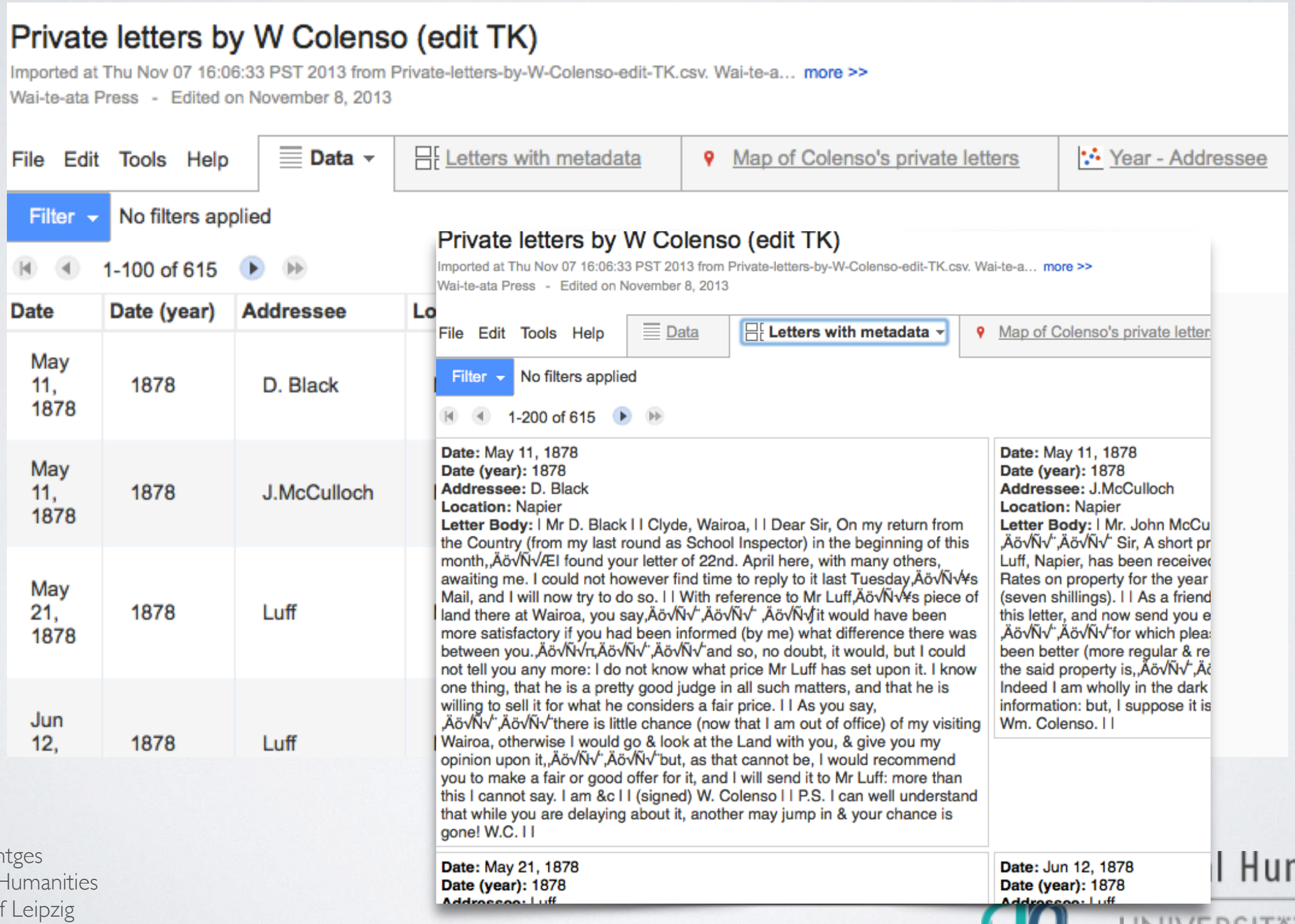
GOOGLEFUSION



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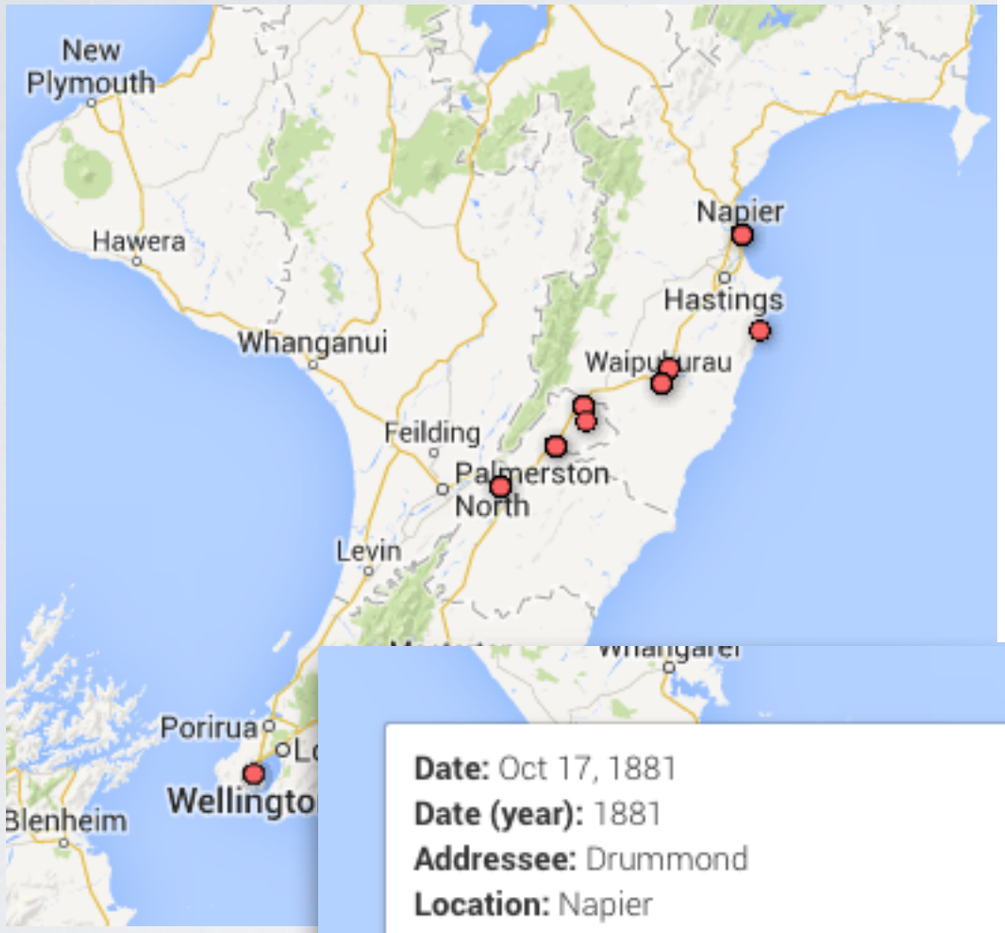
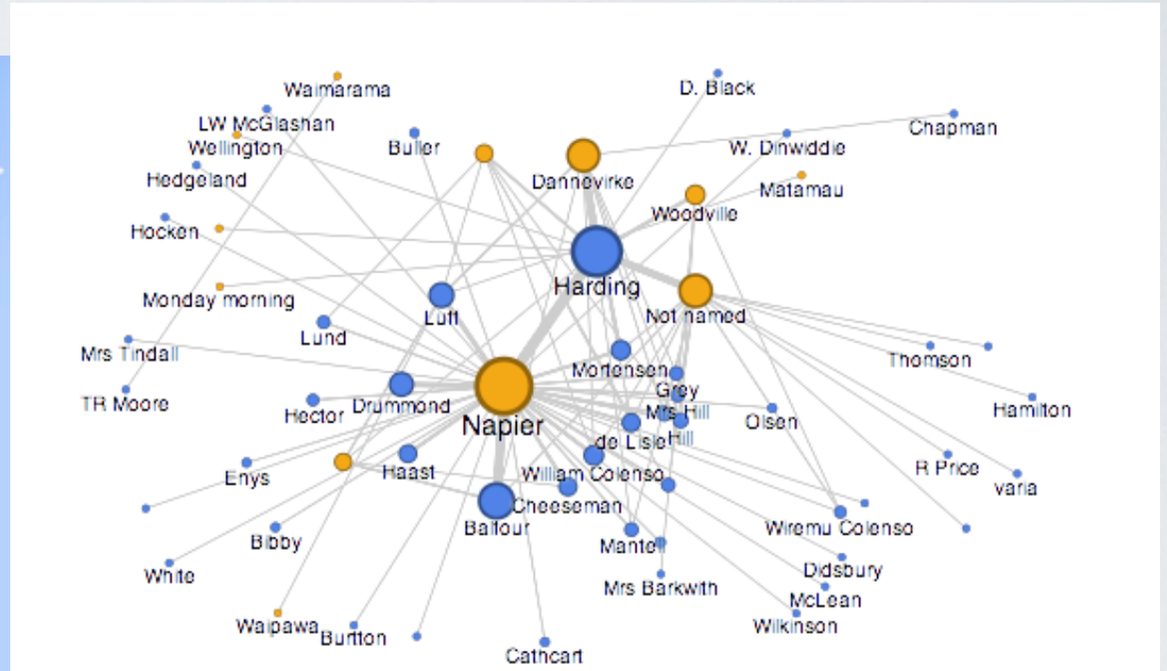
GOOGLEFUSION





Date: Oct 17, 1881
Date (year): 1881
Addressee: Drummond
Location: Napier
Letter Body: | Mr John Drummond | | Dear Sir | | No doubt you have been long expecting a line or two from me. I have been very busy (rather more so than I could have wished) having been considerably thrown back through Rheumatism, but this morning I cleared right off a lot of (Papers &c) to Dr Hector, and now, this afternoon & evening, I hope to finish reply¬¨¨¬®ing to some letters, which have been long waiting on my table.¬¨¨¬®‚Äö√Ñ√Æ(I leave tomorrow for 40 mile Bush & shall return about end of month, all being well. I would have gone thither last week had it not been for the holy-days, as I never travel at such times). | | Your letter of 19th Sept I duly received, & was pleased to find that you were then all well;‚Äö√Ñ√Æmay this find you so,. | | I have just put up for you 6 Eng Papers, to be posted with this. They are rather old, & would have been sent to you before, only I had lent two of the lot, and one of them only came back on Sat last.‚Äö√Ñ√Æ I had been personally 3 times after it. Those 2 Standards

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GOOGLEFUSION

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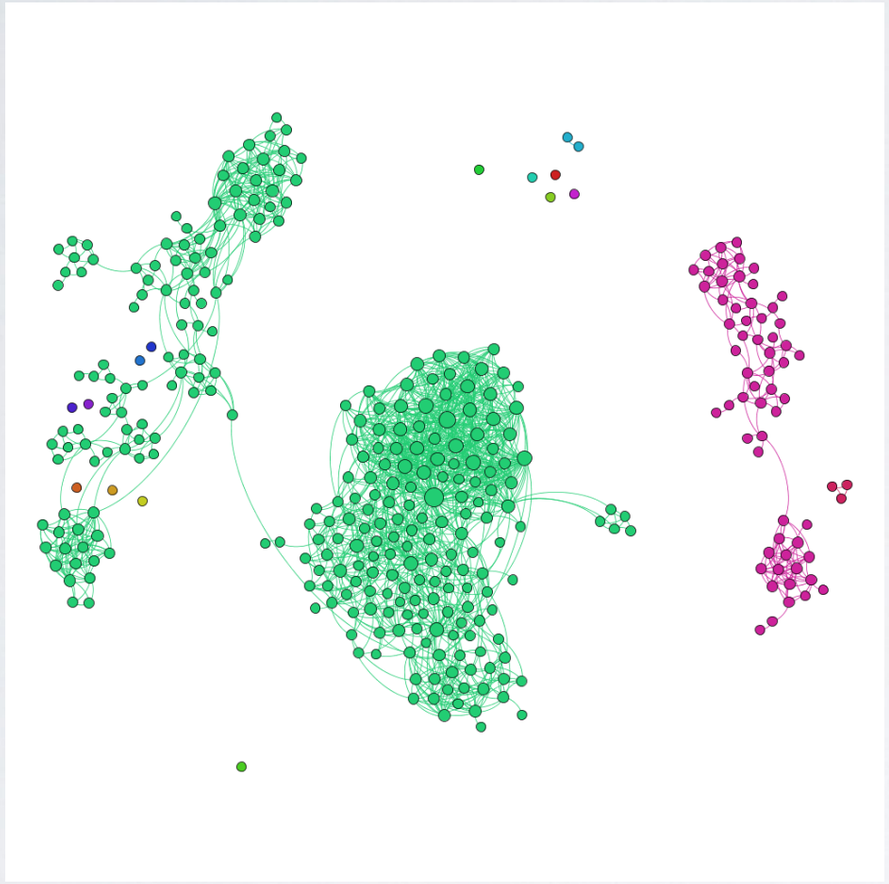
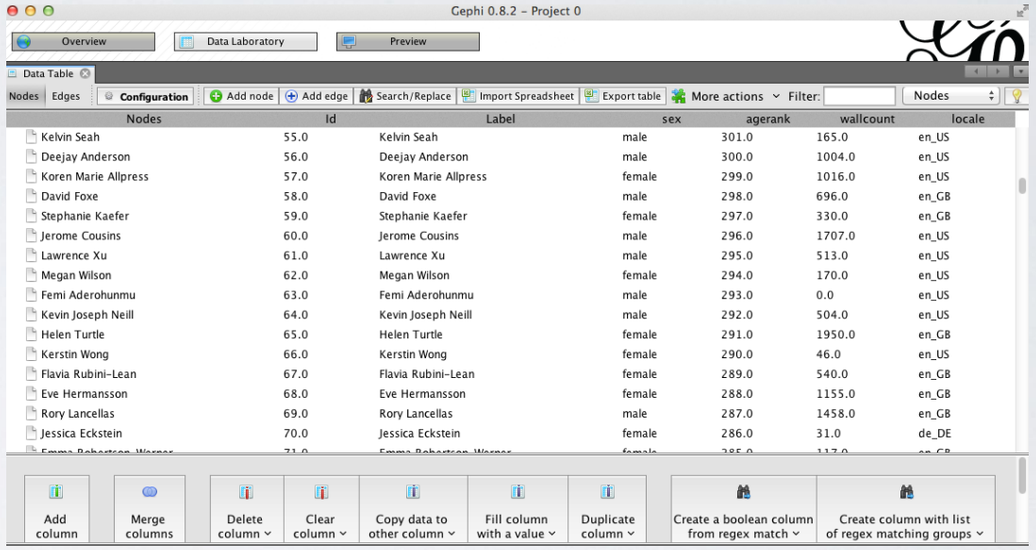
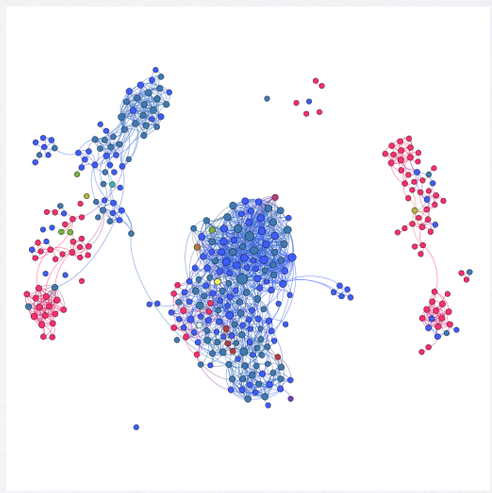
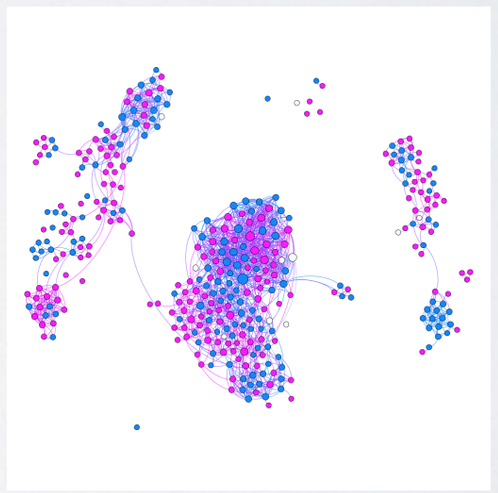
GEPHI









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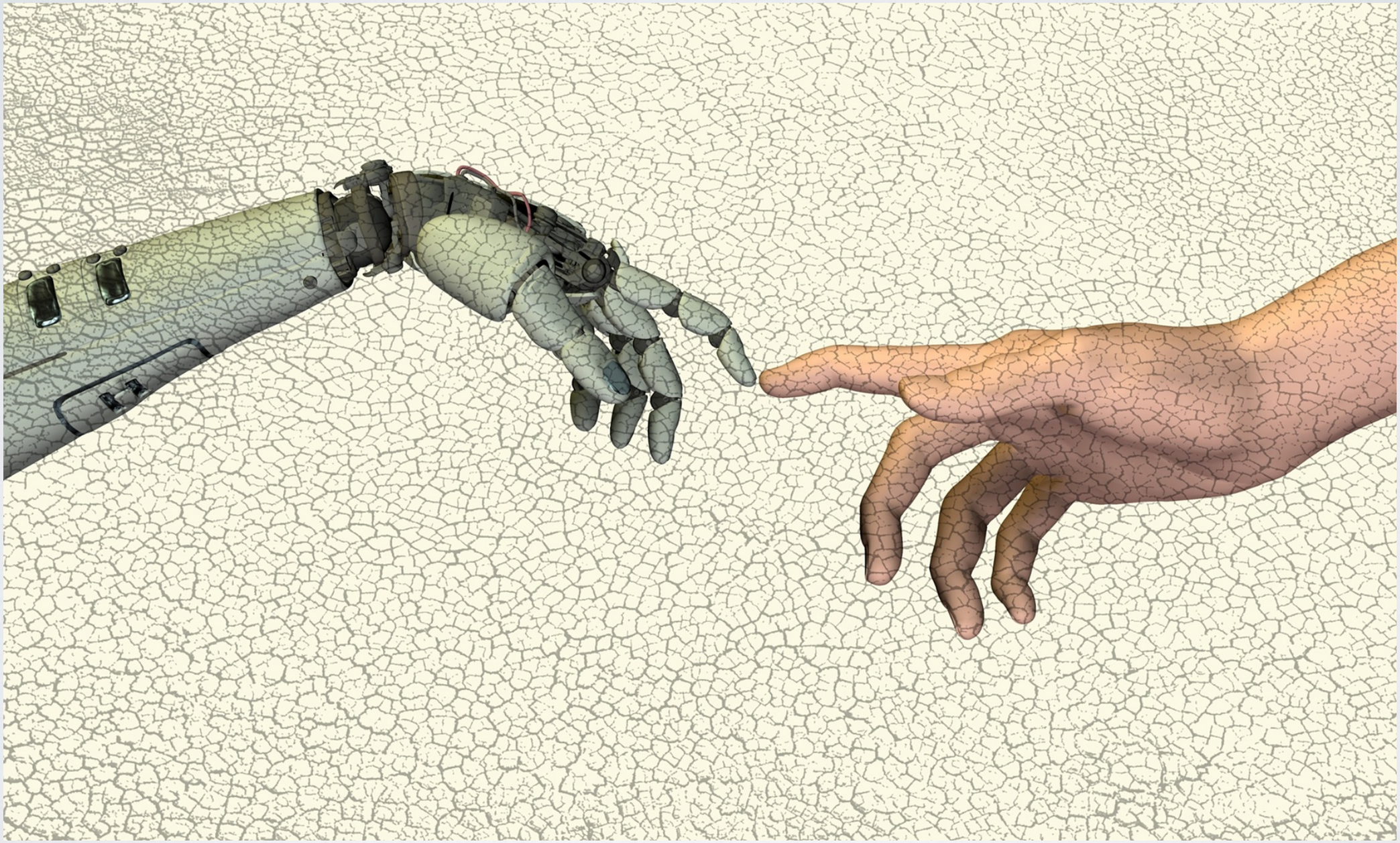
QUESTIONS?



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PRACTICAL PART:

OPEN-REFINE

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DATA CLEANING

[{"id”22702847,"updated_at":"2015-06-18T18:56:26.709+12:00","created_at":"2012-04-21T07:23:26.000+12:00","title":"Scott, Thomas, 1947- :[Christchurch earthquake] 25 February 2011","description":"The cartoon shows a digger dredging through the rubble and digging up a red heart representing 'hope' (Tom Scott doesn't do colour so this is significant). A rescuer nearby yells 'Careful! It's still beating'. Context - on 22 February 2011 a 6.3 magnitude earthquake struck in Christchurch which has probably killed more than 200 people (at this point the number is still not known) and caused much more severe damage. There were many people trapped in collapsed buildings and it was apparent in only two or three days that in most cases they could not have survived but of course people still held out impossible hope.\nQuantity: 1 digital cartoon(s).\nPhysical Description: Image file - Jpeg","content_partner":["Alexander Turnbull Library"],"category":["Images"],"creator":["Not specified"],"dc_type":["Item"],"dnz_type":"Artwork","date":["2011-01-01 12:00:00 UTC"],"source_url":"http://api.digitalnz.org/records/22702847/source","collection":["Scott, Thomas, 1947- :[Digital cartoons published from 2003 onward in the Dominion Post]","TAPUHI","Drawings and Prints Collection","New Zealand Cartoon Archive","CEISMIC"],"alternate_title":[],"additional_description":[],"display_content_partner":"Alexander Turnbull Library","collection_title":["Scott, Thomas, 1947- :[Digital cartoons published from 2003 onward in the Dominion Post]","TAPUHI","Drawings and Prints Collection","New Zealand Cartoon Archive","CEISMIC"],"display_collection":"TAPUHI","primary_collection":["TAPUHI"],"contributing_partner":[],"contributor":[],"copyright":["All rights reserved"],"citation":[],"credit_creator":null,"language":["en"],"provenance":null,"publisher":[],"rights":"Please check copyright","usage":["All rights reserved"],"source":[],"tag":["CEISMIC"],"thesis_level":null,"holding":[],"library_collection":["Drawings and Prints Collection","New Zealand Cartoon Archive"],"shelf_location":"DCDL-0017168","eprints_type":[],"text":null,"fulltext":null,"format":["Digital images","Cartoons (Commentary)","1 digital cartoon(s)","Single art work","Image file - Jpeg"],"dc_identifier":["ndha:IE3303922","tap1410005","urn:nbn:nz:wtu:DCDL-0017168","DCDL-0017168"],"display_date":"2011","published_date":[],"syndication_date":"2014-08-04T15:29:35.905+12:00","landing_url":"http://natlib.govt.nz/records/22702847","large_thumbnail_url":"http://ndhadeliver.natlib.govt.nz/NLNZStreamGate/get?dps_pid=IE3303922","rights_url":[],"thumbnail_url":"http://ndhadeliver.natlib.govt.nz/delivery/DeliveryManagerServlet?dps_pid=IE3303922\u0026dps_func=thumbnail","origin_url":"http://tapuhi.natlib.govt.nz/cgi-bin/spydus/NAV/GLOBAL/OPHDR/1/1410005","metadata_url":null,"object_url":null,"has_version":[],"license":null,"relation":["Scott, Thomas, 1947- :[Digital cartoons published from 2003 onward in the Dominion Post]","DC-Group-0025","tap:1024981"],"is_part_of":["Scott, Thomas, 1947- :[Digital cartoons published from 2003 onward in the Dominion Post]","DC-Group-0025","tap1024981"],"is_replaced_by":null,"replaces":null,"is_required_by":null,"is_version_of":null,"table_of_contents":null,"is_commercial_use":null,"atl_free_download":null,"atl_physical_viewability":null,"atl_purchasable":true,"atl_purchasable_download":true,"atl_location_code":null,"atl_usage_code":null,"anzsrc_code":null,"marsden_code":[],"subject":["Hope","Christchurch Earthquake, N.Z., 2011","Earthquakes","New Zealand","Canterbury Region","Search and rescue operations","Christchurch City"],"coverage":[],"attachments” [{"_id":"5556b31c646e7a5bbd396500","aspect_ratio":null,"date":null,"dc_identifier":"IE3303922","dc_type":null,"description":null,"display_date":null,"file_size":null,"file_type":null,"large_thumbnail_url":"http://ndhadeliver.natlib.govt.nz/NLNZStreamGate/get?dps_pid=IE3303922","name":"25feb11.jpg","ndha_rights":100,"thumbnail_url":"http://ndhadeliver.natlib.govt.nz/delivery/DeliveryManagerServletdps_pid=IE3303922\u0026dps_func=thumbnail","title":null,"url":null}],"authorities":[{"_id":"55826b9a646e7a095201d628","authority_id":1137550,"name":"subject_authority","role":null,"text":"Hope"},{"_id":"55826b9a646e7a095201d629","authority_id":1411976,"name":"subject_authority","role":null,"text":"Christchurch Earthquake, N.Z., 2011"},{"_id":"55826b9a646e7a095201d62a","authority_id":144081,"name":"subject_authority","role":null,"text":"Earthquakes - New Zealand - Canterbury

- Cartoonist
- Title
- Date
- URL
- Publisher
- Description
- Name authorities
- Subject authorities

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RESTRUCTURING

- Cartoonist
- Title
- Date
- URL
- Publisher
- Description
- Authorities

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I. INSTALL OPENREFINE

http://openrefine.org/download.html

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11. DOWNLOAD EXAMPLE DATASET FROM GITHUB

git pull
or
git clone https://github.com/ThomasK81/IntroDH.git
or
http://api.digitalnz.org/v3/records.json?api_key=LUq9-soDzWWhShuy3XhU&text=canterbury+earthquake&and[category][]=Images&and[collection][]=TAPUHI&fields=verbose&per_page=100&page=3

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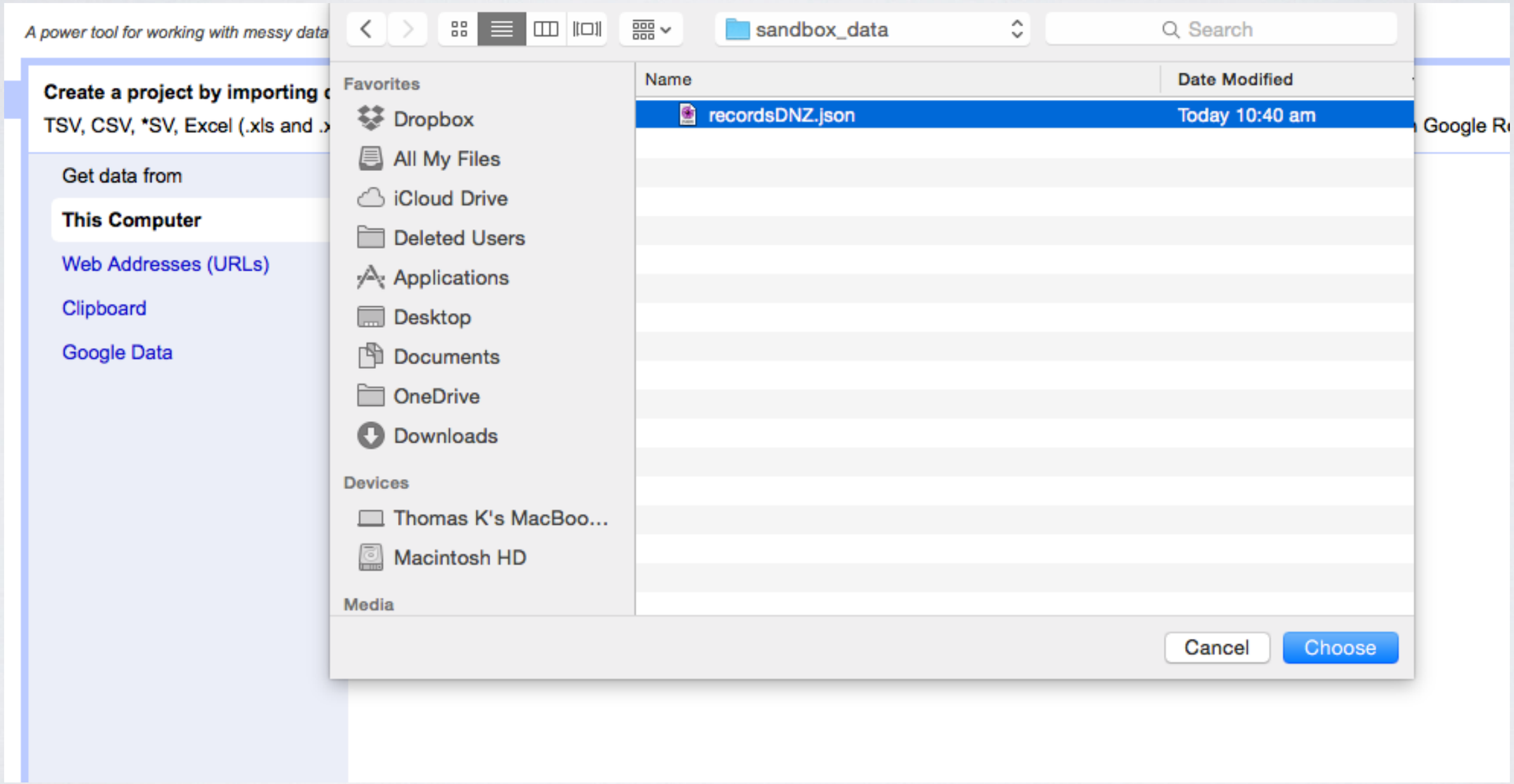
III. OPENREFINE AND IMPORT DATA SET



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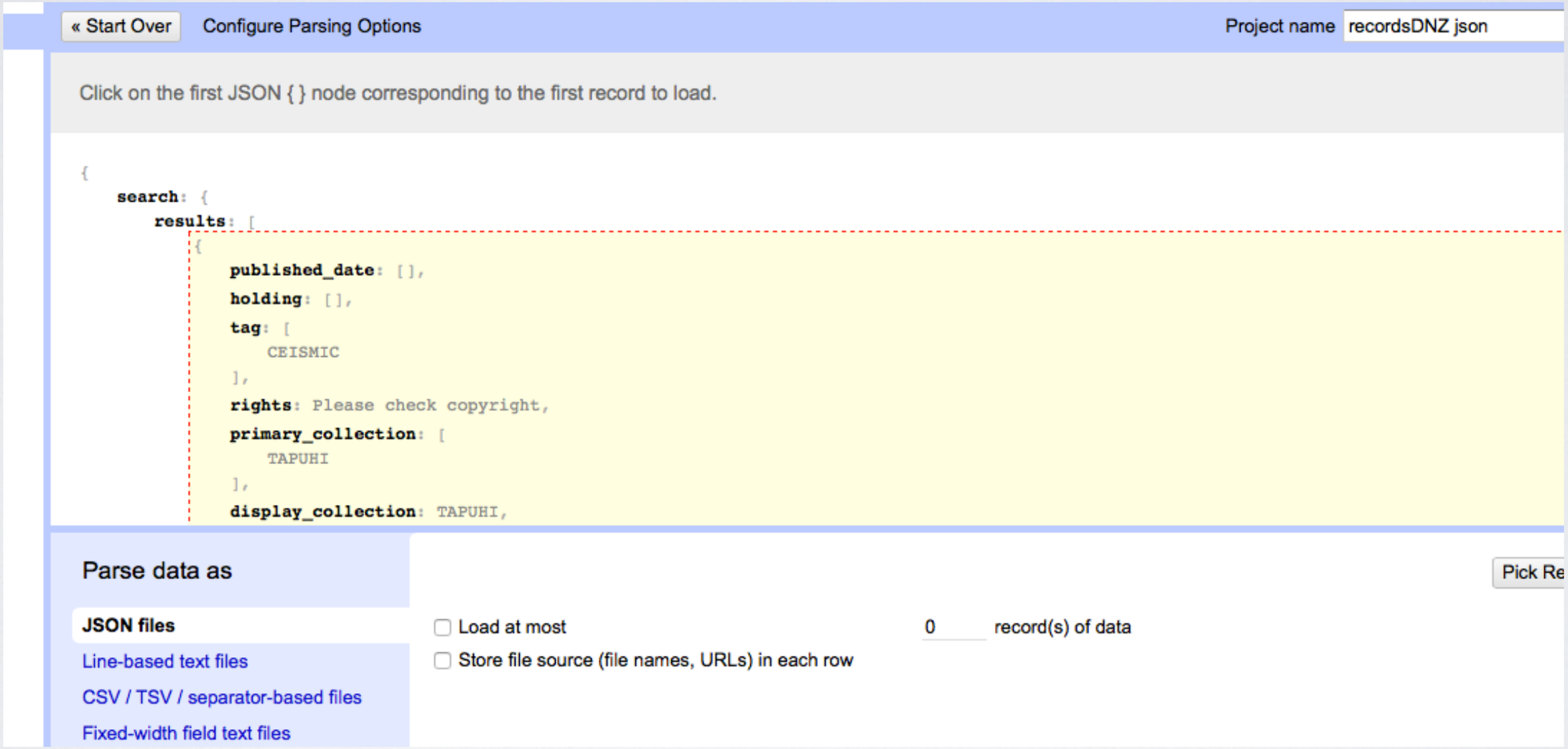
III. OPENREFINE AND IMPORT DATA SET



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III. START CLEANING

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PRUNING

- Double-ups from Canterbury & Christchurch
- Remove Photographs
- Remove DPP and Ephemera

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CREATE CSV FILE WITH THIS INFORMATION

- Cartoonist
- Title
- Date
- URL
- Publisher
- Description
- Authorities

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EXTRACT CARTOONIST'S NAME

- Cartoonist, title and date all in one field
- But, cartoonist is not always in title
- As cartoonist
- As creator
- Collection_root

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EXTRACT THE DATE

"id”22702847,"updated_at":"**2015-06-18T18:56:26.709+12:00**","created_at":"**2012-04-21T07:23:26.000+12:00**","title":"Scott, Thomas, 1947- :[Christchurch earthquake] **25 February 2011**","description":"The cartoon shows a digger dredging through the rubble and digging up a red heart representing 'hope' (Tom Scott doesn't do colour so this is significant). A rescuer nearby yells 'Careful! It's still beating'. Context - on 22 February 2011 a 6.3 magnitude earthquake struck in Christchurch which has probably killed more than 200 people (at this point the number is still not known) and caused much more severe damage. There were many people trapped in collapsed buildings and it was apparent in only two or three days that in most cases they could not have survived but of course people still held out impossible hope.\nQuantity: 1 digital cartoon(s).\nPhysical Description: Image file - Jpeg","content_partner":["Alexander Turnbull Library"],"category”:["Images"],"creator":["Not specified"],"dc_type":["Item"],"dnz_type":**"Artwork","date":**["**2011-01-01 12:00:00** UTC"],"source_url":"http://api.digitalnz.org/records/22702847/source","collection":["Scott, Thomas, 1947- :[Digital cartoons published from 2003 onward in the Dominion Post]","TAPUHI","Drawings and Prints Collection","New Zealand Cartoon Archive","CEISMIC"],"alternate_title":[],"additional_description":[],"display_content_partner":"Alexander Turnbull Library","collection_title":["Scott, Thomas, 1947- :[Digital cartoons published from 2003 onward in the Dominion Post]","TAPUHI","Drawings and Prints Collection","New Zealand Cartoon Archive","CEISMIC"],"display_collection":"TAPUHI","primary_collection":["TAPUHI"],"contributing_partner":[],"contributor":[],"copyright":["All rights reserved"],"citation":[],"credit_creator":null,"language":["en"],"provenance":null,"publisher":[],"rights":"Please check copyright","usage":["All rights reserved"],"source":[],"tag":["CEISMIC"],"thesis_level":null,"holding":[],"library_collection":["Drawings and Prints Collection","New Zealand Cartoon Archive"],"shelf_location":"DCDL-0017168","eprints_type":[],"text":null,"fulltext":null,"format":["Digital images","Cartoons (Commentary)","1 digital cartoon(s)","Single art work","Image file - Jpeg"],"dc_identifier":["ndha:IE3303922","tap:1410005","urn:nbn:nz:wtu:DCDL-0017168","DCDL-0017168"],**"display_date":"2011","published_date":[],"syndication_date":"2014-08-04T15:29:35.905+12:00",**

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EXTRACT THE DATE

"id”22702847,"updated_at":"**2015-06-18T18:56:26.709+12:00**","created_at":"**2012-04-21T07:23:26.000+12:00**","title":"Scott, Thomas, 1947- :[Christchurch earthquake] **25 February 2011**","description":"The cartoon shows a digger dredging through the rubble and digging up a red heart representing 'hope' (Tom Scott doesn't do colour so this is significant). A rescuer nearby yells 'Careful! It's still beating'. Context - on 22 February 2011 a 6.3 magnitude earthquake struck in Christchurch which has probably killed more than 200 people (at this point the number is still not known) and caused much more severe damage. There were many people trapped in collapsed buildings and it was apparent in only two or three days that in most cases they could not have survived but of course people still held out impossible hope.\nQuantity: 1 digital cartoon(s).\nPhysical Description: Image file - Jpeg","content_partner":["Alexander Turnbull Library"],"category”:["Images"],"creator":["Not specified"],"dc_type":["Item"],"dnz_type":**"Artwork","date":**["**2011-01-01 12:00:00** UTC"],"source_url":"http://api.digitalnz.org/records/22702847/source","collection":["Scott, Thomas, 1947- :[Digital cartoons published from 2003 onward in the Dominion Post]","TAPUHI","Drawings and Prints Collection","New Zealand Cartoon Archive","CEISMIC"],"alternate_title":[],"additional_description":[],"display_content_partner":"Alexander Turnbull Library","collection_title":["Scott, Thomas, 1947- :[Digital cartoons published from 2003 onward in the Dominion Post]","TAPUHI","Drawings and Prints Collection","New Zealand Cartoon Archive","CEISMIC"],"display_collection":"TAPUHI","primary_collection":["TAPUHI"],"contributing_partner":[],"contributor":[],"copyright":["All rights reserved"],"citation":[],"credit_creator":null,"language":["en"],"provenance":null,"publisher":[],"rights":"Please check copyright","usage":["All rights reserved"],"source":[],"tag":["CEISMIC"],"thesis_level":null,"holding":[],"library_collection":["Drawings and Prints Collection","New Zealand Cartoon Archive"],"shelf_location":"DCDL-0017168","eprints_type":[],"text":null,"fulltext":null,"format":["Digital images","Cartoons (Commentary)","1 digital cartoon(s)","Single art work","Image file - Jpeg"],"dc_identifier":["ndha:IE3303922","tap:1410005","urn:nbn:nz:wtu:DCDL-0017168","DCDL-0017168"],**"display_date":"2011","published_date":[],"syndication_date":"2014-08-04T15:29:35.905+12:00",**

"Create column Extracted Date at index 1 based on column title using expression grel: value.partition([0-9]{1,2}+\\s+\\S+\\s+[0-9]{4}/)[1]

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CREATE CSV FILE WITH THIS INFORMATION

- Cartoonist
- Title
- Date
- URL
- Publisher
- Description
- Authorities

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TASK
EXPORT CSV TO
GOOGLEFUSION
AND
GITHUB

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