Data Modeling in the Humanities

ILiADS 2021
Mackenzie Brooks
Associate Professor & Digital Humanities Librarian
July 28, 2021
brooksm@wlu.edu // @mackymoo

Objectives

1. Define the concept of data modeling in the humanities.
2. Raise awareness of the process of data modeling in humanities research.
3. Share best practices for modeling and creating data through local case studies.

Assumptions

1. You have a project that you know would benefit from some structured data.
2. You have some data but you're not sure if it's usable for your goals.
3. Or maybe you're just hear to learn what's possible!

What about metadata?

What is (humanities) data?

"When you call something data, you imply that it exists in discrete, fungible units; that it is computationally tractable; that its meaningful qualities can be enumerated in a finite list; that someone else performing the same operations on the same data will come up with the same results. This is not how humanists think of the material they work with."

Posner, Miriam. "Humanities Data: A Necessary Contradiction."
https://miriamposner.com/blog/humanities-data-a-necessary-contradiction/

Data-driven research questions

In medieval Florence, in or on which buildings did works commissioned by individual patrons appear? What was the age/sex of each patron and how much money did they give? - Florence As It Was

How long was the average tenure of a Scottish minister during the Reformation? How did density of parishes compare to density of population? - Mapping the Scottish Reformation

How many forms of this place name exist? Which map contains the earliest form? Which maps were used by the authors of these epics?

Who was Elizabeth Melville writing to? Who was writing back? How many times did they write to each other what does that say about their relationship? How many were in the clergy?

What I mean when I say "data modeling"

- Turning information into a format that can be processed by a computer.

- In practice, this often means creating spreadsheets while working with archival material or other objects of humanities study (artwork, books, biographies, maps, Tweets).

- Documenting the way you express your data, the relationships, the decisions, the motivations, and the context.

- The format can vary, but some communities have tools for expressing your data model. (See example from the Enslaved project ontology)

Why care about data modeling?

- Whether you're aware or not, the choices you make when creating data determine your data model. But being conscious of your data model, and thereby your assumptions about the nature of your material, can lead to better (legible, useful, equitable) results.
- A data model enables 1) data constraints 2) data queries.
- A formal data model can be studied as an object itself to learn more about the context of its creation.
- Data creation is not a neutral process.

1. A model is a model of *something*. It represents something, an object, a concept, and so on, by representing it using something else like clay, words, images, and so forth.
2. A model is *not the original* and it is not a copy of the original. Unlike a copy, a model doesn't capture all features of the entity it represents, only some of them. **The choice of features selected to be present in the model is usually based on assumptions by the creator of the model concerning which features are relevant for the intended use of the model.**
3. A model is meant to be used *by someone for something.*

Flanders, Julia, and Fotis Jannidis. The Shape of Data in the Digital Humanities : Modeling Texts and Text-Based Resources . Routledge, Taylor & Francis Group, 2019, p. 28.

THE SHAPE OF DATA IN DIGITAL HUMANITIES

Digital Research in the Arts and Humanities

MODELING TEXTS AND TEXT-BASED RESOURCES

Edited by
Julia Flanders and Fotis Jannidis

What Computers Want

- Structure
- Consistency
- Conciseness

Name	Date
Brooks, Mackenzie	2020-10-20
Mackenzie Brooks	October 20, 2020
Mackenzie K. Brooks	10/20/20

What Humanities Scholars Want

"Humanistic data are almost by definition uncertain, open to interpretation, flexible, and not easily definable. Node types are concrete; your object either *is* or *is not* a book. Every book-type thing shares certain unchanging characteristics.

This *reduction of data* comes at a price, one that some argue traditionally divided the humanities and social sciences. If humanists care more about the differences than the regularities, more about what makes an object unique rather than what makes it similar, that is the very information they are likely to lose by defining their objects as nodes."

Weingart, Scott. "Demystifying Networks."
http://www.scottbot.net/HIAL/index.html@p=6279.html

Structured Data: German Fanfiction (Jaime Roots)

- Is this a space where women feel free to share their experiences?
- How do women support each other in this space?
- What do the members themselves think of this space?
- Why does this fandom seem to be free of misogyny?
- Why is there a huge majority of women writers?
- What does it mean that barely any men are coming to this space?
- What type of space can we define this as? Is it public, private, or some kind of hybrid?
- Are there any identifiable posting trends?

Structured Data: German Fanfiction (Jaime Roots)

|	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	Rem
1	Title	Author	Age	Gender	Location	Fairy Tales Used		Type of Fic	Feminist?	Reasoning	Genre	Criminality	Length (wo	Chapters	Traditional,	Number of	Number of	Number of	AN?	Rem
2	Rotkäppch	Elster	34	weiblich	Deutschlan	Rotkäppch	NA	Pessimistic	0	Focus on fa	Drama	1	1335	1	Modern	24	24	1	1	Note
3	Moderne M	Marzahn	NA	männlich	NA	Rotkäppch	NA	Traditional	0	Follows tra	Spoof	0	313	2 total	Modern	NA	3 total	0 total	1	Shor
4	Moderne M	Marzahn	NA	männlich	NA	Der Wolf u	NA	Traditional	0	Follows tra	Spoof	0		2 total	Modern	NA	3 total	0 total	1	Shor
5	Im Märche	Dea Tacita	32	weiblich	Deutschlan	Crossover	NA	Leaning	1	Focus on in	Humor	0	12818	16	Traditional	15	15	0	1	Shor
6	CSI: Märch	Pruina	NA	weiblich	NA	Schneewitt	NA	Traditional	0	Follows tra	Krimi	1	2977	1	Modern	5	5	0	1	Who
7	Ghettokäp	Captain Lifi	24	weiblich	Irland	Rotkäppch	NA	Leaning	1	She isn't sa	Drama	1	1476	1	Modern	4	4	0	1	Note
8	Die Märche	Jessy96	23	weiblich	Deutschlan	Wizard of C	Characters:	Traditional	0	Follows tra	Allgemein	0	1487	7	Modern	2	2	0	0	NA
9	Naked	Bot-chan	NA	männlich	NA	Der Froschk	Des Kaisers	Empowerm	1	frog-prince	Humor	0	2537	1	Traditional	5	5	3	0	NA
10	Fairytale...	Kaizokulsse	NA	weiblich	NA	Crossover	NA	Other	0	Not enough	Mystery	0	328	1	Traditional	1	1	0	1	Wha
11	Rumpelstil	FrauNasenl	28	weiblich	Deutschlan	Rumpelstil	NA	Traditional	0	Seems like	Spoof	0	892	1	Modern	8	8	0	1	This
12	Rumpelstil	-Melaly-	NA	weiblich	NA	Rumpelstil	NA	Dark	1	Rumpelstilt	Drama	1	1519	1	Modern	1	1	0	0	NA
13	Hans im Ur	SeiraChi	26	weiblich	Deutschlan	Hans im Gl	NA	Pessimistic	0	Follows tra	Spoof	0	912	1	Modern	2	2	0	1	Writ
14	Rotkäppch	musicgirl	25	weiblich	Deutschlan	Rotkäppch	NA	Dark	1	Red is a ba	Drama	1	711	1	Modern	4	4	3	1	Writ
15	Dornrösche	Traumscha	33	weiblich	NA	Dornrösche	NA	Empowerm	1	Abuse beca	Drama	1	1763	1	Traditional	2	2	0	0	NA
16	Der Wolf u	Splitterherz	NA	weiblich	NA	NA	NA	Leaning	1	Wolf is the	Drama	0	1563	1	Traditional	2	2	2	1	NA
17	das Werber	littleCaitlin	31	weiblich	NA	Crossover	NA	Modern	0	Just a silly	Spoof	0	494	1	Modern	1	1	0	1	Writ
18	Hänsel und	DareToDair	NA	weiblich	NA	Hänsel und	NA	Traditional	0	Largely foll	Spoof	0	834	1	Modern	2	2	1	0	NA
19	Der Wolf	abyzz	23	weiblich	NA	Rotkäppch	NA	Dark	1	She is swall	Drama	1	2442	1	Modern	3	3	1	1	NA
20	Der Prinz u	HappyEndS	34	weiblich	Südkorea	Dornrösche	Der Prinz u	Leaning	1	Prince is cu	Spoof	0	540	1	Traditional	2	2	1	1	Asks
21	Urban Fair	LittleChi	25	weiblich	Deutschlan	Schneewitt	NA	Leaning	1	Notes of da	Drama	1	3586	3	Traditional	3	3	3	1	Thes
22	...Grimmsch	Cassiiiee	23	weiblich	NA	Rotkäppch	NA	Empowerm	1	Reclaims fe	Humor	0	151	3 total	Modern	NA	18 total	16 total		0	NA
23	...Grimmsch	Cassiiiee	23	weiblich	NA	Rapunzel	NA	Empowerm	1	Reclaims fe	Humor	0	102	3 total	Modern	NA	18 total	16 total		0	NA
24	...Grimmsch	Cassiiiee	23	weiblich	NA	Aschenputt	NA	Empowerm	1	Reclaims fe	Humor	0	101	3 total	Modern	NA	18 total	16 total		0	NA
25	Red Riding	ChChCo	NA	NA	NA	Rotkäppch	NA	Leaning	1	The "wolf"	Allgemein	0	611	1	Traditional	0	0	0	1	Mea
26	Raven Tale	MewMitsu	NA	weiblich	Deutschlan	Rotkäppch	NA	Leaning	1	Red wants	Allgemein	1	777	1	Traditional	0	0	0	1	Anot
27	Li'l Red Rid	ShadowMa	27	männlich	Deutschlan	Rotkäppch	NA	Leaning	1	Wolf decid	Drama	0	543	1	Traditional	4	4	2	1	Inspi
28	I'd like to t	Noreechinx	NA	NA	NA	Rotkäppch	NA	Other	0	Not enough	Fantasy	0	356	1	Traditional	0	0	0	0	NA
29	....Eine and	merjana	24	weiblich	Deutschlan	Aschenputt	NA	Empowerm	1	Cinderella t	Humor	0	696	1	Modern	3	3	2	1	"Wh
30	Hänsel und	MissTake	NA	NA	Deutschlan	Hänsel und	NA	Traditional	0	Follows tra	Humor	0	1314	2	Modern	4	4	3	1	Rem
31	Dornrösche	Cherry-Lyn	25	weiblich	NA	Dornrösche	NA	Modern	0	Zombie att	Horror	0	662	1	Traditional	3	3	0	1	Und
32	Das Blauk	KathaXD	NA	weiblich	Deutschlan	Rotkäppch	NA	Empowerm	1	Reds tells t	Spoof	1	606	1	Modern	3	3	3	1	NA

fics_final
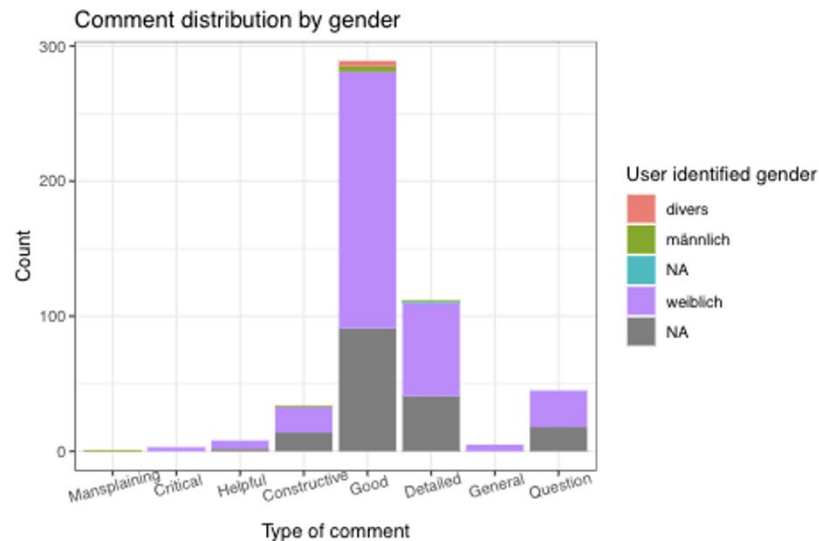
Structured Data: German Fanfiction (Jaime Roots)
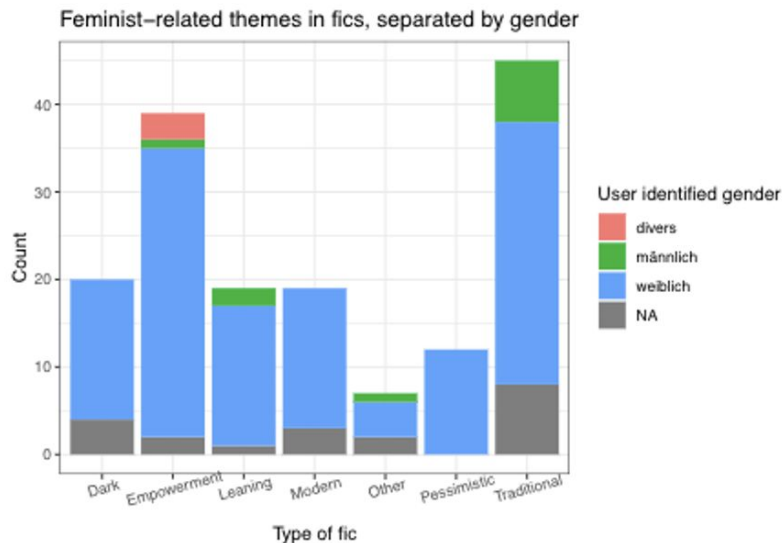
"Tidy datasets are easy to manipulate, model and visualise, and have a specific structure: each variable is a column, each observation is a row, and each type of observational unit is a table."

Wickham, Hadley. "Tidy Data."
https://vita.had.co.nz/papers/tidy-data.pdf

Tidy Data?

	A	B	C	D	E
1	Elizabeth Melville SNA		**Passage of Melville's Literature**		
2					
3	If you add a row, make sure it doesn't		***Disclaimer: This category only maps the impacts of literary works. The Relationship between individuals may have b		
4	mess up another data set! Adding				
5	columns should be fine. :)		Node	Arc or Edge	Relationship
6					
7	Closest and Most Certain Connections		James Melville	commissioner/owner of the Crawford Manuscript	has his work in there
8			James Melville	Andrew Melville	wrote a Latin epigram in Propine, which James translated
9	|		James Melville	William Scot	wrote in Propine and added his own poem
10	|		James Melville	John Johnston	wrote in Propine
11	|		James Melville	Robert Durie	wrote in Propine
12	|		James Melville	John Carmichael	wrote in Propine
13	|		James Melville	John Caldcleuch	wrote in Propine
14	|		James Melville	John Dykes	wrote in Propine
15	V		James Melville	David Calderwood	read The Autobiography and Diary of Mr James Melville
16					
17	Distant and Least Certain Connections		Node	Arc or Edge	Relationship
18					
19	For example, I know that John Adams		Robert Durie	James Melville	wrote in Propine
20	and Abigail Adams are closer than John		Robert Durie	Andrew Melville	wrote in Propine
21	Adams and Samuel Adams or John		Robert Durie	John Johnston	wrote in Propine
22	Adams and George Washington. I do		Robert Durie	William Scot	wrote in Propine
23	not know for certain if John Adams		Robert Durie	John Carmichael	wrote in Propine
24	knew Martha Washington or General		Robert Durie	John Caldcleuch	wrote in Propine
25	Cornwallis, but I do know that he would		Robert Durie	John Dykes	wrote in Propine
26	have known Martha Washington better				
27	than he would have known Cornwallis.		Node	Arc or Edge	Relationship

Social Network Analysis of Elizabeth Melville (Genelle Gertz)

Edge list

	A	B
1	source	target
2	Adam Colt	John Livingstone
3	Agnes Livingstone	Alexander Livings
4	Agnes Livingstone	Barbara Livingsto
5	Agnes Livingstone	Bartholomew Flee
6	Agnes Livingstone	Elizabeth Melville
7	Agnes Livingstone	Janet Fleeming
8	Agnes Livingstone	John Livingstone
9	Agnes Livingstone	Margaret Cor
10	Agnes Livingstone	Marion Hamilton
11	Agnes Livingstone	Samuel Livingsto
12	Agnes Livingstone	William Livingstor
13	Agnes Livingstone	William Livingstor
14	Alexander Brodie	David Dickson
15	Alexander Brodie	John Livingstone
16	Alexander Colville	Christian Colville
17	Alexander Colville	Elizabeth Melville
18	Alexander Colville	James Colville
19	Alexander Colville	John Colville of W
20	Alexander Colville	Samuel Colville
21	Alexander Dickson, profes	David Dickson
22	Alexander Gordon of Earls	Bishop of Gallowa
23	Alexander Gordon of Earls	Elizabeth Gordon
24	Alexander Gordon of Earls	John Livingstone
25	Alexander Gordon of Earls	Samuel Rutherfor
26	Alexander Gordon of Earls	William Gordon o
27	Alexander Gordon of Knoc	John Livingstone

Node Attribute Table

fx | id

	A	B	C	D	E	F	G	H	I	J	K
1	id	label	name-alternate	location	sources	royal-title	layperson-title	clergy	clerical-title	relationship to	Alive with Me
2	Agnes Livingstor	Agnes Livingstor	N/A	Kilsyth	ODNB	no	no	no	no	mother of John Livingstone	
3	Alexander Colvil	Alexander Colvil	N/A	Halhill	ODNB	no	third Lord of Culr	no	N/A	her son	yes
4	Alexander Montg	Alexander Montg	Earl of Eglinton,	Eglinton	ODNB	no	no	no	N/A	friends	yes
5	Andrew Duncan	Andrew Duncan	N/A	Crail	N/A	no	no	minister	minister of Crail	N/A	yes
6	Andrew Melville	Andrew Melville	N/A	Newburn	ODNB	no	no	minister	minister and prin	Lady Culross wr	yes
7	Beatrix Hamilton	Beatrix Hamilton	N/A	Ayrshire	ODNB	no	no	no	no	N/A	yes
8	Christian Colville	Christian Colville	N/A	Fife	N/A	no	no	no	no	daughter	yes
9	Christian Hamilto	Christian Hamilto	Lady Boyd	Chryston	SR Project Gute	no	no	no	no	acquaintances	yes
10	Christian Melville	Christian Melville	N/A	Fife	N/A	no	no	no	no	sisters	yes
11	Christine Boswe	Christine Boswe	N/A	Fife	ODNB	no	no	no	N/A	mother	yes
12	Clement Cor	Clement Cor	N/A	Culross	N/A	no	no	minister	minister of Culro	brother-in-law	
13	David Black	David Black	N/A	Edinburgh	ODNB	no	no	minister	minister of St. Ar	N/A	no
14	David Calderwo	David Calderwo	N/A	Edinburgh	ODNB	no	no	minister	Church of Scotla	N/A	yes
15	David Dickson	David Dickson	N/A	Irvine	ODNB	no	no	minister	Minister of Irvine	friends	yes
16	Edward Bryce	Edward Bryce	N/A	unknown	EM's letters	no	no	no	no	acquaintances	yes
17	Elizabeth Melvill	Elizabeth Melvill	Lady Culross	Fife	ODNB	no	Lady Culross	no	N/A	N/A	yes
18	Euphan McCulle	Euphan McCulle	N/A	unknown	EM's letters	no	no	no	no	acquaintances	yes
19	George Dunbar	George Dunbar	N/A	unknown	EM's letters	no	no	no	no	acquaintances	yes
20	Henry Balnaves	Henry Balnaves	N/A	Glasgow		no	diplomat	no	N/A		
21	Isobell Cor	Isobell Cor	N/A	Logie near Sterli	EM's letters	no	no	no	no	friends	yes

Cartography Project (Stephen P. McCormick)

	A	B	C	D	E	F
2	**Ptolemy**	**Order**	***Capitolo XVIII***	**Type**	**Africa I & Guerrino**	**5698 Africa IV Guerrino**
19	Ischeri	133	Ascherin			
20	Aucol	100	Aucol (sul mare…)+B115			
21	Ausum	75	Ausin			
22	Autolaia	23	Autalale	city		Autolale
23	Bagazi civitas	16	Bagazin	city		Bagaça?
24	Badiath	132	Baldiac			
25	Babica civitas	7	Balibam	city		Babiba?
26	---	97	**BARBERIA (a venire verso levante entri en ~)**			
27	---	108	**BARBERIA (Partito di ~ verso levante)**			
28	Baecolicus mons	154	Battolir (monte)			
29	Bedis	70	Bendil			
30	Beynich (Ben Ghasi)	143	Bernic			
31	Bizerte	104	Beserta (sul mare…)			
32	Byren mons	85	Blaran (Byren mons)			
33	Benta	48	Bintar			
34	Buthurus	115	Bitulassa (sul mare…)			Buthuris
35	Bona	102	Bona (sul mare…)			
36	Bonandrea	147	Bonandrea (costa sett.)			
37	---	111	Bondrat (Tison, ma qui è chiamato ~)			
38	---	95	Brazara (monte ~)			
39	Brisch	89	Bricif (città)			
40	Lyxama	139	Brisana (fra terra)			
41	Buzara mons	83	Buzara (Buzara mons)			
42	---	93	Buzias (città)			
43	Daratus fluvius	10	Caifas	river		Daradus fluvius
44		4	Cailes (= Nillo)	river		
45	Chelonidas palus	140	Caloimbes (lago)			

What Computers Want: Structured + Tidy Data

Data Table

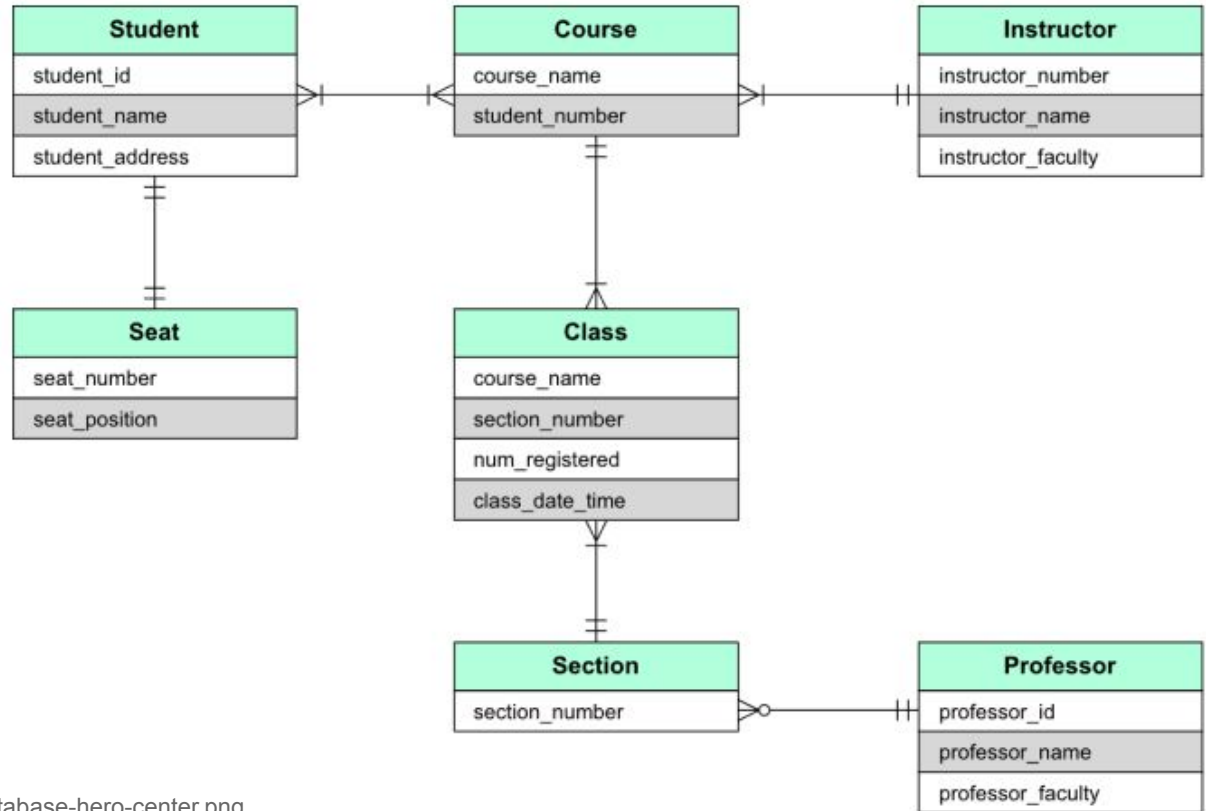| PetID	Name	Animal	Breed
Pet1	Huxley	Cat	Tabby
Pet2	Harper	Dog	Flat Coat Retriever
Pet3	Hobbes	Dog	Hound

Format: CSV or Comma Separated Value

PetID,Name,Animal,Breed,
Pet1,Huxley,Cat,Tabby,
Pet2,Harper,Dog,Flat Coat Retriever,
Pet3,Hobbes,Dog,Hound

What Computers Want: Data types

Data type	Example
Strings or characters, often surrounded by quote marks	"This is a string!"
Integer	4
Boolean, another way to say true/false or yes/no	YES
Date, usually formatted as YYYY-MM-DD	2019-10-20
Time, usually formatted as HH:MM:SS	10:20:23

Relational Data

Relational Data & Structured Query Language (SQL)

PetID	Name	Animal	Breed
Pet1	Huxley	Cat	Tabby
Pet2	Harper	Dog	Flat Coat Retriever
Pet3	Hobbes	Dog	Hound

SELECT column_name,column_name

FROM table_name

WHERE column_name operator value;

SELECT * FROM pets

WHERE animal='cat';

Pet1   Huxley   Cat   Tabby

Mapping the Scottish Reformation (Mikki Brock)
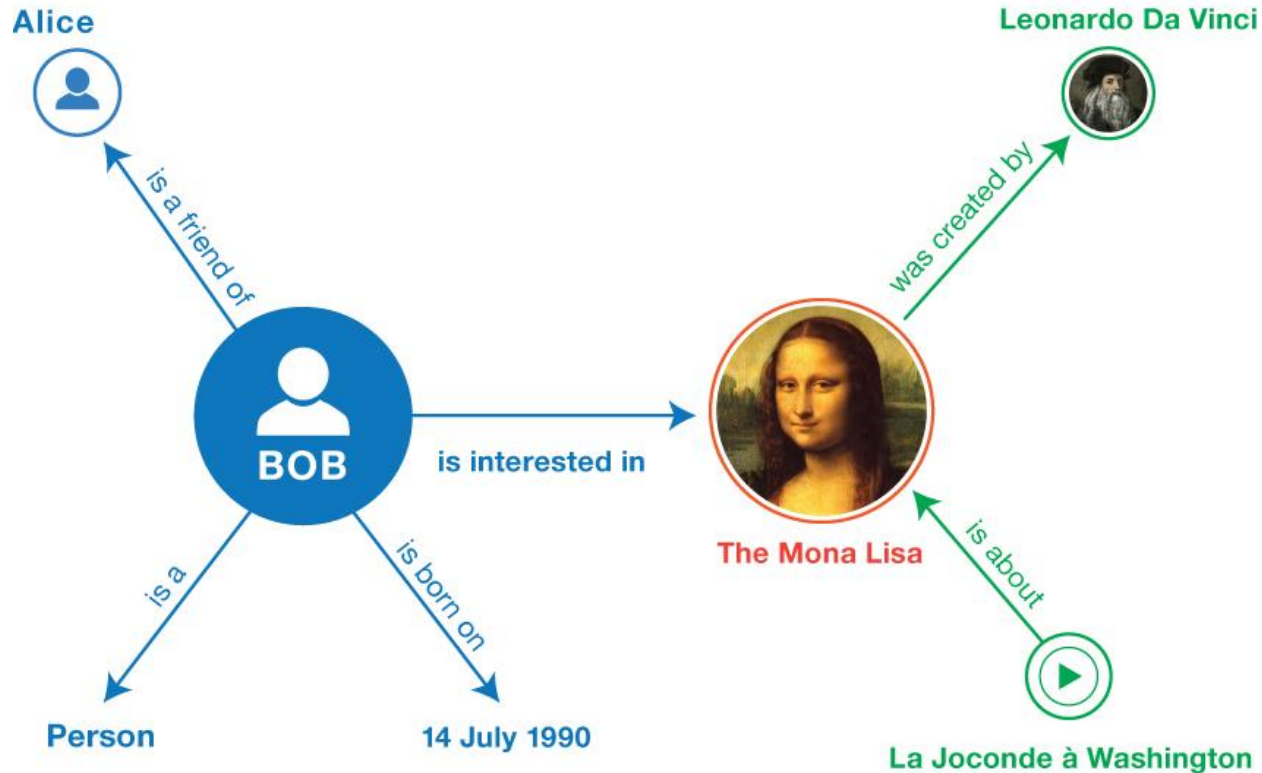
```
1  #defaultView:Map
2
3  SELECT ?minister ?ministerLabel ?PlaceLabel ?StartTime ?EndTime (SAMPLE(?coords) AS ?coord) WHERE {
4    ?minister wdt:P106 wd:Q1423891.
5    {
6      ?minister p:P551 ?PlaceStatement.
7      ?PlaceStatement ps:P551 ?Place;
8        pq:P580 ?StartTime;
9        pq:P582 ?EndTime.
10   }
11   ?minister wdt:P551 ?Place.
12   ?Place wdt:P625 ?coords.
13   SERVICE wikibase:label { bd:serviceParam wikibase:language "en". }
14 }
15 GROUP BY ?minister ?ministerLabel ?PlaceLabel ?StartTime ?EndTime
16 ORDER BY (?StartTime)
17
```

minister	ministerLabel	PlaceLabel
wd:Q189937	John Knox	St Giles' Cathedral
wd:Q93496570	John Spottiswood	Mid Calder
wd:Q6264440	John Willock	St Giles' Cathedral

http://www.mappingthescottishreformation.org/

Extending Your Data - Linked Data

Linked Data - Mapping the Scottish Reformation


```
#defaultView:Map

SELECT ?minister ?ministerLabel ?PlaceLabel ?StartTime ?EndTime (SAMPLE(?coords) AS ?coord) WHERE {
  ?minister wdt:P106 wd:Q1423891.
  {
    ?minister p:P551 ?PlaceStatement.
    ?PlaceStatement ps:P551 ?Place;
      pq:P580 ?StartTime;
      pq:P582 ?EndTime.
  }
  ?minister wdt:P551 ?Place.
  ?Place wdt:P625 ?coords.
  SERVICE wikibase:label { bd:serviceParam wikibase:language "en". }
}
GROUP BY ?minister ?ministerLabel ?PlaceLabel ?StartTime ?EndTime
ORDER BY (?StartTime)
```

minister	ministerLabel	PlaceLabel
Q wd:Q189937	John Knox	St Giles' Cathedral
Q wd:Q93496570	John Spottiswood	Mid Calder
Q wd:Q6264440	John Willock	St Giles' Cathedral

Identifiers

VIAF ID	100199622
	▸ 3 references
ISNI	0000 0001 1880 1517
	▸ 2 references
VcBA ID	495/180680
	▸ 1 reference
BAnQ author ID	0001038991
	▸ 1 reference
BIBSYS ID	90735407
	▸ 1 reference

http://www.mappingthescottishreformation.org/

https://www.wikidata.org/wiki/Q189937

Serialized Data &

JavaScript
Object Notation
(JSON)

See also RDF…

Real world example:
http://numismatics.org/collection/1944.100.75
080?lang=en

{

  "PetID": "Pet1",

  "Name": "Huxley",

  "Animal": true,

  "Breed": "Tabby",

  "Address": {

        "streetAddress": "555 5th St.",

        "city": "The Couch",

        "state": "Living Room",

        "postalCode": "55555"

  },

}

Serialized Data & Extensible Markup Language (XML)

<lg rhyme="ABCCBBA">

       <l>The sunlight on the <rhyme label="A">garden</rhyme></l>

       <l><rhyme label="A">Harden</rhyme>s and grows <rhyme label="B">cold</rhyme>,</l>

       <l>We cannot cage the <rhyme label="C">minute</rhyme></l>

       <l>Wi<rhyme label="C">thin it</rhyme>s nets of <rhyme label="B">gold</rhyme></l>

       <l>When all is <rhyme label="B">told</rhyme></l>

       <l>We cannot beg for <rhyme label="A">pardon</rhyme>.</l>

</lg>

https://tei-c.org/release/doc/tei-p5-doc/en/html/VE.html

Getting started

- Start with common standards like Dublin Core (15 very generic elements).
- Create or rely on controlled vocabularies (set lists of terms).
- Keep in mind the **use** of your data.
- Document your decisions.
- Consistency is more important than doing everything right. Plus, "right" is subjective.

Extending Your Data

- Find and use linked open data standards, especially for place names, locations, people, or subject terms.
- Programming Historian lesson: "[Introduction to the Principles of Linked Open Data](#)"
- Check out projects like [Wikidata](#), [Getty Vocabularies](#), [Pelagios](#). Some get more specific: [Enslaved.org ontology](#)
- Look at data-driven projects in your field to find out what vocabularies they might use. Example: http://numismatics.org/collection/1944.100.2247
- Know that there is a lot out there: http://jennriley.com/metadatamap/seeingstandards.pdf

Data Modeling Questions

- What questions are you trying to ask/answer?
- What are your sources?
- What do you care about? What don't you care about?
- What are your methods?
- What tools are you using? What format does your data need to be in?
- What constraints do you need? What constraints will be problematic?
- How can/should you extend your data?
- Who is going to use your data?
- How should you share and license your data?
- What critical conversations about description are relevant to my project?
- **Who can help me learn more about data/metadata?**

Tools for Capturing and Cleaning Data

- Excel + Google Sheets - tried and true spreadsheet software

- AirTable - $$, user-friendly database platform

- Tropy - Research photo management

- Open Refine - "Powerful tool for working with messy data" + extending data

- Recogito - Semantic annotation, tag a document with people and places

- Omeka S - Lots of new linked data capabilities!

Resources and Readings

- [Big? Smart? Clean? Messy? Data in the Humanities](#)

- [Designing Databases for Historical Research](#)

- [DH Curation Guide](#)

- [The Programming Historian](#)

- [Guidelines for Inclusive and Conscientious Description](#)

- [Working with Dublin Core (Omeka)](#)

- [Understanding Metadata: What is Metadata, and What is it For?: A Primer](#)
- [Metadata by Jeffrey Pomerantz](#) (MIT Essential Knowledge, so cute)