

# New Frontier: Using Wikidata on Commons

By Jarek Tuszynski

(user:jarekt)





























August 2017

# Infobox templates on Commons


- Purpose:
  - **Preserve metadata** - Many files come from institutions which store rich metadata. When uploading files to Commons we want to preserve it all.
  - **Present metadata** – Present metadata to the users in the most simple and readable way
  - **Internationalization** (l18n) - Commons serves Wikimedia projects using many languages. Our goal is to show pages in the language of the viewer.
  - **Machine readability**
- Metadata is stored in variety of templates, for example
  - `{{Information}}` – for user generated photographs
  - `{{Artwork}}` – for artworks, artifacts and other objects
  - `{{Creator}}` – for authors
  - `{{Institution}}` – for galleries, museums and other institutions
  - We also have `{{Book}}`, `{{Authority control}}`, `{{Location}}` (for coordinates) taxonomic templates and many more
- Originally infobox templates stored metadata in wikitext format

# Preserving metadata during upload

## Summary [edit]

<b>Artist</b>	Barthel Bruyn the Elder (1493–1555)  	
<b>Alternative names</b>	Bartholomäus Bruyn the Elder, Bartholomäus Bruyn (I), Bartholomaeus de Bruijn, Bartold Bruin, Bartel Bruns, Bartholomäus Bruyen, Bartholomaeus de Bruyn, Bartel Bruen	
<b>Description</b>	German painter	
<b>Date of birth/death</b>	1493	22 April 1555
<b>Location of birth/death</b>	Wesel	Cologne
<b>Work location</b>	Cologne	
<b>Authority control</b>	 · VIAF: 3264584  · ISNI: 0000 0000 6674 576X  · ULAN: 500028449  · LCCN: n86033709  · WGA: BRUYN, Barthel  · WorldCat 	
<b>Title</b>	English: Portrait of a Woman 	
<b>Date</b>	1539	
<b>Medium</b>	oil on panel	
<b>Dimensions</b>	Height: 35 cm (13.8 in). Width: 26 cm (10.2 in).	
<b>Current location</b>	Thyssen-Bornemisza Museum   (Inventory) 	
		<b>Native name</b> Museo Thyssen-Bornemisza
		<b>Location</b> Madrid, (Spain)
		<b>Coordinates</b> 40° 24′ 58″ N, 3° 41′ 42″ W  
		<b>Established</b> 1992
		<b>Website</b> <a href="http://www.museothyssen.org">www.museothyssen.org</a> 
		<b>Authority control</b>  · VIAF: 135949719  · ISNI: 0000 0001 2164 2115  · ULAN: 500302400  · LCCN: nr95022080  · GND: 5087058-0  · WorldCat 
<b>Accession number</b>	68 (1930.12) <small>Accession number retrieved from Wikidata</small>	
<b>Source/Photographer</b>	Web Gallery of Art    <a href="#">Info about artwork</a> 	



 **WEB GALLERY OF ART**  online since 1996

[HOME](#) [MOBILE](#) [ARTISTS](#) [SEARCH](#) [TOURS](#) [DUAL MODE](#) [GLOSSARY](#) [MUSIC](#) [POSTCAR](#)

**BRUYN, Barthel**  
(b. 1493, Cologne, d. 1555, Cologne)

**BIOGRAPHY** 



**Portrait of a Woman**  
1539  
Oil on panel, 35 x 26 cm  
Museo Thyssen-Bornemisza, I

- [Send this picture as postcard](#)
- [Friendly format for printing and bookmarking](#)
- [Order oil painting](#)

This painting is possibly the companion-piece of a portrait of similar format, size and composition, representing a man. The two portraits depict a couple identified as members of the Weinsberg family from the coat-of-arms which appears on one of the man's rings.

# Internationalization

Summary [\[ edit \]](#)

- The same page as seen by English and German speakers
- Language determined from user preferences or from Wikipedia they come from

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<b>Alternative names</b>	Bartholomäus Bruyn the Elder, Bartholomäus Bruyn ( <span></span> ), Bartholomaeus de Bruijn, Bartold Bruin, Bartel Bruns, Bartholomäus Bruyen, Bartholomaeus de Bruyn, Bartel Bruen	
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<b>Source/Photographer</b>	Web Gallery of Art:  <a href="#">Image</a>  <a href="#">Info about artwork</a>															

Beschreibung [\[ Bearbeiten \]](#)

<b>Künstler</b>	Bartholomäus Bruyn der Ältere (1493–1555)  																	
<b>Alternative Namen</b>	Bartholomäus Bruyn ( <span></span> ), Bartholomaeus de Bruijn, Bartold Bruin, Bartel Bruns, Bartholomäus Bruyen, Bartholomaeus de Bruyn, Bartel Bruen																	
<b>Beschreibung</b>	deutscher Maler																	
<b>Geburts-/Todesdatum</b>	1493	22. April 1555																
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<b>Wirkungsstätte</b>	Köln																	
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<b>Datum</b>	1539																	
<b>Technik</b>	Öl auf Holz																	
<b>Maße</b>	Höhe: 35 cm. Breite: 26 cm.																	
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<b>Herkunft/Fotograf</b>	Web Gallery of Art:  <a href="#">Image</a>  <a href="#">Info about artwork</a>																	









# I18n templates

- Need for I18n templates is unique to Commons and few other multi-language projects

{{Artwork}}

{{Creator}} {{ISOdate}} {{City}}

Summary [edit]

Artist	<b>Barthel Bruyn the Elder</b> (1493–1555) 
Alternative names	Bartholomäus Bruyn the Elder, Bartholomäus Bruyn (/), Bartholomaeus de Bruijn, Bartold Bruin, Bartel Bruns, Bartholomäus Bruyen, Bartholomaeus de Bruyn, Bartel Bruen
Description	German painter
Date of birth/death	1493 <span style="float: right;">22 April 1555</span>
Location of birth/death	Wesel <span style="float: right;">Cologne</span>
Work location	Cologne
Authority control	 • VIAF: 3264584  • ISNI: 0000 0000 6674 576X  • ULAN: 500028449  • LCCN: n86033709  • WGA: BRUYN, Barthel  • WorldCat 

{{NationAndOccupation}}

{{Authority Control}}






{{Technique}}

{{Institution}}

{{location}}

Translated using  
{{LangSwitch}} template

Translated on  
[Translatewiki.net](http://Translatewiki.net)

Title	English: Portrait of a Woman 
Date	1539
Medium	oil on panel
Dimensions	Height: 35 cm (13.8 in). Width: 26 cm (10.2 in).
Current location	<b>Thyssen-Bornemisza Museum</b>  <span style="float: right;">(Inventory) ▾</span>
	
Native name	Museo Thyssen-Bornemisza
Location	Madrid, (Spain)
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Accession number	68 (1930.12) <small>Accession number retrieved from Wikidata</small>
Source/Photographer	Web Gallery of Art:  Image  Info about artwork 

# Infobox uses

- Single file:
  - Most files store metadata relevant to a single file in templates like {{Information}}, {{Artwork}}, etc.
- Multiple files:
  - When metadata can be shared among multiple files it is stored in designated templates which are transcluded into multiple files.
  - We have large collections of infobox templates, like :
    - Creator templates – 30k - have their own namespace
    - Institution templates – 4.4k - have their own namespace
    - Book templates – 1.8k - stored in template namespace
    - Artwork templates – 12k - stored in category namespace (!)
  - Collections of infobox templates served for years some of the functions of wikidata: mass metadata storage which than can be accessed from the files

# Introduction of Wikidata and Lua

- The system became very esoteric, with some templates becoming too complicated to maintain.
- We were rescued by two 2013 developments:
  - Introduction of Lua programming language
  - Introduction of Wikidata
- In April 2016 [arbitrary access](#) was enabled on Commons, which finally made Wikidata useful to Commons.
- Since then much work was done on rewriting templates using Lua and accessing Wikidata.

# New Frontier

Wikidata can simplify three of the purposes of infoboxes:

- **Internationalization** – Wikidata can be also used for translation
- **Machine readability**
- **Preserve metadata** – Much of metadata about people, places, institutions, books, artworks, etc. can be stored on Wikidata, which serves as central repository shared by all the projects.
  - Benefit for Wikidata – there is a wealth of metadata stored on Commons
  - Benefit to Commons - more users will bring better quality and simplify maintenance. Using Wikidata also greatly simplifies creation of the templates

Parallel to the effort of conversion of Infobox templates to use Wikidata, we also work on importing data from Commons to Wikidata.




# Stages of moving metadata to Wikidata

1. Link Commons pages with Wikidata (often using [mix-n-match](#) tool)
  - Store Commons page name in Wikidata properties
  - Store Wikidata *q-code* on Commons page
2. Rewrite Infobox in Lua to allow pulling metadata from Wikidata
3. Reconcile Commons and Wikidata metadata, through automatic comparison:
  - The same → remove from Commons, as redundant
  - Missing from Wikidata → move to Wikidata
  - Present in both but different → reconcile by human as one of the pages is likely wrong

# Quick Statements



- [Quick statements](#) (QS) is an life-saving tool by Magnus Manske for moving data to Wikidata
- It reads a list of [text commands](#) and adds statements (with optional qualifiers and sources) to Wikidata items.
- It can be operated in 2 modes:
  - Batch mode: collect the data through a database query or scrape it using [AWB](#) tool. Converts the data into proper text commands using text editor or spreadsheet, and than run a batch of commands.
  - Individual template mode: Lua code can detect that local template has information missing from Wikidata, and can create proper QS commands which are then embedded in URL. Template displays  arrow which when clicked uploads the data to Wikidata.

# Progress

Template	Lua	Wikidata link	Reconcile	Comment
{{City}}	100%	100%	100%	
{{Authority control}}	100%	138k (98%)	100%	See <a href="#">Category:Pages using authority control without Wikidata link</a>
{{Creator}}	90%	27.6k (94%)	~50%	Utilizing as much of Wikidata data as possible is a long term process
{{Institution}}	0%	4k (97%)	0%	Should be similar to {{Creator}}
{{Artwork}}	5%	60k (6%)	?	<i>Sum of all Paintings</i> project added metadata for 148k paintings and 11k sculptures
{{Book}}	0%	0%	0%	
{{Object Location}}	100%	~30k	80%	
{{VN}}	80%		?	<a href="#">Template:VN</a> is for vernacular names of taxons

# {{Authority control}}

- Used 140k times on some Category pages and most Creator and Institution pages
- We matched most instances to Wikidata and modified each template by adding “Wikidata” parameter
- Pages using both local and Wikidata parameters use color to identify the source
- We reconciled and removed local parameters from 138k pages. 2.5k remains unmatched.

Code which can be used with [quick statements tool](#) to add Commons value to Wikidata








Matching values      Commons value      Wikidata value

Authority control  · VIAF: [39447335](#) · ISNI: [0000 0001 0889 7770](#) · Botanist: [P. Karsten](#) / [P.Karst.](#) (Q931828 P428 "P. Karsten" S143 Q585) · GND: [127704353](#) · SUDOC: [064959767](#) · BNF: [12322463v](#)







# {{Creator}}

- {{Creator}} template allows creation of a *creator template* with basic information about people. We have almost 30k of them.
- We matched 95% of them to Wikidata and wrote Lua code that closely mimics current template:

Local parameters (over 100 lines of wikicode):

Paul Cézanne (1839–1906)   																
	<table><tr><td><b>Description</b></td><td colspan="2">French painter and engraver</td></tr><tr><td><b>Date of birth/death</b></td><td>19 January 1839</td><td>23 October 1906</td></tr><tr><td><b>Location of birth/death</b></td><td><a href="#">Aix-en-Provence</a></td><td><a href="#">Aix-en-Provence</a></td></tr><tr><td><b>Work location</b></td><td colspan="2">Paris, Auvers-sur-Oise, Aix-en-Provence, Marseille</td></tr><tr><td><b>Authority control</b></td><td colspan="2"> · <a href="#">VIAF: 39374836</a> · <a href="#">ISNI: 0000 0001 2128 7379</a> · <a href="#">ULAN: 500004793</a> · <a href="#">LCCN: n79055446</a> · <a href="#">NLA: 35026986</a> · <a href="#">WorldCat</a></td></tr></table>	<b>Description</b>	French painter and engraver		<b>Date of birth/death</b>	19 January 1839	23 October 1906	<b>Location of birth/death</b>	<a href="#">Aix-en-Provence</a>	<a href="#">Aix-en-Provence</a>	<b>Work location</b>	Paris, Auvers-sur-Oise, Aix-en-Provence, Marseille		<b>Authority control</b>	 · <a href="#">VIAF: 39374836</a> · <a href="#">ISNI: 0000 0001 2128 7379</a> · <a href="#">ULAN: 500004793</a> · <a href="#">LCCN: n79055446</a> · <a href="#">NLA: 35026986</a> · <a href="#">WorldCat</a>	
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Wikidata based infobox ( `{{Creator | Wikidata = Q35548 | Option = {{{1}}}}` ):

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# Challenges

- Many Commons templates and many Wikidata statements do not have references, making reconciliation of differences hard.
- More options to specify approximate dates on Commons than on Wikidata. Dates like born in “Spring of 993” or “first half of 18-th century” can not be used (at the moment?) so we need to use less precise dates.
- Places of birth/death on Commons are at city-precision, On Wikipedia they are at the highest precision available (house, hospital, street, etc.) so it is a challenge to extract city-precision locations.
- Dates on Wikidata come from many sources. There might be several dates with different precision (day / month/ year) and different quality of references. Not clear how to compare and pick the “preferred” date if not indicated
- Multiple ways to model the same type of data. For example “Burial date” or “Work period”/”floruit” can be modeled 2-3 different ways on Wikidata
- Wikidata does not store “nationality” of people. “Country of citizenship” (P27), “ethnic group” (P172) can be often used to determine nationality
- Location coordinates of countries, cities, etc. are not well defined and users setting them often do not use precision field correctly, resulting in discrepancies between different sources.

# Commons' Structured data

- `{{Information}}` template is the most used infobox on Commons used by 37M files.
- In the future, data from `{{Information}}` templates will be moved to Commons' structured data.
- Lessons learned from migrating other infoboxes to Wikidata will be important when we begin that process.

# Help Needed

- Help with geographical coordinates
  - [Category:Pages with local coordinates and mismatching wikidata coordinates](#)
  - [Category:Pages with local coordinates and similar wikidata coordinates](#)
- Help with reconciling biographical data
  - [Category:Creator template maintenance](#)
  - [Category:Creator templates with Wikidata link: quick statements](#)
  - [Category:Pages using authority control without Wikidata link](#)



# Backup slides

# Trouble brewing

- The system become very esoteric, with some templates becoming too complicated to maintain.
- Many of i18n templates are used on a lot of pages, like `{{Dir}}` used on 41M out of 47M pages.
- We were often tripping the *expansion limit* “safety fuse”
- We were rescued by two 2013 developments:
  - Introduction of Lua programing language
  - Introduction of Wikidata

# Timeline

- **January 2013** - Wikidata phase I went live on Wikipedia projects allowing storage of interwiki links in a single place as Wikidata "sitelinks".
- **March 2013** - Lua is introduced on all Wikimedia projects, including Commons. Many templates were rewritten in Lua.
- **September 2013** - Wikidata phase I went live on Commons, with little notice since most interwiki links on Commons were from Commons categories to Wikipedia articles and back then there was a semi-consensus that sitelinks should not be between pages in different namespaces
- **September 2015** - [Arbitrary access](#) to Wikidata properties was enabled on English Wikipedia allowing calls like `{{#property:P36|from=Q183}}`
- **April 2016** - [Arbitrary access](#) was enabled on Commons, which finally made Wikidata useful to Commons.

# Rewriting Templates in Lua

- Commons templates often rely on a lot of other templates, which again rely on even more templates
- One challenge of moving to Lua is to minimize number of calls to other templates
- Luckily many of the most basic templates, are already translated

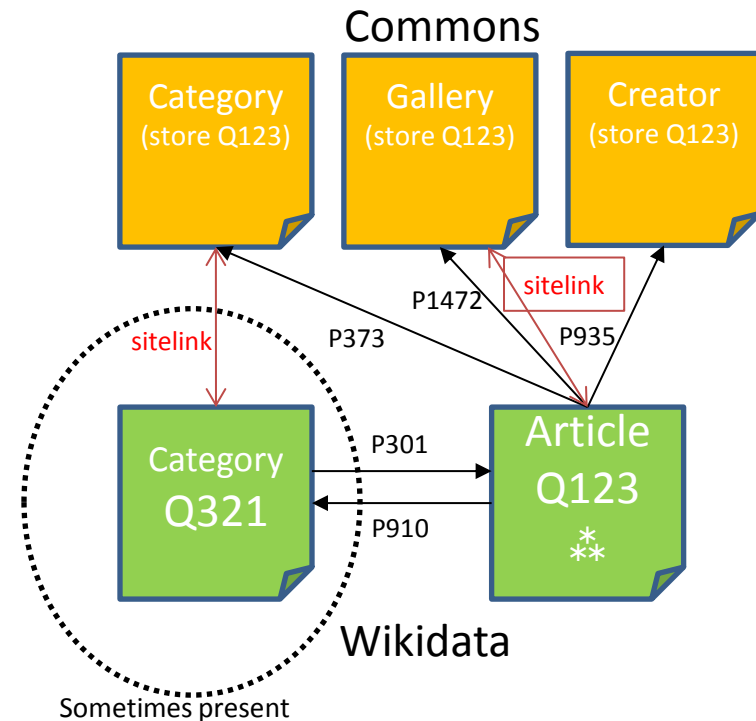


# {{City}} template

- {{City}} template serves as a giant lookup table matching 1890 names of cities and countries, like “Москва” or “Moscow”, to 1315 location templates, like {{Moscow}}.
- Location templates return name of location in user’s language with a link to user’s native Wikipedia. All names and links for hundreds of languages were stored in each template
- We matched all location templates to Wikidata and rewrote them so they pull all the information required directly from Wikidata.
- {{City}} still works as a lookup table but also calls Wikidata directly

# Commons / Wikidata Linking (current)

- Sitelinks work for 1-to-1 linking with Wikipedia
- Commons Can have several pages that need to access Wikidata properties: category, creator, institution or gallery pages, but only one sitelink is allowed.
- Current solution:
  - Store Commons page names in Wikidata properties
  - Store Wikidata *q-code* on Commons page
  - Not use sitelinks which can be pointing to any page
- Issues:
  - Two places to store the same information means a lot of maintenance to keep them in synch
  - Commons moving, redirecting or deleting pages does not update Wikidata
  - Wikidata merges, even deletes, pages without updating Commons
  - Wikidata maintenance tools do not work with linking through properties



# Commons / Wikidata Linking (alternatives)

- Create Wikidata page for every Category, Creator or Institution page on Commons. Connect to Commons through sitelinks. Link them to each other through properties.
  - Issue 1: that is a lot of new pages on Wikidata and interconnections to maintain
  - Issue 2: Where to keep properties? Usually only article pages on Wikidata have properties.
- Allow Commons pages to detect when they are used as a property of some Wikidata page
  - Issue: not the way Wikidata is designed to operate. The properties would become a little like sitelinks

