

# Art Tracks: a technical deep dive.

David Newbury, Lead Developer, Art Tracks

October 14th, 2016  
2016 Digital Provenance Symposium  
Carnegie Museum of Art

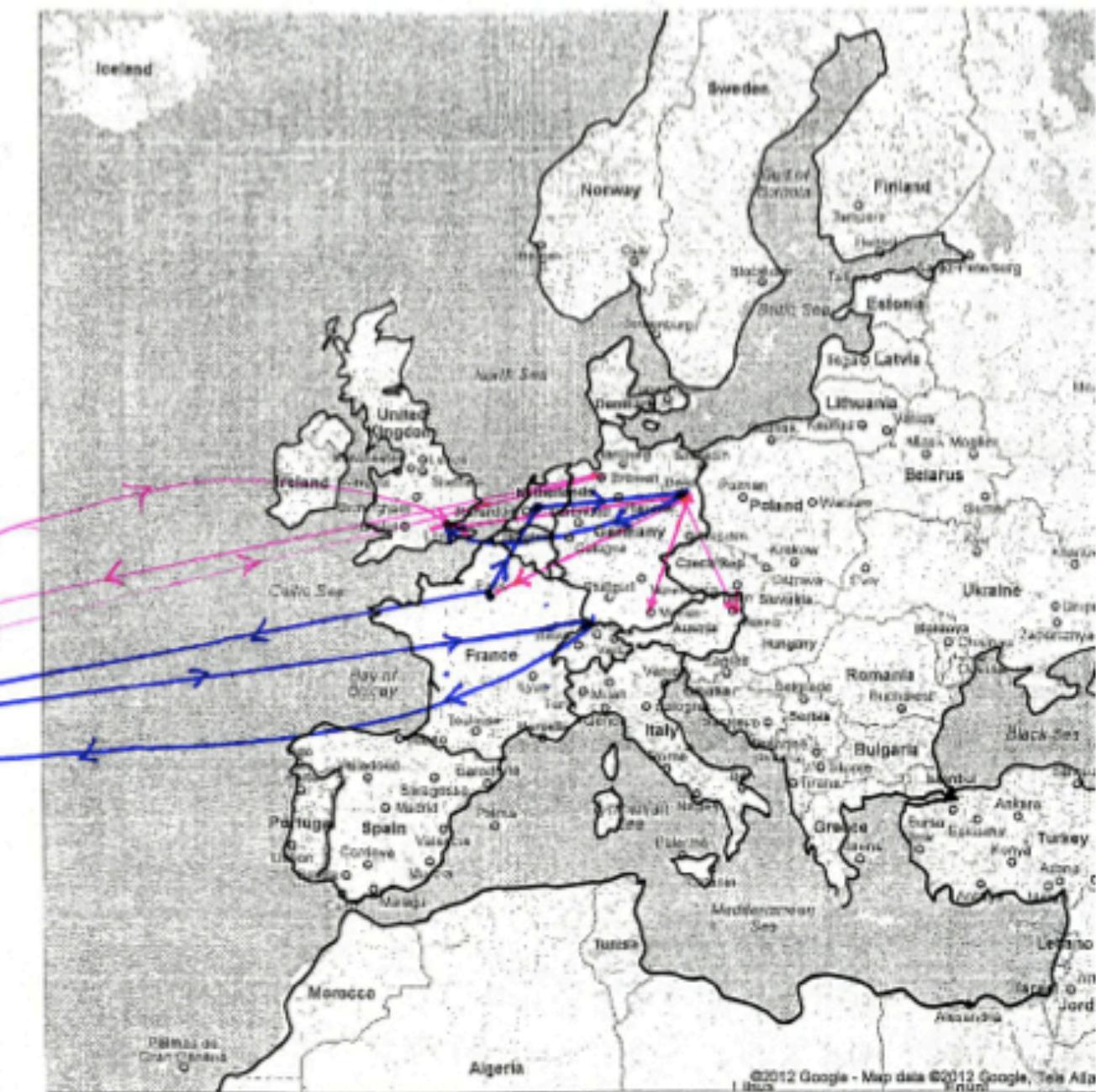
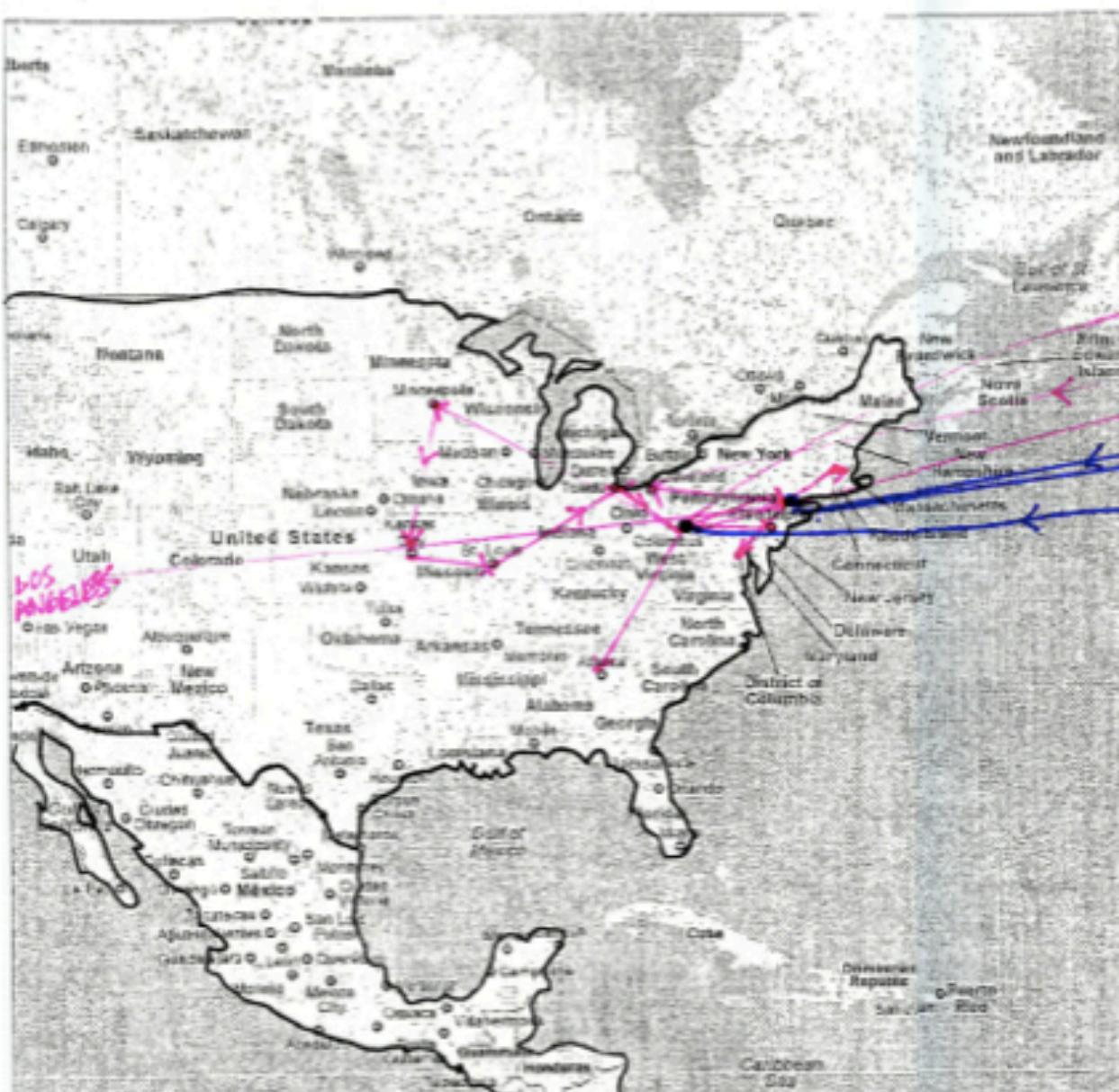
# What is Art Tracks?

- **What have we done?**
- **What will we be doing?**
- **How does it work?**
- **How can you use it?**

# Art Tracks: Phase I

**IMLS-funded data visualization project.**

ART TRACK: VAN GOGH, Wheatfield OWNERSHIP  
VAN GOGH, Wheatfield EXHIBITIONS





68.11

## Paul Cézanne Self-Portrait

Paul Cézanne [1839-1906], France.  
(Ambroise Vollard, Paris, France, stock no. 3465A);  
Baron Denys Cochin, Paris, France, until April 26, 1913;  
(purchased by Galerie Bernheim-Jeune, Paris, France, April  
26, 1913 until December 29, 1916, stock no. 19935);  
purchased by Georges Bernheim, Paris, France, December 29,  
1916;  
(Galerie Tanner, Zurich, Switzerland);  
Rudolf Staechelin, Basel, Switzerland, by 1930?;  
Rudolf Staechelin Foundation, Basel, Switzerland, 1931?;  
(Galerie Beyeler, Basel, Switzerland);  
Wildenstein & Company, Inc., New York, NY, until April 1968;  
purchased by Museum of Art, Carnegie Institute, Pittsburgh,  
PA, April 1968.



Museum of Art, Carnegie Institute

Wildenstein &amp; Company, Inc.

Galerie Beyeler

Rudolf Staechelin Foundation

Rudolf Staechelin

Galerie Tanner

Georges Bernheim

Galerie Bernheim-Jeune

Baron Denys Cochin

Ambroise Vollard

Paul Cézanne

1880

1900

1920

1940

1960

1980

2000

Durand-Ruel, Paris, August 23, 1872 [1];  
Catholina Lambert, New Jersey;  
Lambert sale, American Art Association, Plaza Hotel, New York, NY,  
February 21, 1916 until February 24, 1916, no. 67;  
Durand-Ruel, Paris, until at least 1930;  
purchased by Simon Bauer, Paris, by June 1936 [2];  
anonymous sale, Parke-Bernet Galleries, Inc., February 25, 1970, no. 19 [3];  
Sam Salz, Inc., New York, NY;  
purchased by Museum, May 1971.

NOTES:

[1] bought from the artist.

[2] Listed and illustrated in "List of Property Removed from France  
during the War 1939-1945" (no. 7114, as belonging to Simon Bauer).

[3] "Highly Important Impressionist, Post-Impressionist &  
Modern Paintings and Drawings", illustrated.

**purchased by Simon Bauer, Paris,  
France, by 1936 [2];**

**[2] Listed and illustrated in "List of Property  
Removed from France during the War 1939-1945"  
(no. 7114, as belonging to Simon Bauer).**

# Acquisition Methods:

- "*purchased by*"
- "*gift of*"
- "*by descent to*"

*purchased by Simon Bauer, Paris, France, by 1936 [2];*

[2] Listed and illustrated in "List of Property Removed from France during the War 1939-1945" (no. 7114, as belonging to Simon Bauer).

# Location:

## Building, City, State, Country

- *New York, NY*
- *France*
- *Highclere Castle, West Berkshire, England*

purchased by Simon Bauer, *Paris, France*, by 1936 [2];

[2] Listed and illustrated in "List of Property Removed from France during the War 1939-1945" (no. 7114, as belonging to Simon Bauer).

# Party:

Name, life dates, titles, relationships

- *Walter P. Chrysler, Jr. [1909-1988]*
- *Michel Monet, his son*
- *Thomas George Baring, 1st Earl of Northbrook*

purchased by *Simon Bauer, Paris France, by 1936 [2];*

[2] Listed and illustrated in "List of Property Removed from France during the War 1939-1945"  
(no. 7114, as belonging to Simon Bauer).

# Dates:

## Period of ownership

- *January 1, 1995*
- *until the 15th century*
- *sometime between 1885 and 1895 until May 1950*

purchased by Simon Bauer, Paris, France, by 1936 [2];

[2] Listed and illustrated in "List of Property Removed from France during the War 1939-1945" (no. 7114, as belonging to Simon Bauer).

**BOTB EOTB**



**BOTE EOTE**

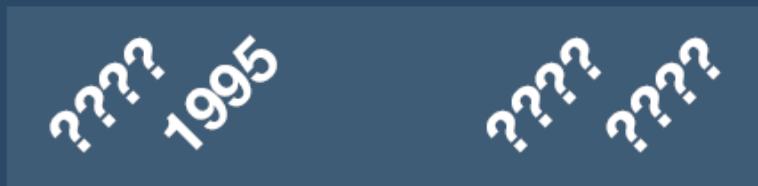
**after 1995**



BOTB EOTB



BOTE EOTE



after 1995



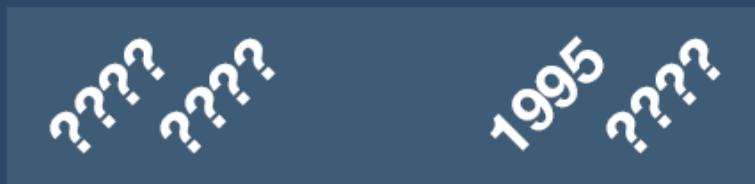
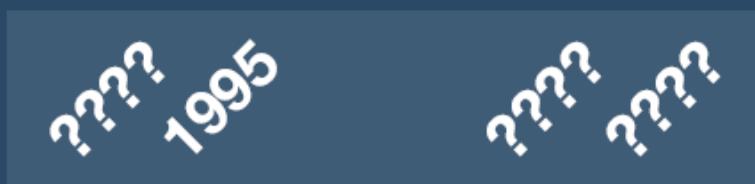
by 1995



BOTB EOTB



BOTE EOTE



after 1995



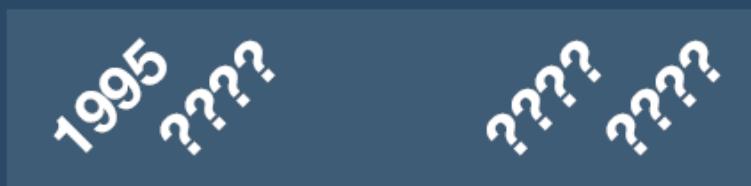
by 1995



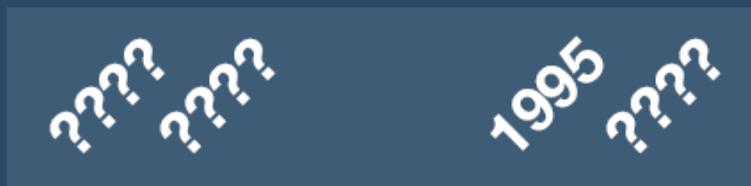
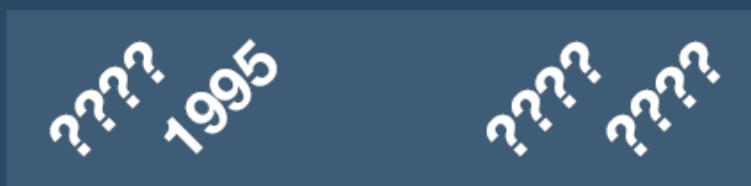
until at least 1995



BOTB EOTB



BOTE EOTE



after 1995



by 1995



until at least 1995



until sometime before 1995



## Footnotes:

### Additional descriptive information

- *Durand Ruel stock no. D1343*
- *See curatorial file for more information*
- *Her birth name was Ellen Mary Cassatt*

purchased by Simon Bauer, Paris, France, by 1936 [2];

[2] Listed and illustrated in "List of Property Removed from France during the War 1939-1945" (no. 7114, as belonging to Simon Bauer).

# museum\_provenance library

[https://github.com/arttracks/  
museum\\_provenance](https://github.com/arttracks/museum_provenance)

The screenshot shows the GitHub repository page for `cmoa / museum_provenance`. The repository has 76 commits, 1 branch, 0 releases, and 1 contributor. The master branch is selected. The commit history shows several changes, including date fixes and minor tweaks for documentation. The repository page includes links for Issues, Pull Requests, Wiki, Pulse, Graphs, Settings, SSH clone URL, Clone in Desktop, and Download ZIP.

A library for extracting structured data from museum provenance records. — Edit

76 commits 1 branch 0 releases 1 contributor

branch: master museum\_provenance / +

better suffixes

workergnome authored 28 days ago latest commit 6cb84dfc6f

File	Description	Time Ago
lib	better suffixes	28 days ago
test	Date fixes	2 months ago
.gitignore	Minor tweaks for documentation	5 months ago
Gemfile	Now using github version instead of custom version of date_time_preci...	4 months ago
LICENSE.txt	Initial commit	5 months ago
README.md	Update README.md	a month ago
Rakefile	Lots of date fixes, handle asterisk footnotes, handle multiple initials	2 months ago
TODO.md	Fixes from the Yale data set.	2 months ago
museum_provenance.gemspec	Lots of date fixes, handle asterisk footnotes, handle multiple initials	2 months ago
README.md		

SSH clone URL  
git@github.com:cmoa/  
You can clone with HTTPS, SSH, or Subversion.

Clone in Desktop Download ZIP



## Dr. Washington Epps, My Doctor [1885]

Lawrence Alma-Tadema  
2002.63.1

[copy provenance](#)

Lawrence Alma-Tadema [1836-1912]; gift to Dr. Washington Epps [1848-1912], London, 1885 until 1912 [1]; Mrs. Washington Epps, his widow, Hampstead, 1912 until 1913; George Selby Washington Epps, her son [1885-1951], Spaxton, Somerset, 1913 until 1951; Mrs Leonora Doris Epps, his widow [1883-1961], Spaxton, Somerset, until 1961 [2]; by descent to relatives of Leonora Doris Epps, 1961 until 2001; (Lowell Libson, Ltd., London, 2001 until 2002); purchased by Museum, December 2002.

NOTES: [1] Washington Epps was Alma-Tadema's brother-in-law. [2] Her maiden name was Leonora Doris Peacock. She married George Selby Washington Epps in 1915.

Provenance Party Records

Provenance Original Record Exhibition History

Lawrence Alma-Tadema

**Dr. Washington Epps**

Mrs. Washington Epps, his widow

George Selby Washington Epps, her son

Mrs Leonora Doris Epps, his widow

relatives of Leonora Doris Epps

Lowell Libson, Ltd.

Museum

[Add a Party](#)

Current Text ⓘ gift to Dr. Washington Epps [1848-1912], London, 1885 until 1912

Text Certain ⓘ yes

Party Name ⓘ Dr. Washington Epps

Party Location ⓘ London

Acq. Method ⓘ Gift

Year of Birth ⓘ 1848

Year of Death ⓘ 1912

Direct Transfer? ⓘ yes

Primary Owner? ⓘ yes

Ownership Dates 1885 until 1912

Footnote Washington Epps was Alma-Tadema's brother-in-law.

Show Extended Fields ▾

Timeline from 1890 to 2010 showing ownership history:

- 1890-1910: Dr. Washington Epps
- 1910-1950: Mrs. Washington Epps, his widow
- 1950-1960: George Selby Washington Epps, her son
- 1960-2000: relatives of Leonora Doris Epps
- 2000-2001: Mrs Leonora Doris Epps, his widow
- 2001-2002: Lowell Libson, Ltd.
- 2002-Present: Museum

Scale Reinstalation

## Elysa

A UI tool for museum professionals.



## Dr. Washington Epps, My Doctor [1885]

Lawrence Alma-Tadema

2002.63.1

[copy provenance](#)

Lawrence Alma-Tadema [1836-1912]; [gift to Dr. Washington Epps \[1848-1912\], London, 1885 until 1912](#) [1]; Mrs. Washington Epps, his widow, Hampstead, 1912 until 1913; George Selby Washington Epps, her son [1885-1951], Spaxton, Somerset, 1913 until 1951; Mrs Leonora Doris Epps, his widow [1883-1961], Spaxton, Somerset, until 1961 [2]; by descent to relatives of Leonora Doris Epps, 1961 until 2001; (Lowell Libson, Ltd., London, 2001 until 2002); purchased by Museum, December 2002.

NOTES: [1] Washington Epps was Alma-Tadema's brother-in-law. [2] Her maiden name was Leonora Doris Peacock. She married George Selby Washington Epps in 1915.

### Provenance Party Records

Lawrence Alma-Tadema
<b>Dr. Washington Epps</b>
Mrs. Washington Epps, his widow
George Selby Washington Epps, her son
Mrs Leonora Doris Epps, his widow
relatives of Leonora Doris Epps
Lowell Libson, Ltd.
Museum

### Provenance      Original Record      Exhibition History

Current Text ⓘ      gift to Dr. Washington Epps [1848-1912], London, 1885 until 1912

Text Certain ⓘ      yes   
Party Name ⓘ      Dr. Washington Epps      Year of Birth ⓘ      1848  
Party Location ⓘ      London      Year of Death ⓘ      1912  
Acq. Method ⓘ      Gift      Direct Transfer?   
Primary Owner?

Ownership Dates      1885 until 1912

Footnote      Washington Epps was Alma-Tadema's brother-in-law.

Show Extended Fields ▾

[+ Add a Party](#)

## Dr. Washington Epps, My Doctor [1885]

Lawrence Alma-Tadema

2002.63.1

[copy provenance](#)

Lawrence Alma-Tadema [1836-1912]; [gift to Dr. Washington Epps \[1848-1912\], London, 1885 until 1912 \[1\]](#); Mrs. Washington Epps, his widow, Hampstead, 1912 until 1913; George Selby Washington Epps, her son [1885-1951], Spaxton, Somerset, 1913 until 1951; Mrs Leonora Doris Epps, his widow [1883-1961], Spaxton, Somerset, until 1961 [2]; by descent to relatives of Leonora Doris Epps, 1961 until 2001; (Lowell Libson, Ltd., London, 2001 until 2002); purchased by Museum, December 2002.

NOTES: [\[1\] Washington Epps was Alma-Tadema's brother-in-law.](#) [\[2\] Her maiden name was Leonora Doris Peacock. She married George Selby Washington Epps in 1915.](#)

## Provenance Party Records

- Lawrence Alma-Tadema
- Dr. Washington Epps**
- Mrs. Washington Epps, his widow
- George Selby Washington Epps, her son
- Mrs Leonora Doris Epps, his widow
- relatives of Leonora Doris Epps
- Lowell Libson, Ltd.
- Museum

[+ Add a Party](#)

Provenance    Original Record    Exhibition History

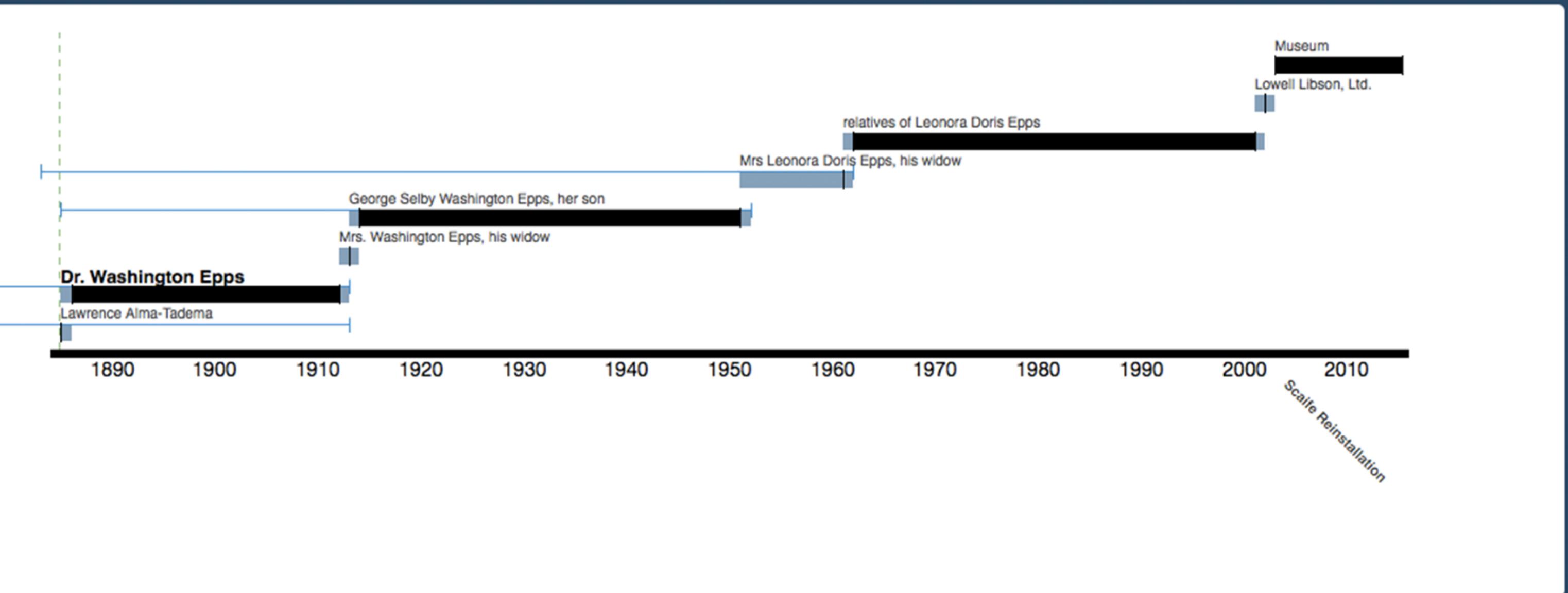
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Text Certain ⓘ	<input checked="" type="checkbox"/> yes	Year of Birth ⓘ	1848
Party Name ⓘ	Dr. Washington Epps	Year of Death ⓘ	1912
Party Location ⓘ	London	Direct Transfer?	<input checked="" type="checkbox"/> yes
Acq. Method ⓘ	Gift	Primary Owner?	<input checked="" type="checkbox"/> yes

Ownership Dates 1885 until 1912

Footnote Washington Epps was Alma-Tadema's brother-in-law.

[Show Extended Fields ▾](#)



## Live Demo

**<http://elysa-demo.museumprovenance.org>**

# **Art Tracks: Phase I**

**IMLS-funded data visualization project.**

- **Parsable Text**
- **Date Math**
- **User Interfaces**

# What did we learn?

The concept works.

# What did we learn?

A community was essential.

# What did we learn?

The interesting stories were larger than CMOA.

# What did we learn?

**Entity reconciliation and validation is important.**

# What did we learn?

**Prototype software is unusable by others.**

# What did we learn?

Regexes are too powerful.

# Museum Agile:

**Two Year Sprints.**  
**Peer-Reviewed Retrospectives.**  
**Grant Proposal Sprint Planning.**

# Art Tracks: Phase II

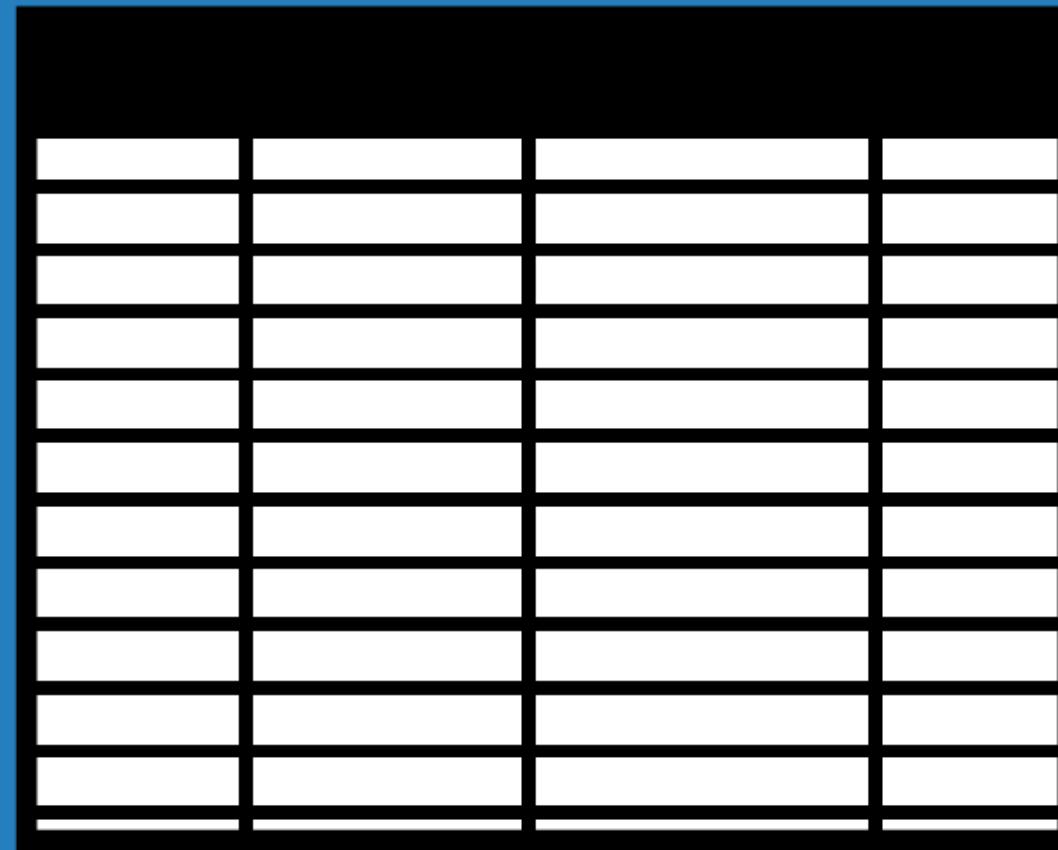
**NEH Funded Standardization Project**

***Partnering with YCBA & Freer|Sackler***

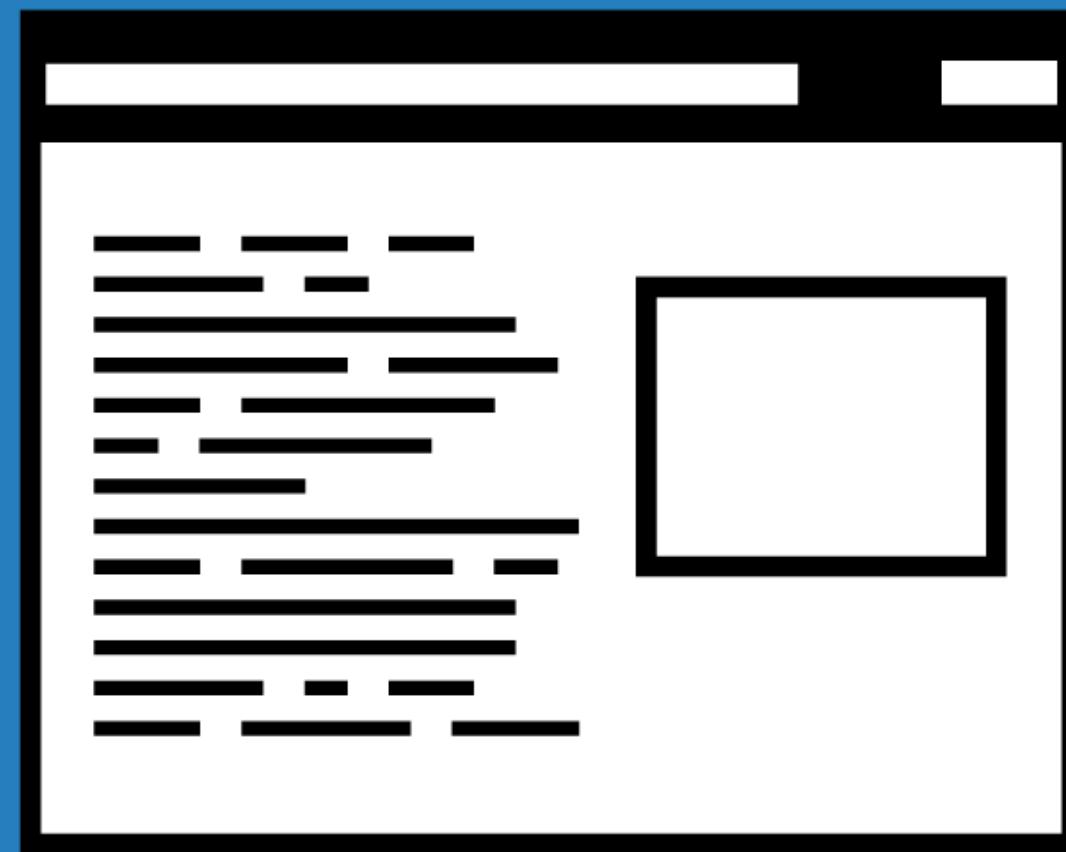
# Documents



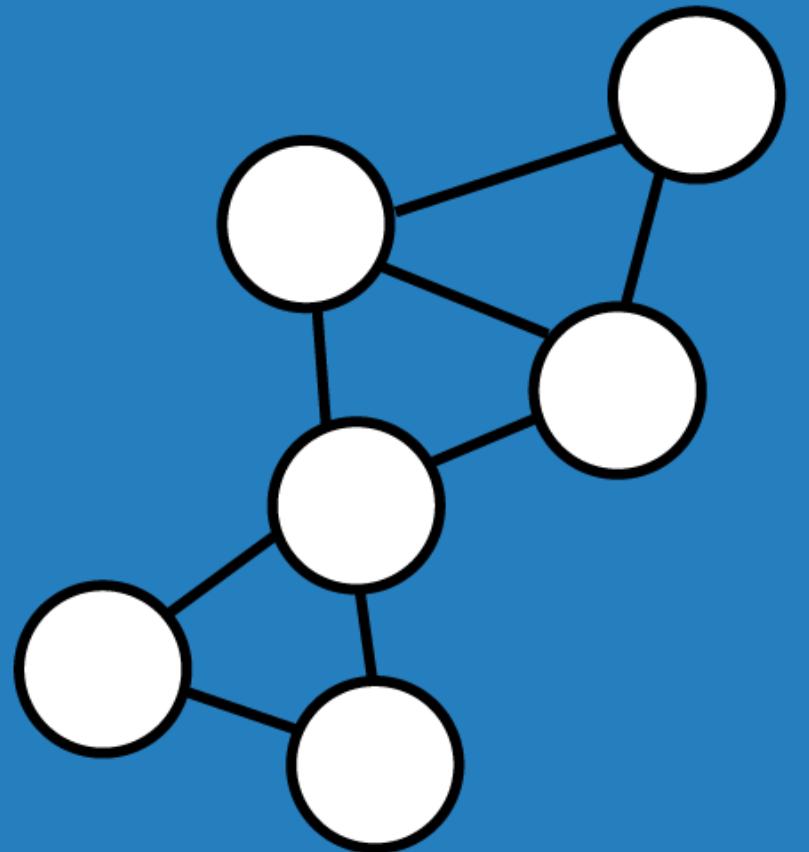
# Content Management Systems



# The Web



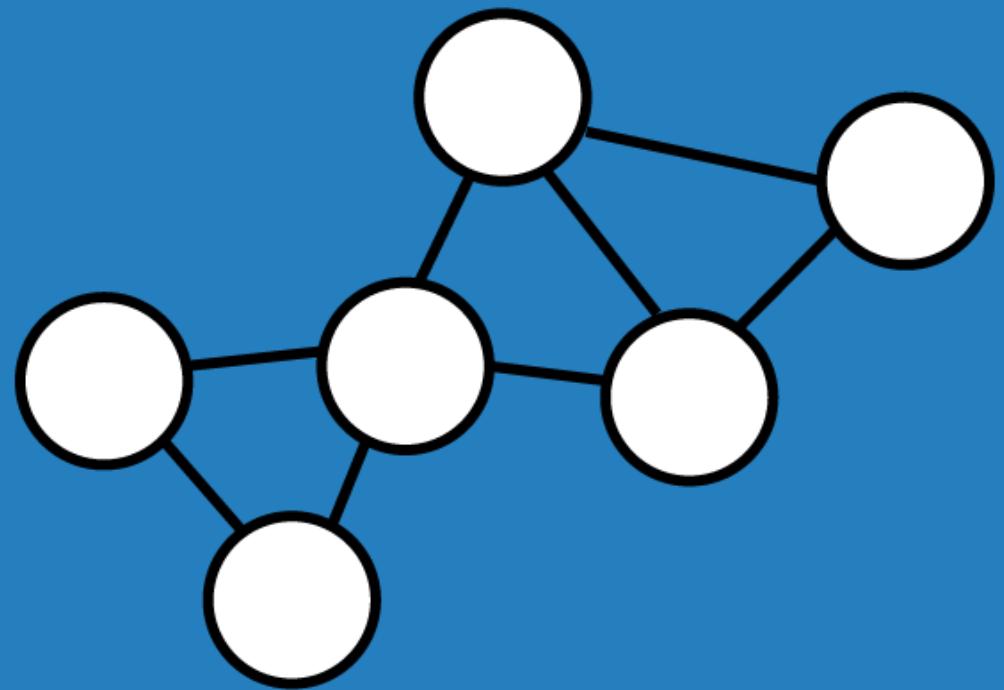
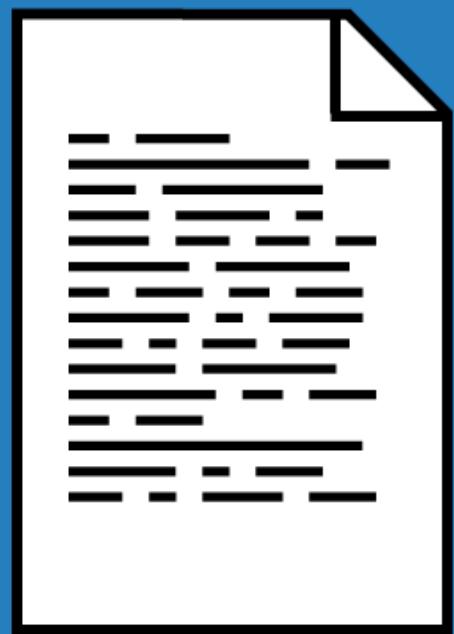
# Linked Open Data



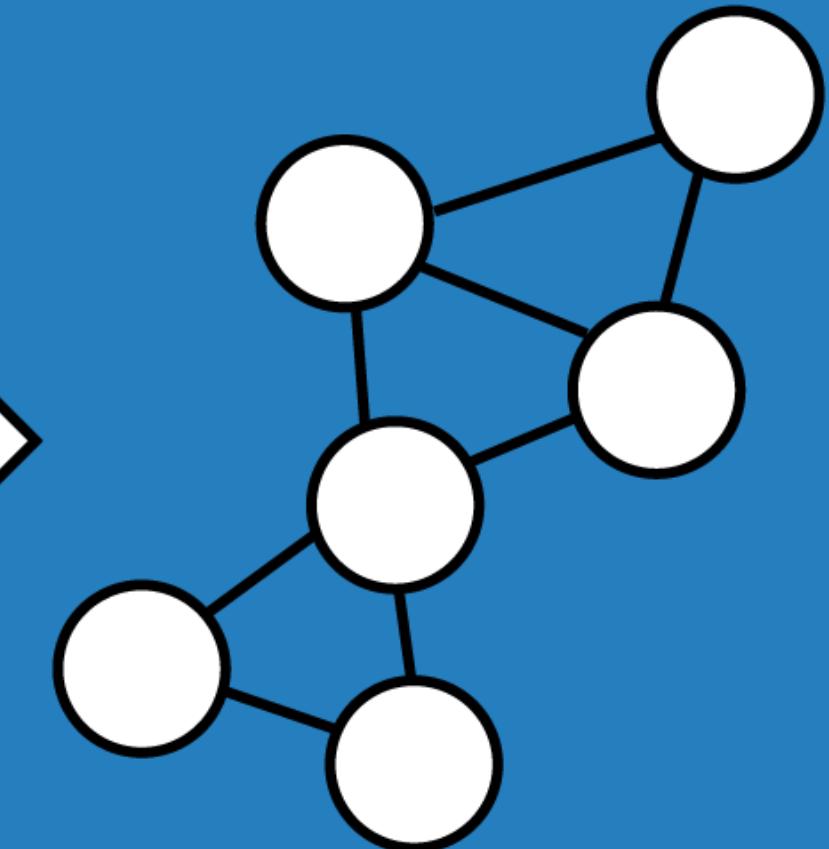
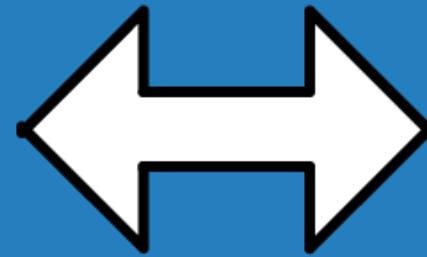
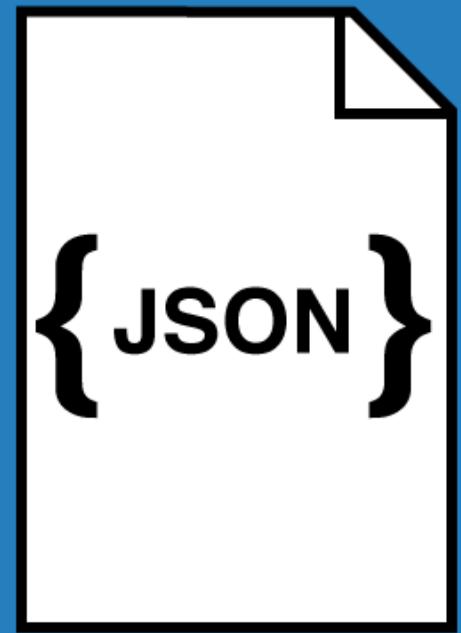
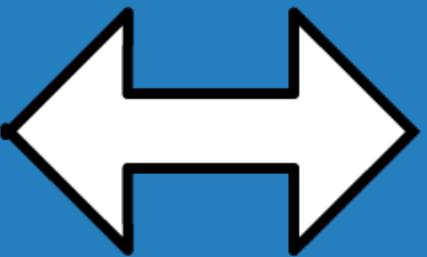
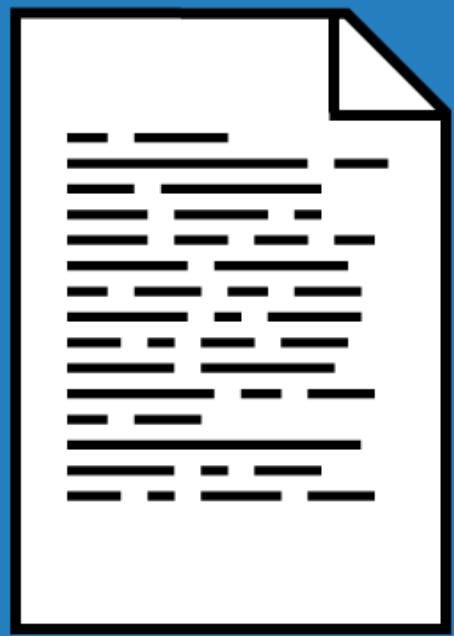
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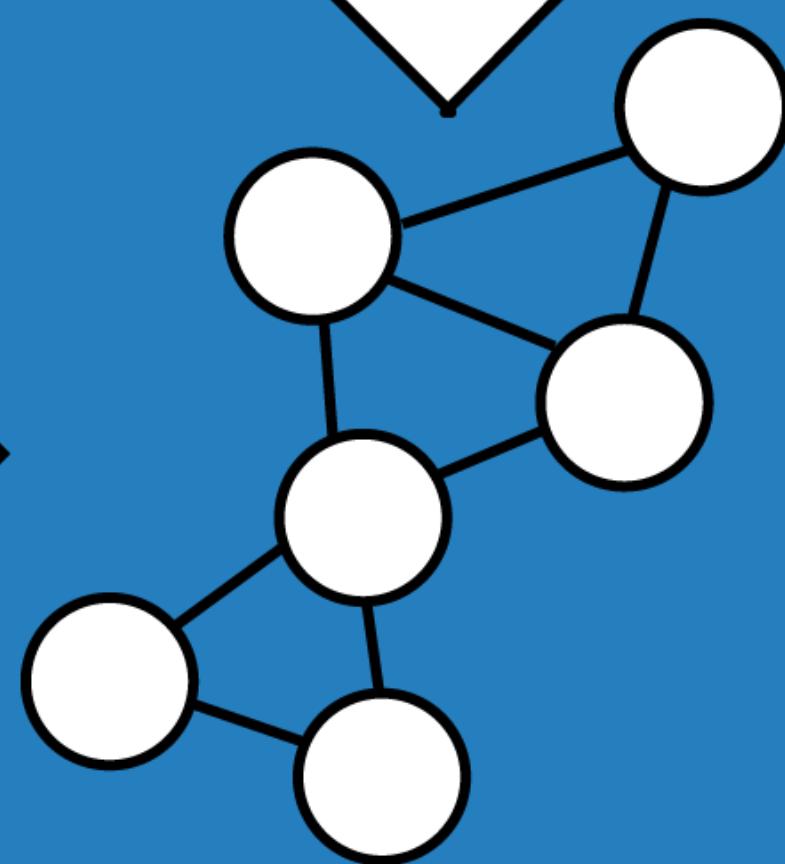
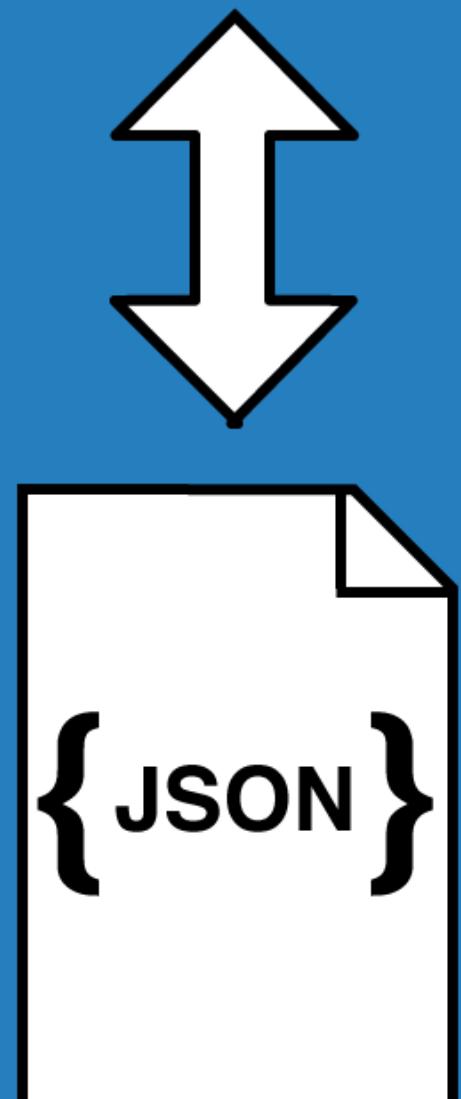
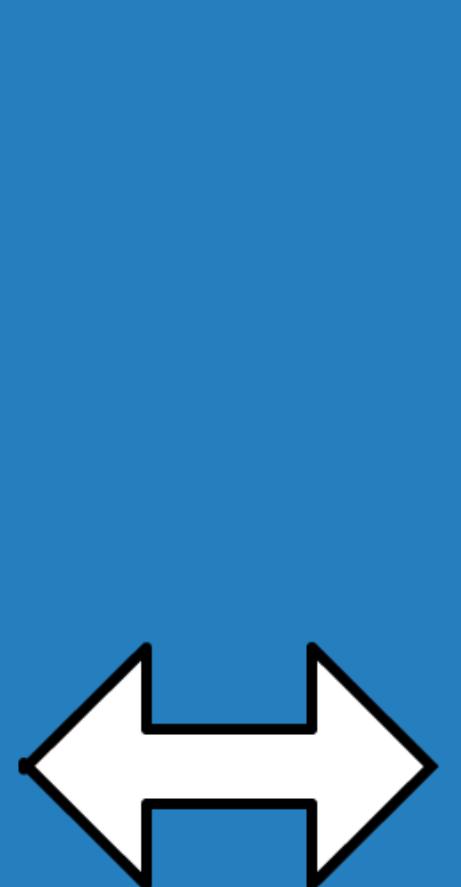
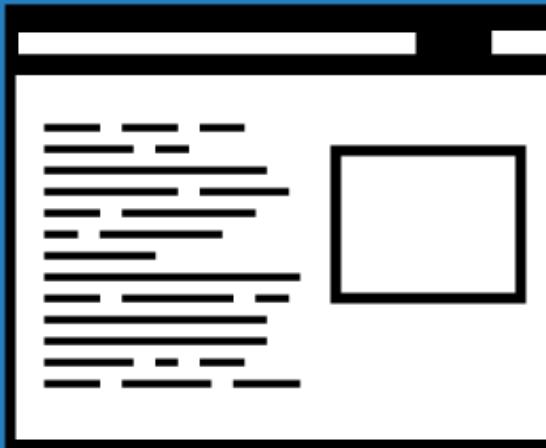
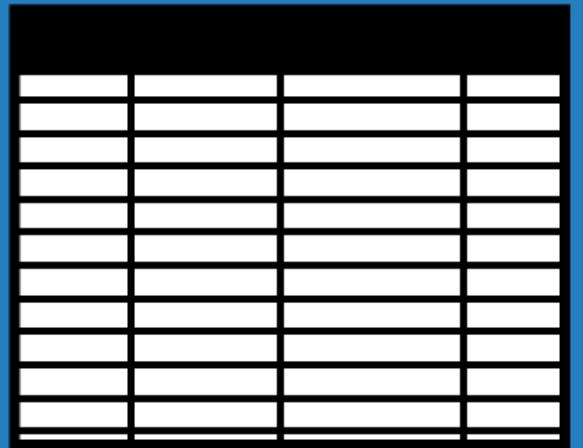


# Documents & Graphs



# Documents & JSON & Graphs

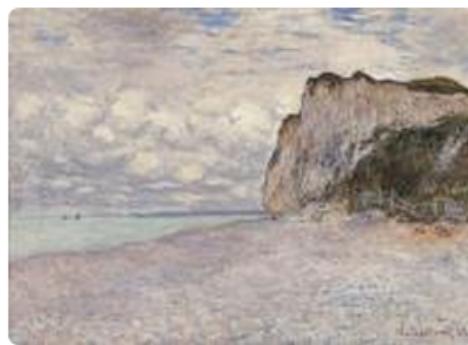




# Art Tracks: Phase II

- Formal Standard
- Linked Data Model
- Entity Reconciliation (*for real*)
- Reusable Software

# Ownership and Custody.



## Cliffs near Dieppe [1882]

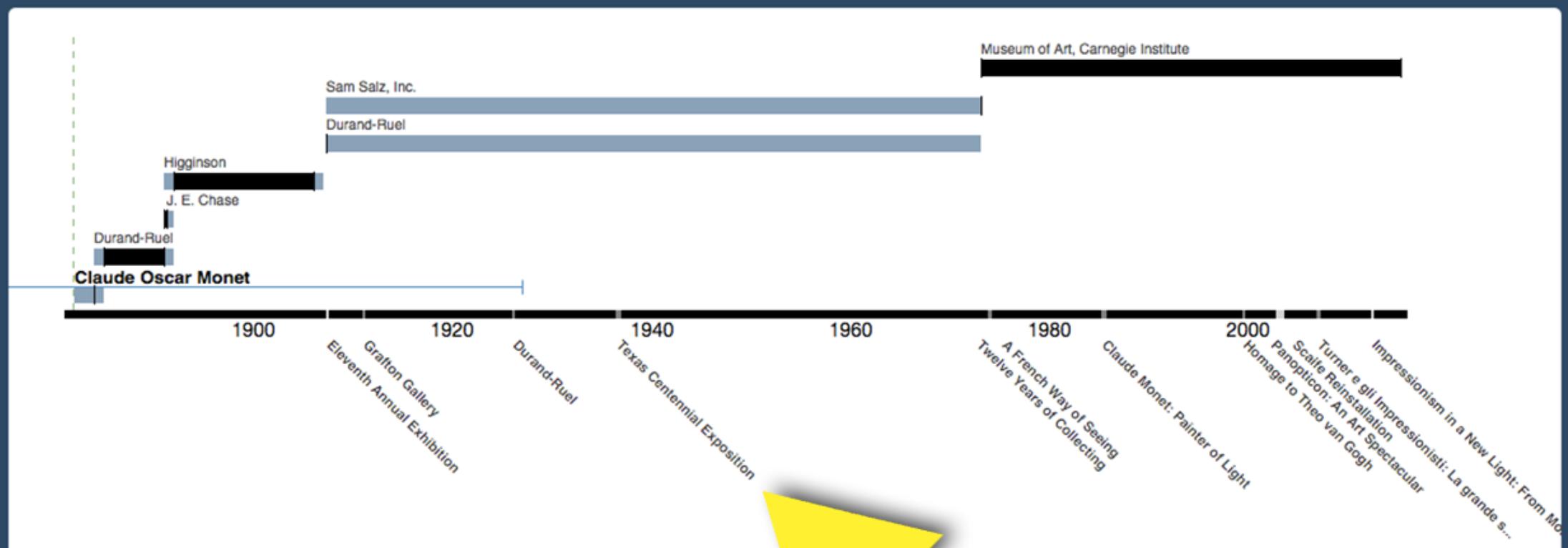
Claude Oscar Monet

73.3.3

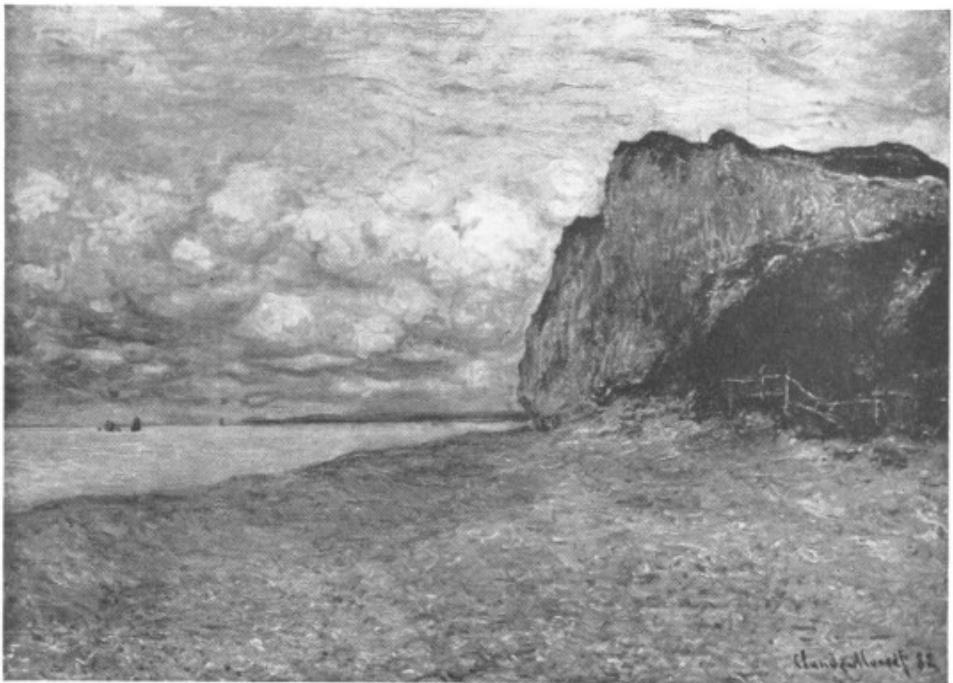
[copy provenance](#)

Claude Oscar Monet [1840-1926], France, until 1884; purchased by Durand-Ruel, Paris, France, 1884 until 1891; sold to J. E. Chase, Boston, MA, April 20, 1891 [1]; Higginson, 1891 until 1906; purchased by Durand-Ruel, Paris, France, April 1907 [2]. Sam Salz, Inc., New York, NY; purchased by Museum of Art, Carnegie Institute, Pittsburgh, PA, February 1973 [3].

NOTES: [1] Recorded as "For Higginson", likely Henry Lee Higginson. J.E. Chase may have been acting as Higginson's agent. [2] Ph. A1035, NY 7395 [3] Updated, by July 2012.



The Centennial Exposition: Catalogue of the Exhibition of Paintings, Sculptures, Graphic Arts

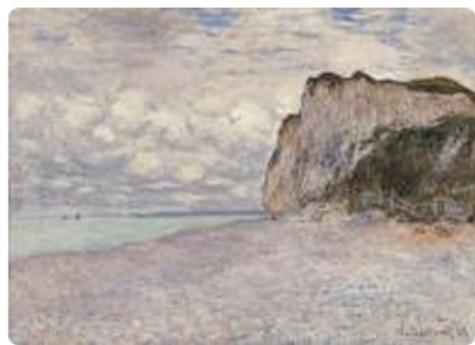


CLAUDE MONET

Cliffs near Dieppe

Home   Se

2. CLAUDE MONET, 1840-1926, French School.  
**Cliffs near Dieppe.** Oil on canvas.  
24 by 32 inches. Lent by the Durand-Ruel Galleries, New York.
3. ALFRED SISLEY, 1839-1899, French School.  
**Winter Day, Marly.** Oil on canvas.  
20 by 26 inches. Lent by Durand-Ruel Galleries, New York.
4. ALFRED SISLEY, 1839-1899, French School.  
**Winter Day, Marly.** Oil on canvas.  
28½ by 36 inches. Lent by Mr. Oscar F. Meyer, Chicago.
5. PABLO PICASSO, 1881- , Spanish (working in French school).  
**Woman in White.** Oil on canvas.  
39 by 31½ inches. Lent by the Museum of Modern Art, the Lillie P. Bliss Collection, New York.
6. HENRI MATISSE, 1869- , French School.  
**Fruits and Flowers of Nice.** Oil on canvas.  
32 by 39½ inches. Lent by the Pierre Matisse Gallery, New York.
7. CLAUDE MONET, 1840-1926, French School.  
**Cliffs near Dieppe.** Oil on canvas.  
24 by 32 inches. Lent by the Durand-Ruel Galleries, New York.
8. AUGUSTE RENOIR, 1841-1919, French School.  
**Girl with Falcon.** Oil on canvas.  
49¾ by 31 inches. Lent by the Durand-Ruel Galleries, New York.
9. EDOUARD MANET, 1832-1883, French School.  
**Garden at Versailles.** Oil on canvas.  
26 by 32 inches. Lent by the Durand-Ruel Galleries, New York.
10. PIERRE ROY, 1880- , French School.  
**Danger on the Stairs.** Oil.  
35¼ by 23½ inches. Lent by the Museum of Modern Art, Gift of John D. Rockefeller, Jr., New York.
11. CHARLES DUFRESNE, 1876- , French School.  
**Scene in Morocco.** Oil on canvas.  
43½ by 43½ inches. Lent by the Worcester Art Museum, Worcester, Massachusetts.



## Cliffs near Dieppe [1882]

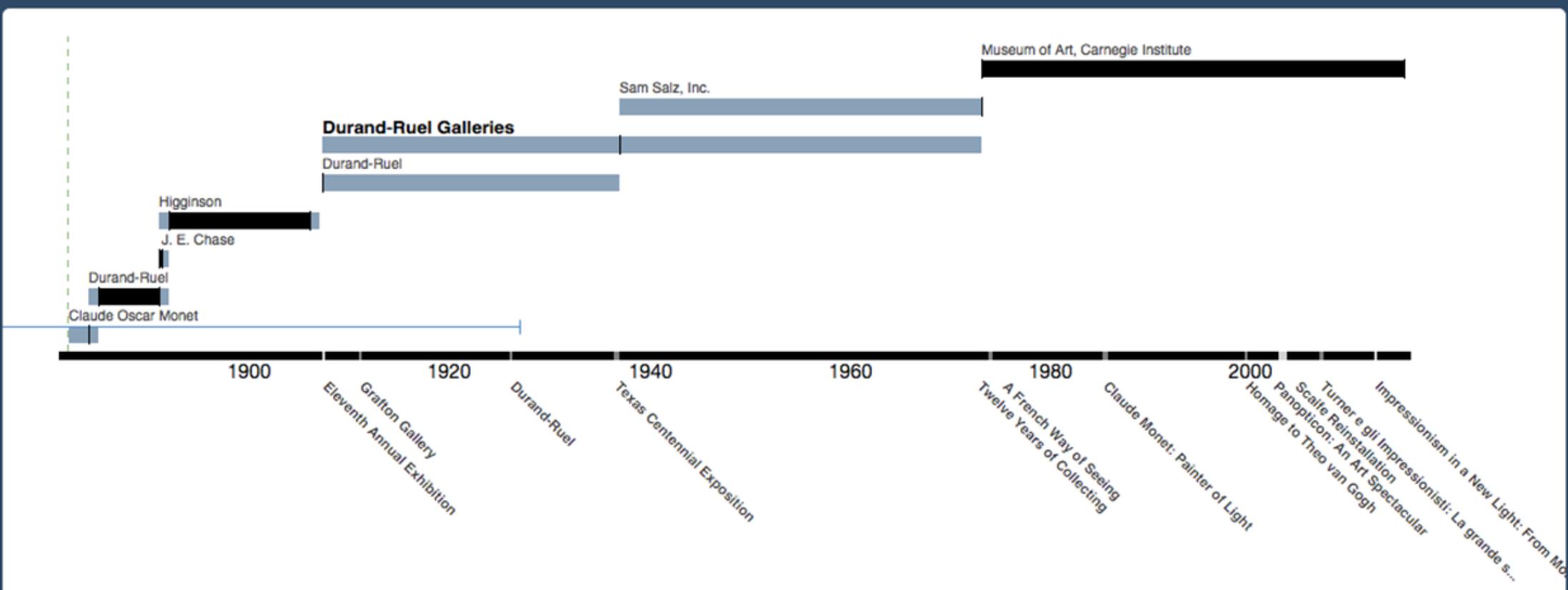
Claude Oscar Monet

73.3.3

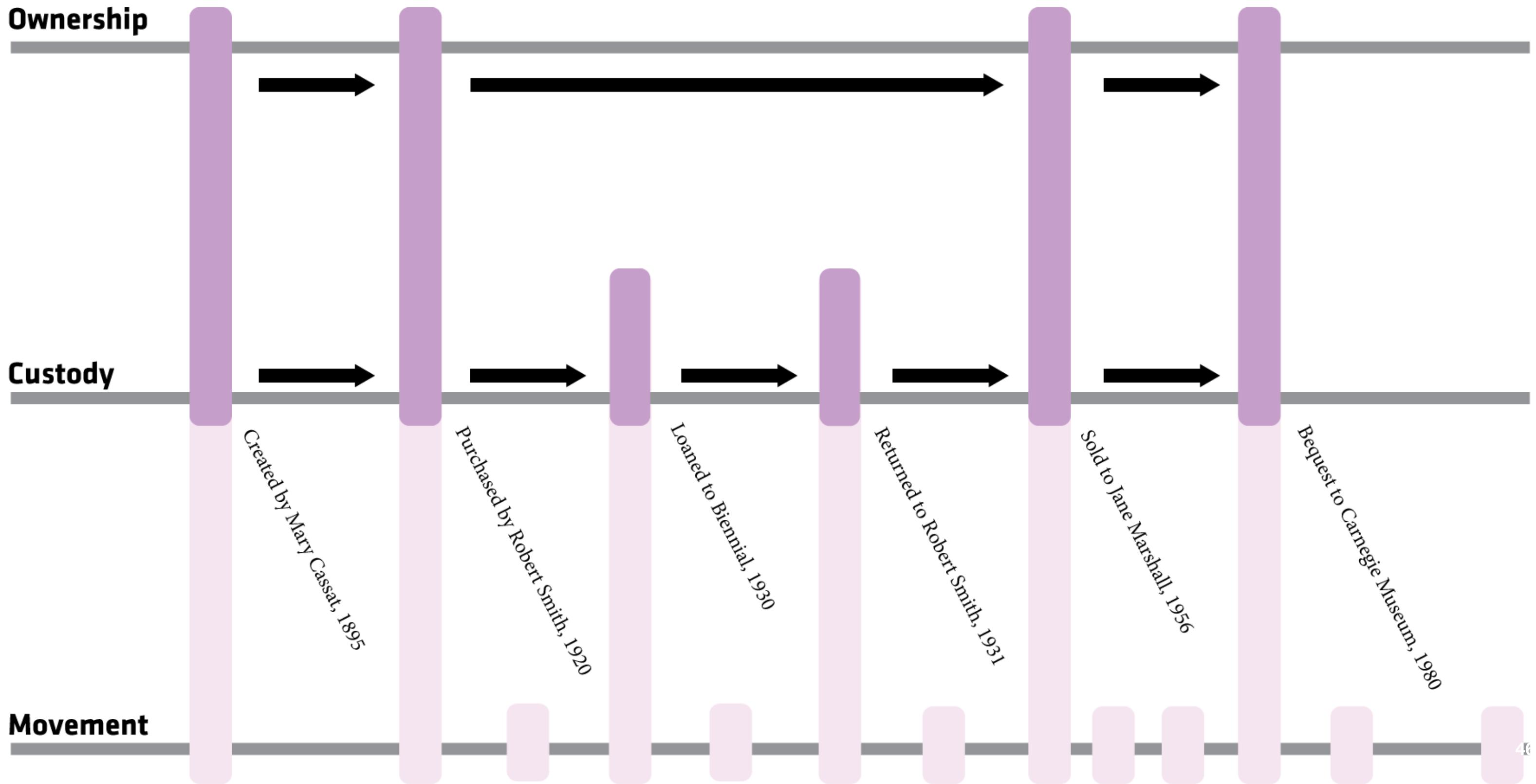
[copy provenance](#)

Claude Oscar Monet [1840-1926], France, until 1884; purchased by Durand-Ruel, Paris, France, 1884 until 1891; sold to J. E. Chase, Boston, MA, April 20, 1891 [1]; Higginson, 1891 until 1906; purchased by Durand-Ruel, Paris, France, April 1907 [2]. [Durand-Ruel Galleries, New York, NY, by 1936 \[3\]](#). Sam Salz, Inc., New York, NY; purchased by Museum of Art, Carnegie Institute, Pittsburgh, PA, February 1973 [4].

NOTES: [1] Recorded as "For Higginson", likely Henry Lee Higginson. J.E. Chase may have been acting as Higginson's agent. [2] Ph. A1035, NY 7395 [3] Lent by Durand-Ruel Galleries to the Texas Centennial Exhibition in 1936 [4] Updated, by July 2012.

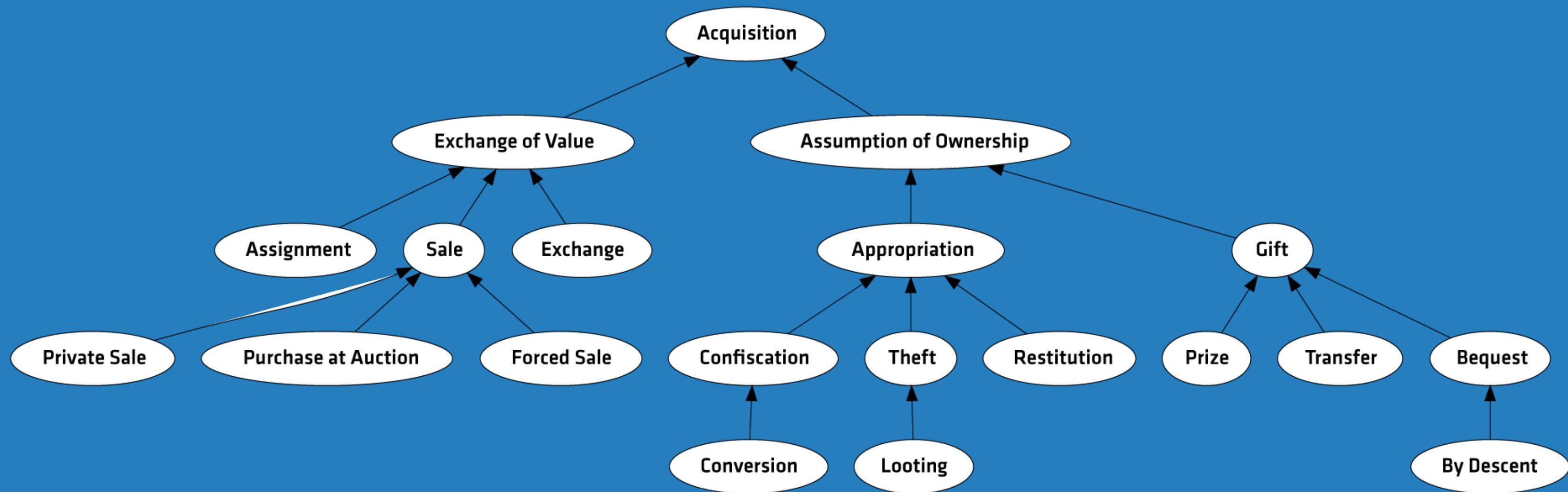


# THREE PARALLEL TIMELINES

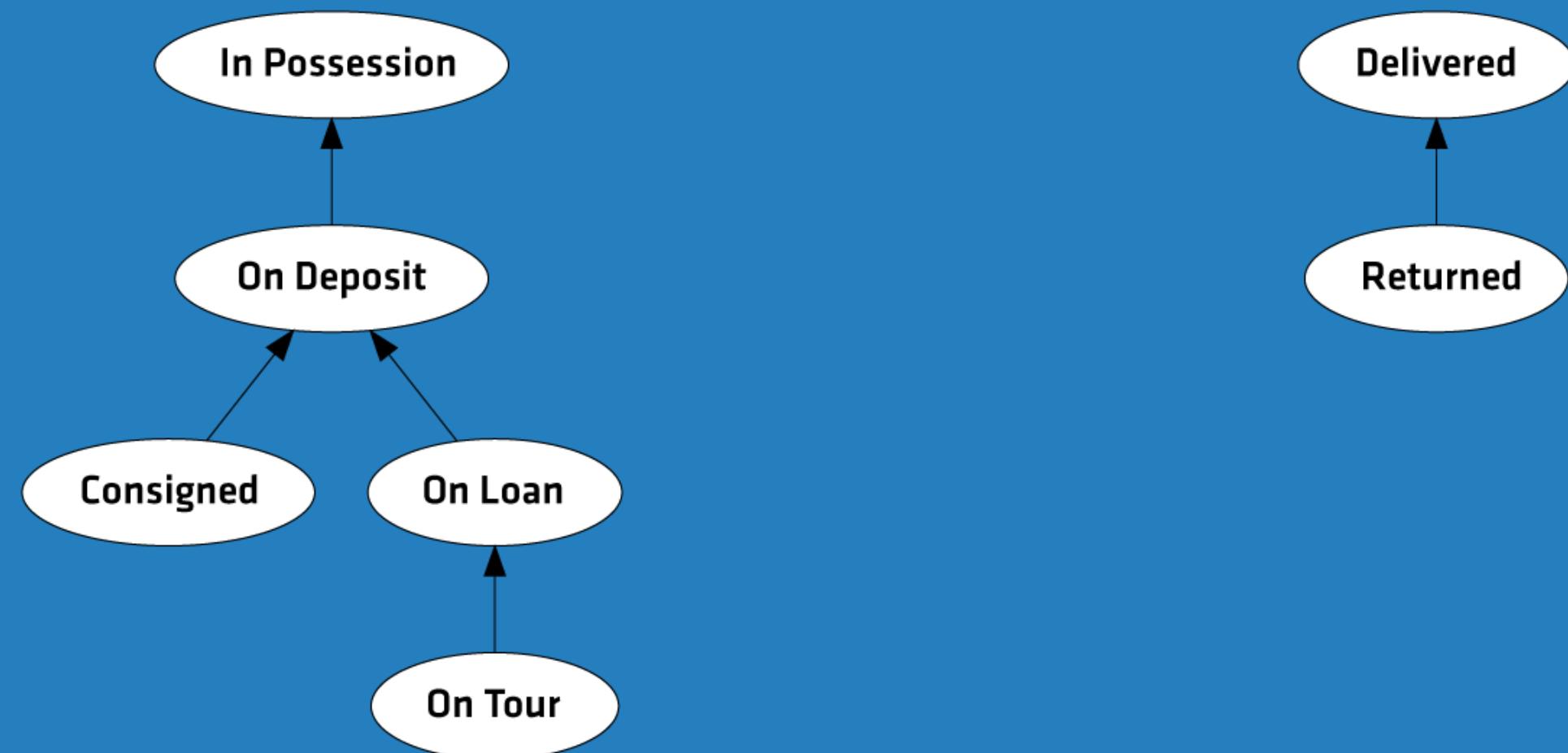


# How does work change hands?

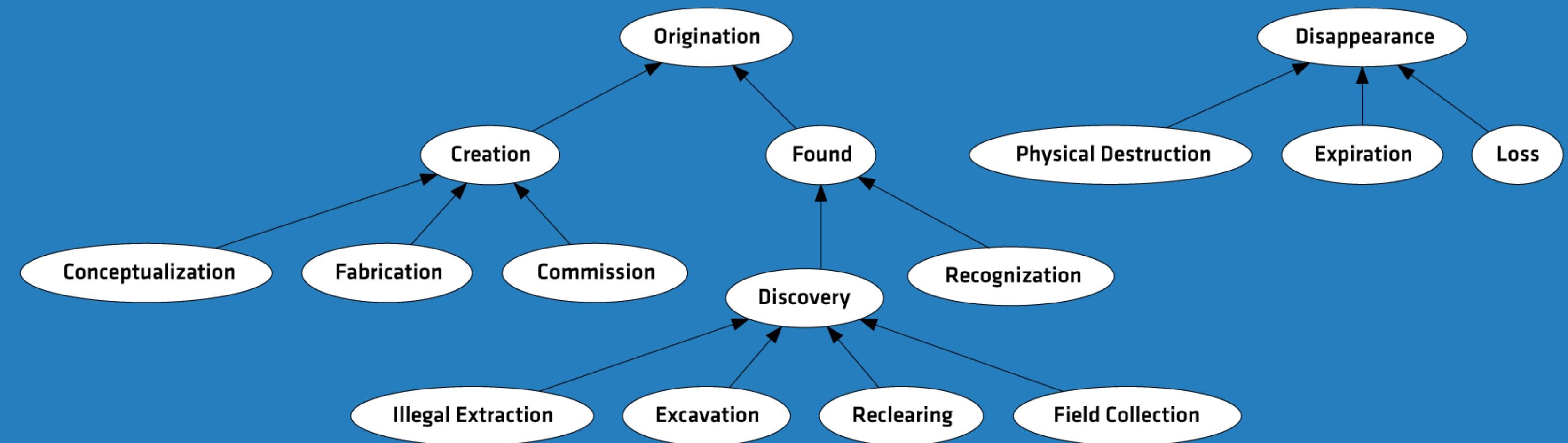
# Acquisitions



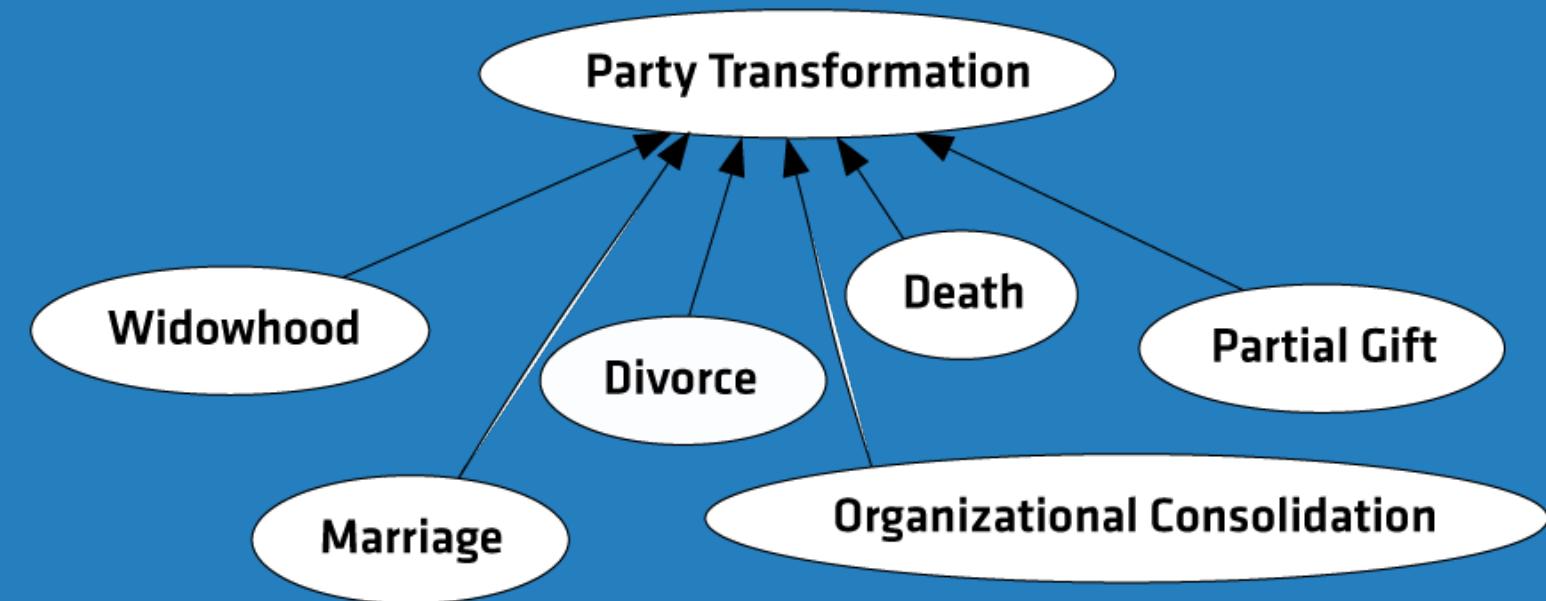
# Custody Transfers



# Creation and Distinction



# Party Transformation

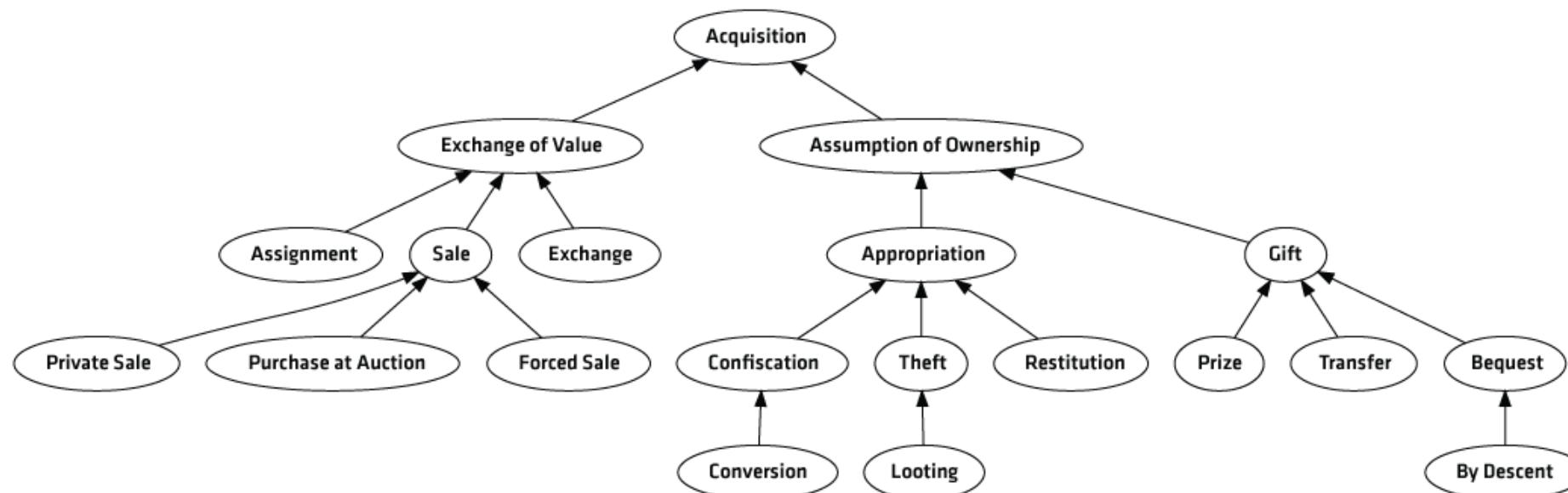


## Transfer of an Object

This category of events represents the transfer of ownership of an object from one party to another. This includes transfers that involve the exchange of value, such as purchases or exchanges. This also includes transfers that do not involve the exchange of value, such as gifts or bequests.

This also includes transfers through illegal means, such as theft or looting.

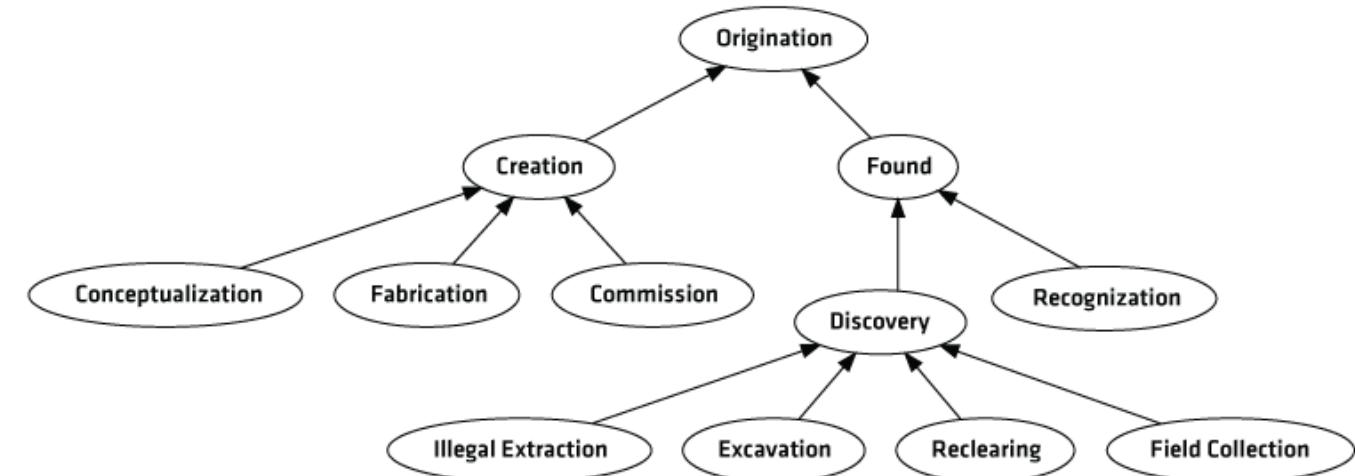
By default, all events in a provenance record are assumed to be this type of event.



## Origination of an Object

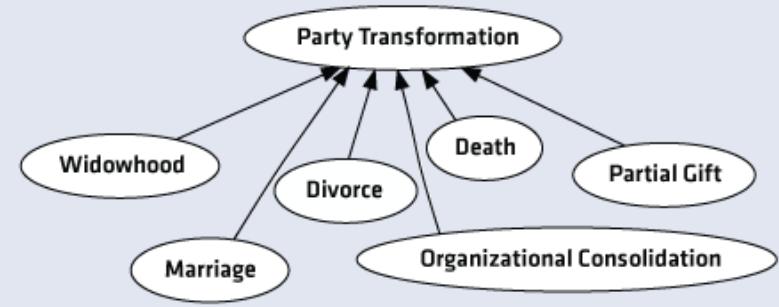
This category of events describe the beginning of an object. This may represent the creation of an object or the moment in which the object began to be perceived as an art object. This relates to the specific physical or conceptual object being described; for instance, this could describe the a specific print of a photograph OR the conceptual entity of the photo, but should not be used to record both in a single provenance record.

All objects are assumed to have been originated. Origination MUST be the first event in the provenance of an object. If a record does not have an origination event as the first event in the provenance, a generic origination event with no date and an unknown party is assumed.



## Transformation of Party

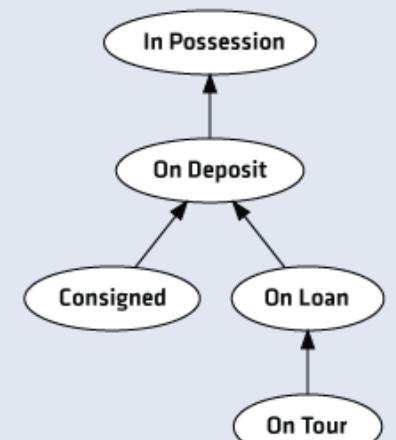
This category of changes are used to handle instances in which a party becomes another party through some sort of legal change. This is explicitly not for name changes; in that case the party remains the same party. However, this is used to record changes via marriages, corporate mergers, or widowhood.



## Division of Custody & Ownership

This category of events describe moments where custody, but NOT ownership of an object is given to a party.

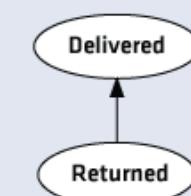
Typical examples of this include consignment or loans.



## Rejoining of Custody & Ownership

This category of events describe moments where the custody and ownership of an object are reunited in a single party. This implies that the party named in the immediately preceding event did not have ownership of the object, and thus MUST either follow a custody division event or a break in knowledge.

The party described is the receiving party, and they MUST already have been named as the owning entity.

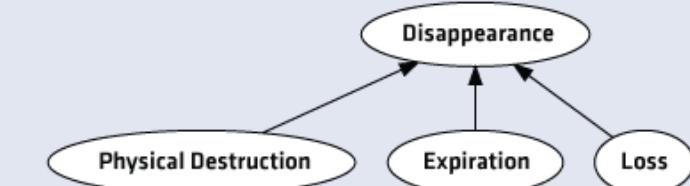


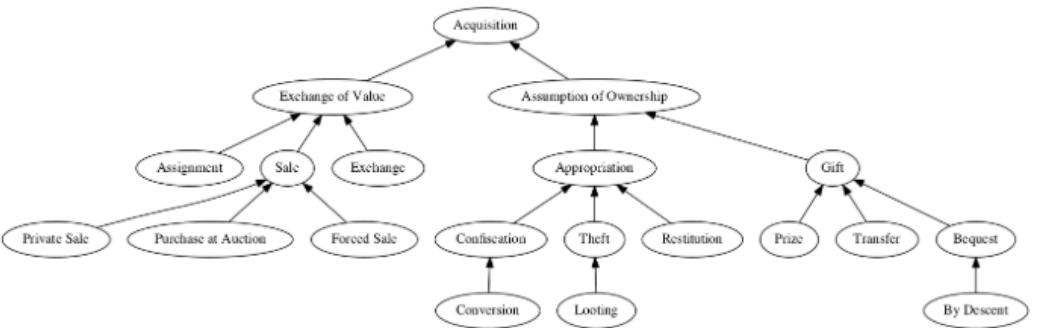
## Disappearance of an Object

This category of events indicates that the object being described no longer exists to the best knowledge of the author. Objects which have been destroyed fall into this category, as do objects which have been lost permanently. This can also be used to describe the completion of objects that are only intended to exist for a finite length of time.

By default, objects have not disappeared. If an object is believed to no longer exist, this SHOULD be recorded. If recorded, this MUST be the final entry in a provenance record. There MUST be at most one disappearance event for an object.

There MAY be one party recorded with these events.





## TRANSFER OF AN OBJECT

This category of events represents the transfer of ownership of an object from one party to another. This includes transfers that involve the exchange of value, such as purchases or exchanges. This also includes transfers that do not involve the exchange of value, such as gifts or bequests. This also includes transfers through illegal means, such as theft or looting.

By default, all events in a provenance record are assumed to be this type of event.

### Acquisition

**This object was acquired by the named party in an unknown fashion.**

*This is the default method for acquisitions and is the base type for all acquisitions. It should be used if there are no additional details available. If there is not an explicit acquisition method mentioned, this will be assumed.*

**Preferred Form:**

**Other Forms:** by acquisition; acquired by

**Example:** Vincent Price [1911-1993], St. Louis, Missouri, July 1969.

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# Art Tracks: Phase II

- Formal Standard
- Linked Data Model
- Entity Reconciliation (*for real*)
- Reusable Software
- Search

# Four levels of provenance.

## Tombstone Info

### Level 1: Basic Provenance

The core entities are the object, the creator(s), and the current owner. These are part of provenance, but are traditionally recorded outside of provenance.

This documents a provenance text in which the individual entities contained within the document are not modeled in any fashion. This is the standard model for provenance within an institution where the provenance is merely a textual document.

### Level 2: Provenance with Entities

This level adds mappings for parties, locations, and URLs contained within the document. The individual events and the connections between entities are not mapped.

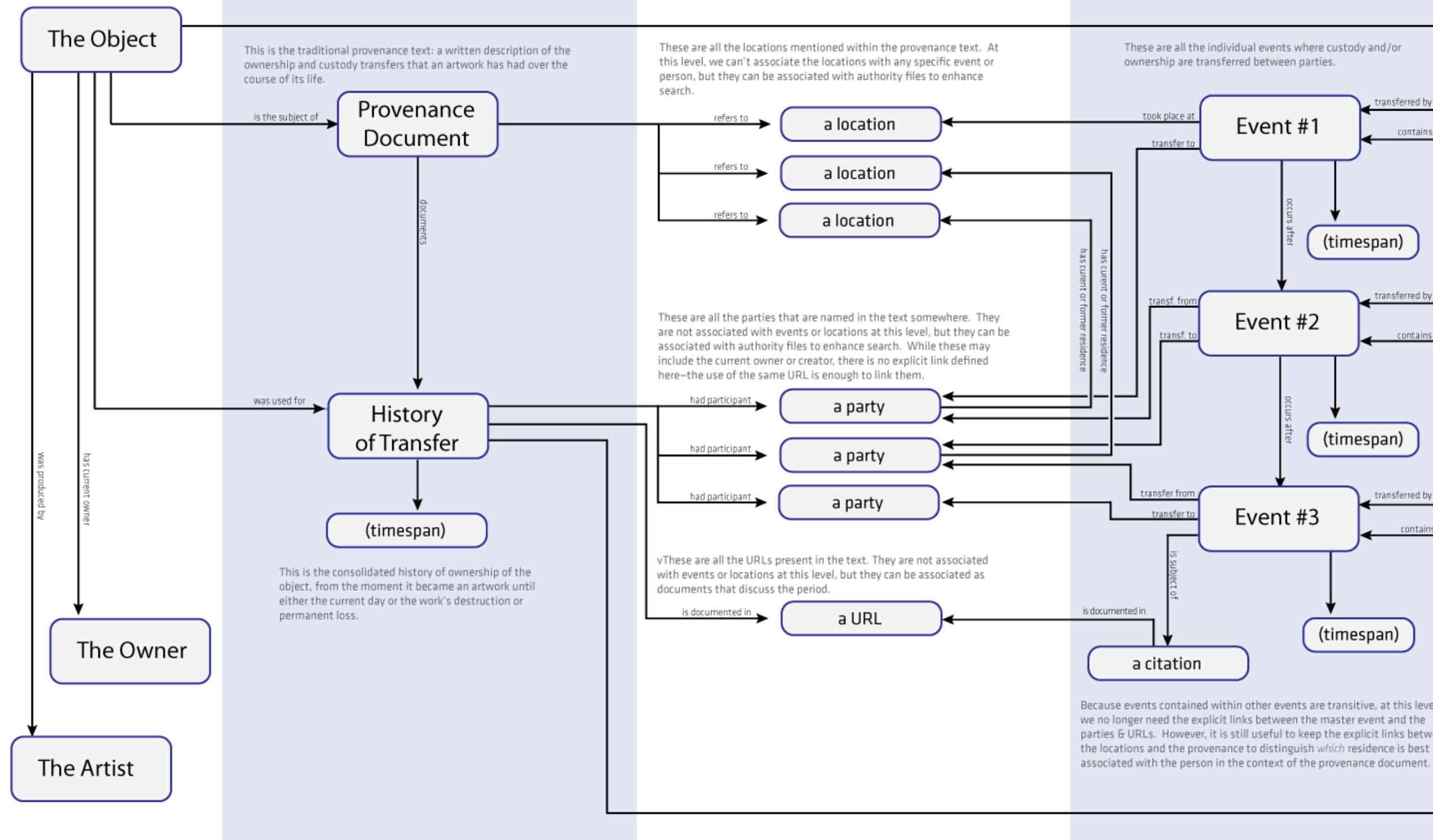
This accommodates software that processes the provenance text but doesn't understand the structure of provenance, such as Named Entity Recognition or reconciliation against authority files.

### Level 3: Event-Based Provenance

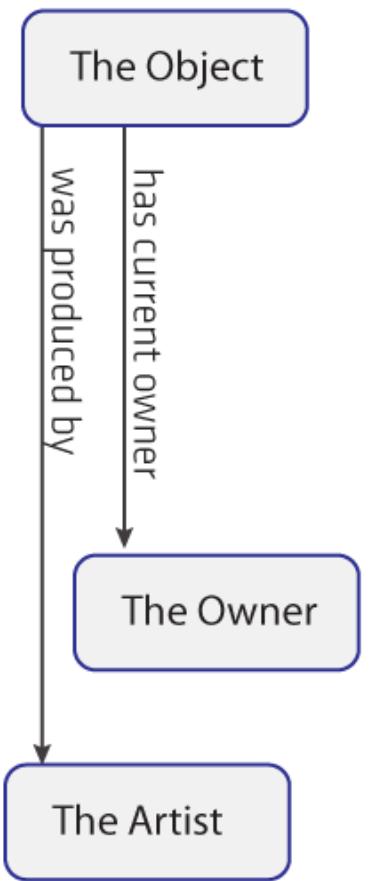
This level of provenance documents the individual transfer events, or the individual "lines" of the provenance document. This will require a parser that understands the syntax of the document.

### Level 3: Additional Information

There are additional items of information that should be included for each event beyond the relationships between people and time. These include documenting acquisition and textual information, as well as providing an association with sale and auction information.

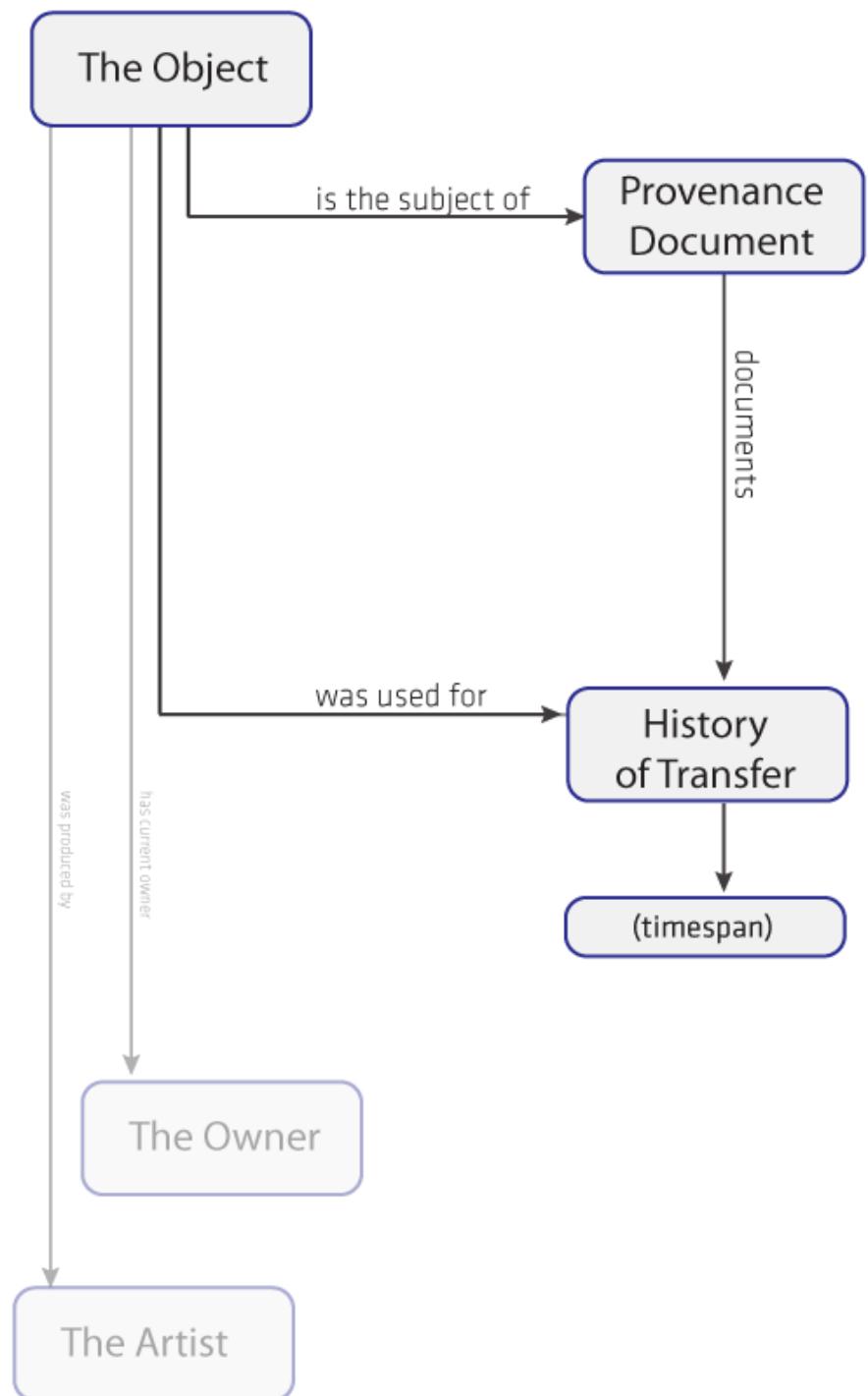


## Basic Tombstone Data



**Mary Cassatt, Young Women Picking Fruit.**  
Carnegie Museum of Art.

## Level 1: Basic Provenance



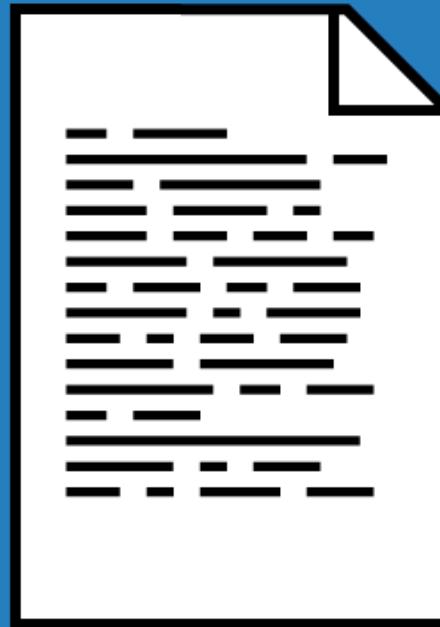
**Mary Cassatt, *Young Women Picking Fruit.***  
Carnegie Museum of Art, 1894.

**Mary Cassatt [1844-1926], France; Galeries Durand-Ruel, Paris, France, by August 1892 [1]; Durand-Ruel Galleries, New York, NY, 1895; purchased by Department of Fine Arts, Carnegie Institute, Pittsburgh, PA, October 1922.**

### Notes:

[1]. Recorded in stock book in August 1892.

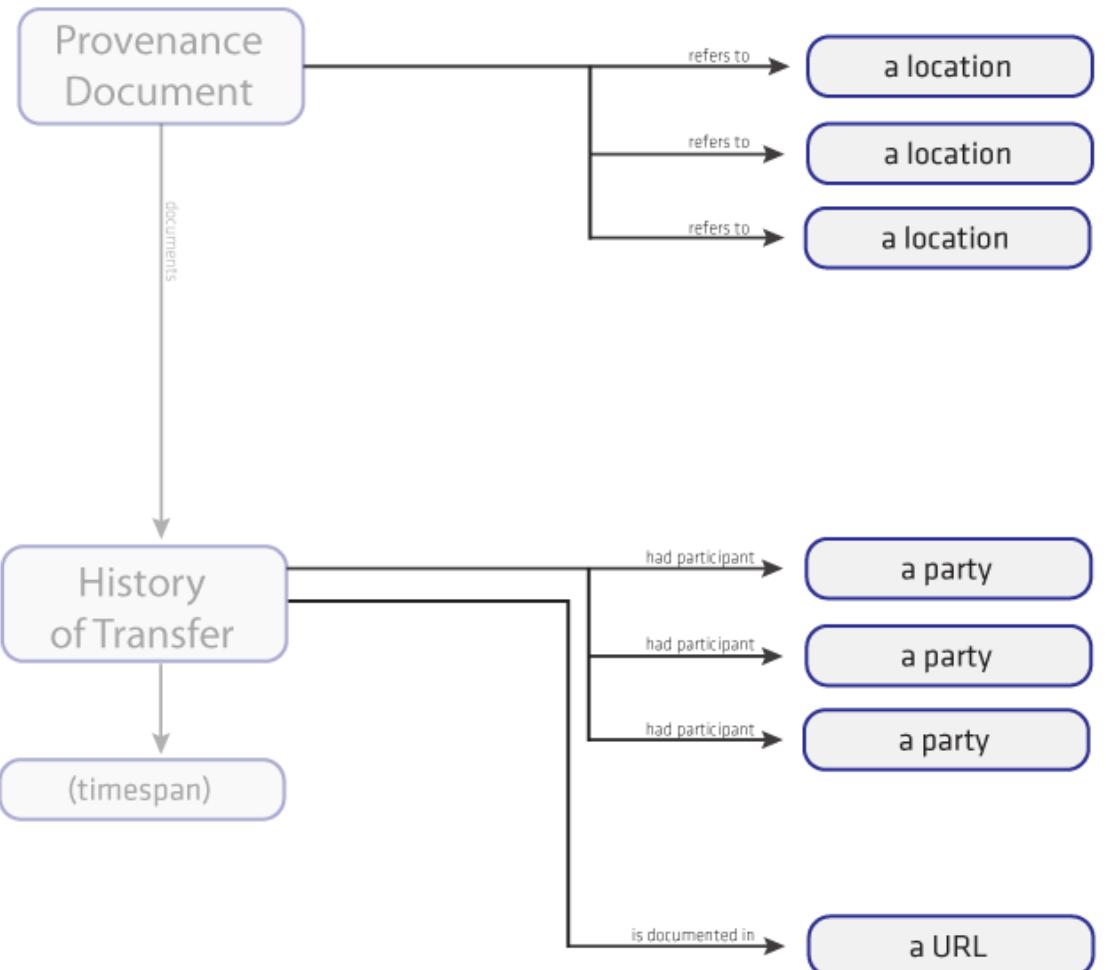
# The Document



# The Timeline



## Level 2: Provenance with Entities



*Mary Cassatt, Young Women Picking Fruit.*  
Carnegie Museum of Art, 1894.

**Mary Cassatt [1844-1926], France; Galeries Durand-Ruel, Paris, France, by August 1892 [1]; Durand-Ruel Galleries, New York, NY, 1895; purchased by Department of Fine Arts, Carnegie Institute, Pittsburgh, PA, October 1922.**

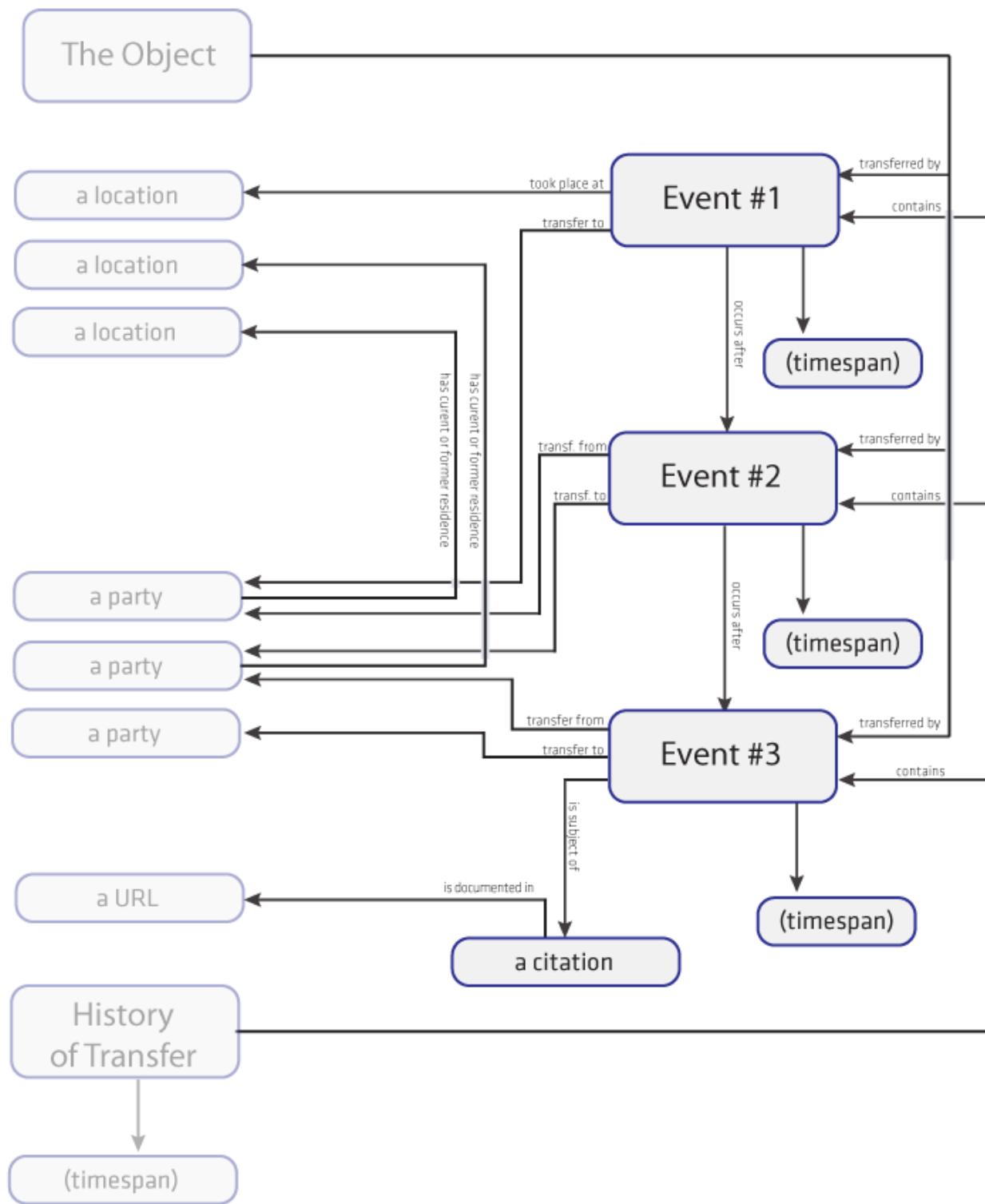
### Notes:

[1]. Recorded in stock book in August 1892.

### Authorities:

Mary Cassatt: see <http://viaf.org/viaf/2478969/>  
Galeries Durand-Ruel: see <http://viaf.org/viaf/153354503>  
Durand-Ruel Galleries: see <http://viaf.org/viaf/134060200>  
Department of Fine Arts, Carnegie Institute: see <http://viaf.org/viaf/147742484>  
France: see <http://vocab.getty.edu/tgn/1000070>  
Paris, France: see <http://vocab.getty.edu/tgn/7008038>  
New York, NY: see <http://vocab.getty.edu/tgn/7007567>  
Pittsburgh, PA: see <http://vocab.getty.edu/tgn/7013927>

## Level 3: Event-Based Provenance



*Mary Cassatt, Young Women Picking Fruit.*  
Carnegie Museum of Art, 1894.

Mary Cassatt [1844-1926], France;  
Galeries Durand-Ruel, Paris, France, by  
August 1892 [1];  
Durand-Ruel Galleries, New York, NY, 1895;  
purchased by Department of Fine Arts,  
Carnegie Institute, Pittsburgh, PA, October  
1922.

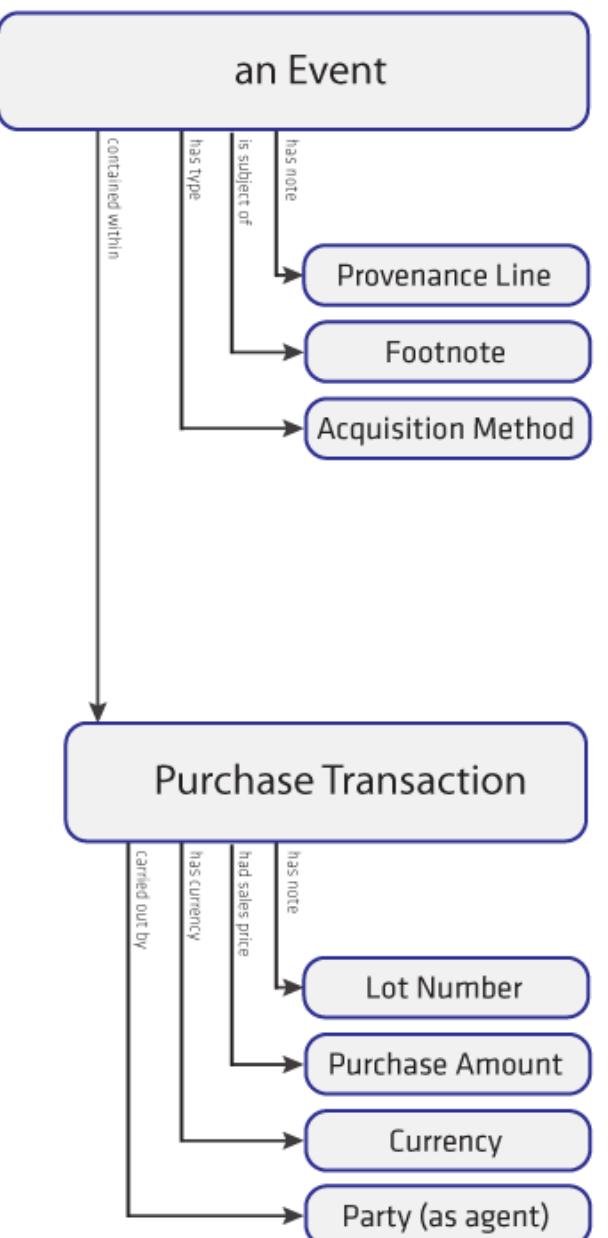
### Notes:

[1]. Recorded in stock book in August 1892.

### Authorities:

Mary Cassatt: see <http://viaf.org/viaf/2478969/>  
Galeries Durand-Ruel: see <http://viaf.org/viaf/153354503>  
Durand-Ruel Galleries: see <http://viaf.org/viaf/134060200>  
Department of Fine Arts, Carnegie Institute: see <http://viaf.org/viaf/147742484>  
France: see <http://vocab.getty.edu/tgn/1000070>  
Paris, France: see <http://vocab.getty.edu/tgn/7008038>  
New York, NY: see <http://vocab.getty.edu/tgn/7007567>  
Pittsburgh, PA: see <http://vocab.getty.edu/tgn/7013927>

## Level 3: Event-Based Provenance



Galerie Durand-Ruel, Paris, France, by August 1892 [1];

### Notes:

[1]. Recorded in stock book in August 1892.

### Authorities:

Durand-Ruel Galleries: see <http://viaf.org/viaf/134060200>  
Paris, France: see <http://vocab.getty.edu/tgn/7008038>

## Tombstone Info

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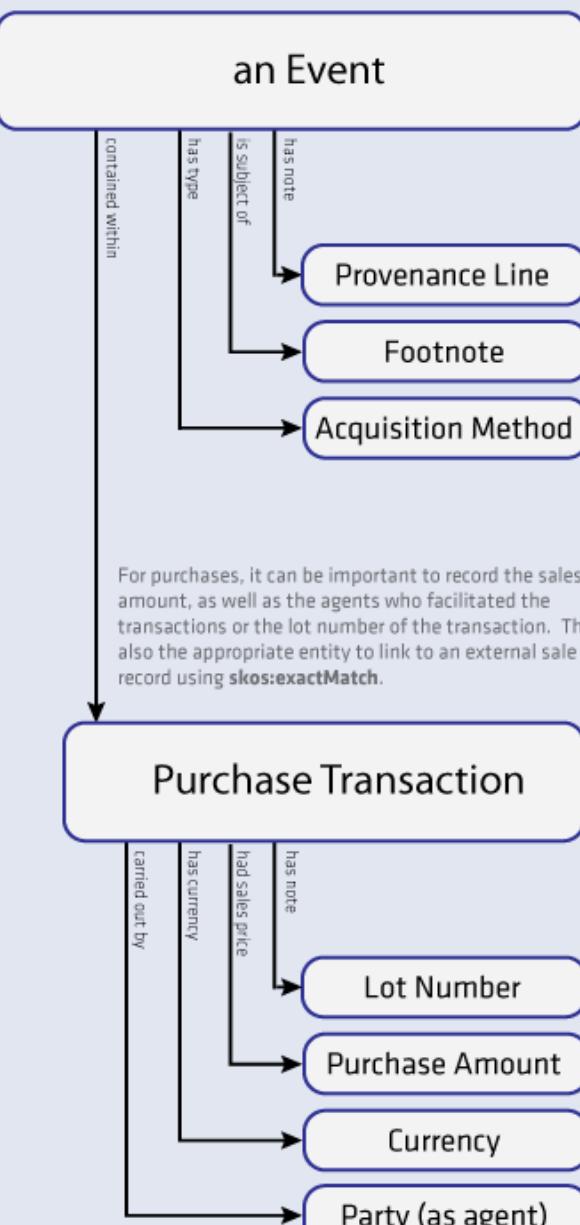
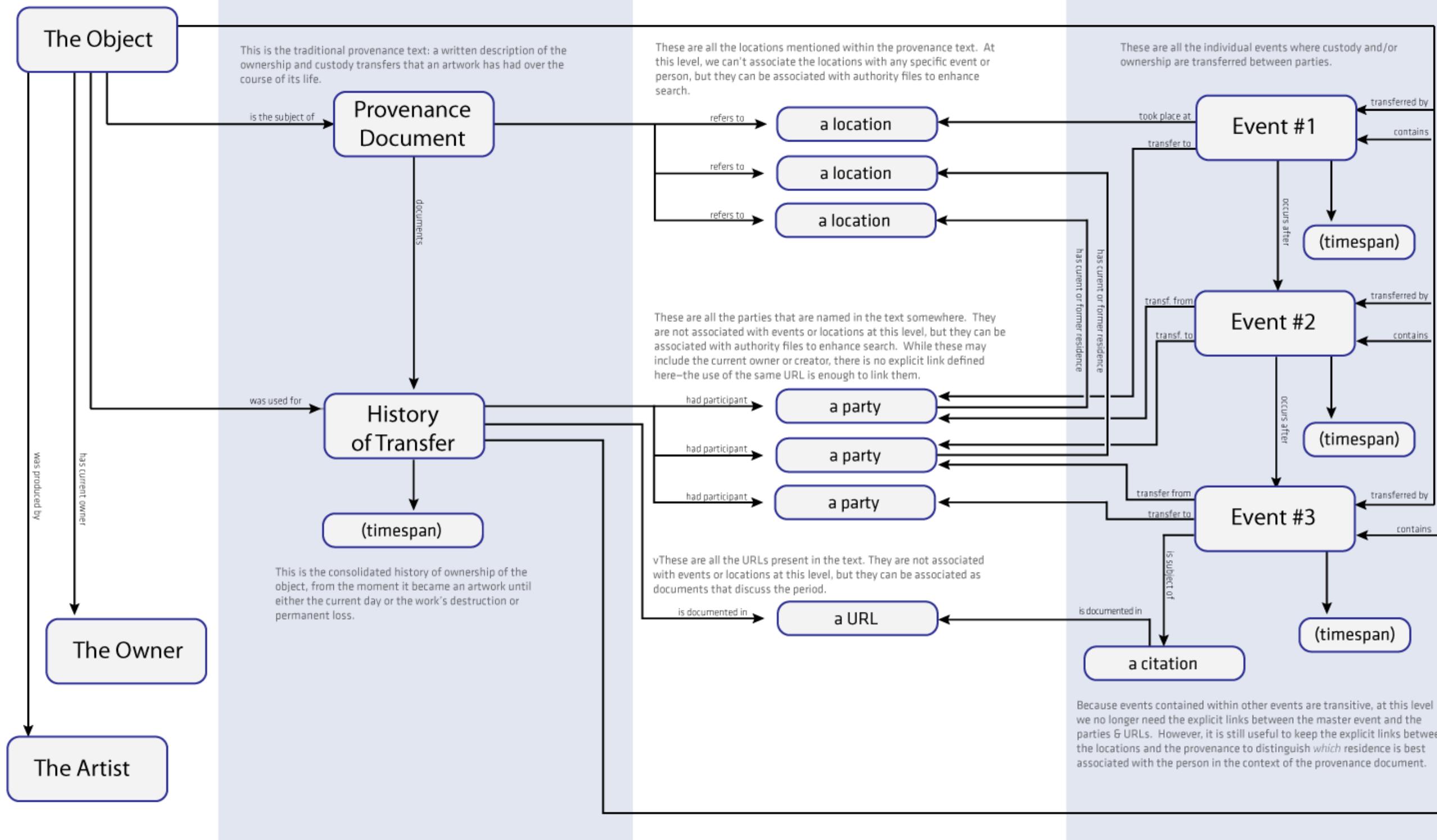
This accommodates software that processes the provenance text but doesn't understand the structure of provenance, such as Named Entity Recognition or reconciliation against authority files.

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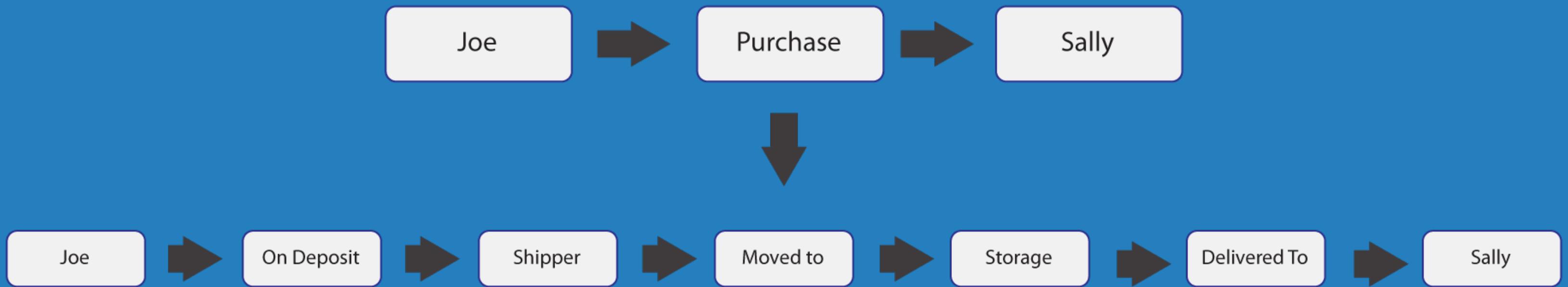
### Level 3: Additional Information

There are additional items of information that should be included for each event beyond the relationships between people and time. These include documenting acquisition and textual information, as well as providing an association with sale and auction information.



# *Four levels of provenance?*

# Level Four: Internal Transaction Events



# Human Readable Provenance.

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID, for his daughter Sally Moe, Baroness of Leeds [1940-], Pittsburgh, PA?, at "Sale of Pleasant Goods", Christie's, in London, England, sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

Notes:

- [1]. Purchased on the occasion of her birthday.

Authorities:

John Doe:	see <a href="http://ulan.getty.org/123455">http://ulan.getty.org/123455</a>
Boise, ID:	see <a href="http://geonames.com/123456">http://geonames.com/123456</a>
Sally Moe, Baroness of Leeds:	see <a href="http://viaf.org/123456">http://viaf.org/123456</a>
Pittsburgh, PA:	see <a href="http://tgn.getty.org/123456">http://tgn.getty.org/123456</a>
Sale of Pleasant Goods:	no record found.
Christie's:	see <a href="http://viaf.org/1234569">http://viaf.org/1234569</a>
London, England:	see <a href="http://geonames.com/555121">http://geonames.com/555121</a>

Citations:

- [a]. See Arnau, F. (1961). *The art of the faker: Three thousand years of deception*. Boston: Little, Brown. <http://www.worldcat.org/oclc/873114>
- [b]. See curatorial file, Carnegie Museum of Art.

# Period Certainty

Is this entire line suspect?

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID,  
for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?,  
at "Sale of Pleasant Goods", Christie's, in London, England,  
sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

# Acquisition Method

How did this work change hands?

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID,  
for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?,  
at "Sale of Pleasant Goods", Christie's, in London, England,  
sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

# Agents

Who facilitated the transaction?

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID, for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?, at "Sale of Pleasant Goods", Christie's, in London, England, sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

# Entity certainty

How do we indicate that a single part is suspect?

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID, for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?, at "Sale of Pleasant Goods", Christie's, in London, England, sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

# Life Dates

Disambiguation, possibly vestigal.

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID, for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?, at "Sale of Pleasant Goods", Christie's, in London, England, sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

# Place of Residence

What places are people associated with?

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID, for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?, at "Sale of Pleasant Goods", Christie's, in London, England, sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

# Family Relationships

How do personal relationships inform provenance?

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID,  
for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?,  
at "Sale of Pleasant Goods", Christie's, in London, England,  
sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

# Primary Owner/Custodian

How do we associate titles with people?

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID, for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?, at "Sale of Pleasant Goods", Christie's, in London, England, sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

# Associated Events

How do we connect works that have been together?

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID, for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?, at "Sale of Pleasant Goods", Christie's, in London, England, sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

# Transaction Location

Where did the transaction actually take place?

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID, for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?, at "Sale of Pleasant Goods", Christie's, in London, England, sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

# Dates

When did the transaction actually take place?

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID, for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?, at "Sale of Pleasant Goods", Christie's, in London, England, sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

# Transaction Identifiers

How do we associate this with a specific transaction?

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID, for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?, at "Sale of Pleasant Goods", Christie's, in London, England, sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

# Price

How much was paid?

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID, for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?, at "Sale of Pleasant Goods", Christie's, in London, England, sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

# Footnotes

**Human-readable, unmodelable data**

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID, for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?, at "Sale of Pleasant Goods", Christie's, in London, England, sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

**Notes:**

**[1]. Purchased on the occasion of her birthday.**

# Citations

Sources of information.

Possibly purchased at auction by John Doe? [1910?-1995?], Boise, ID, for his daughter Sally Moe, Baroness of Leeds, Pittsburgh, PA?, at "Sale of Pleasant Goods", Christie's, in London, England, sometime after November 5, 1975 (lot no. 10, for \$1000) [1][a][b].

Citations:

[a]. See Arnau, F. (1961). The art of the faker: Three thousand years of deception. Boston: Little, Brown. <http://www.worldcat.org/oclc/873114>

# What are we going to do?

# TODO: Documentation

- An Acquisitions Ontology.
- A CIDOC-CRM mapping for provenance.
- A human-readable version of the standard.
- A JSON model of the standard.
- Lots of examples.

# **TODO: Software**

- A revised parser.
- A revised Elsya.
- Tools for working with dates.
- Tools for looking up parties & locations.

# What do we still need?

# What do we still need?

## Small Scale Reconciliation.

*(A consistent system for  
looking up people and places.)*

# What do we still need?

## Data Hydrators.

*(A easy way to use Linked Data  
to ease adding new records to  
your institution's CMS)*

# What do we still need?

## Institutional Authority files.

*(A easy way to look up  
records to your institution's CMS)*

# What do we still need?

A good model for sales and auctions.

*(How do we figure out what objects  
were together in the past?)*

# What do we still need?

A good model for citations and sources.

*(How do we reference books,  
archival material, or internal documents?)*

# What do we still need?

A real search interface.

***(How do we actually search all this information?)***

# Linked Open Data?



# How will we know if this all works?