

RDF-encoding Pliny annotations in the Open Annotation Collaboration project

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

Larry S. Jackson, Ph.D.

<http://people.lis.illinois.edu/~lsjackso/>

lsjackso@illinois.edu

April 21, 2010

Table of Contents

An Overview of Pliny and the Open Annotation Collaboration Project	2
Vocabulary	2
Modeling	3
Database Storage	4
Table Schema	4
Consequences of Single-User Design Assumptions	4
Documents Pliny Annotates.....	5
Webpages	5
Locally Resident Files	5
Concluding Remarks and Observations	5
ATTACHMENT 1 - Applicable Database Table Definition Excerpts	7
Resource	7
LinkableObject	7
Link	8
LOType (Linkable Object Type)	8
Note	8
Object Type	8
ATTACHMENT 2 - Pseudocode with SQL Queries	9
Hierarchical Traversal	9
Recursive Traversal	12

ATTACHMENT 3 - Worked Example	14
Pliny Displays.....	14
Webpage example 1	15
Webpage example 2	16
PDF example	17
Image example.....	18
Derby Table Contents	19
RDF Produced.....	40
ATTACHMENT 4 - Java Source Code	52

An Overview of Pliny and the Open Annotation Collaboration Project

Pliny¹ is an annotation and note organizing system developed by John Bradley, primarily focusing on supporting single users engaged in the types of document interactions expected of humanities scholars in pre-authoring work. That is, Pliny attempts to support humanities-like work, if that work were being performed involving digital representations of documents. As that supposition is only recently and occasionally becoming the case, the exact needs of the postulated scholars are somewhat conjectural. Pliny is written using the Eclipse Java environment², and is available open-source³.

The Open Annotation Collaboration (OAC) project⁴ constructed a Pliny-to-RDF conversion program consistent with the in-process understanding of the OAC annotation model as of the date of this report. That program, its output, and the Pliny data tables which it reads are described herein. Exporting to a common, RDF-based model, is seen as an essential step in the process of becoming able to share annotations between different annotation system types and individual installations on scholars' workstations.

Vocabulary

Each webpage which is the target of annotations has an entry created in Pliny's Resource table. As this particular entry is widely referenced, we give it the name "worksheet."

Annotation text is entered in rectangular boxes which are displayed within a worksheet window. Pliny terms these boxes "notes." (Notes may or may not be linked to other notes. Notes may or may not

¹ <http://pliny.cch.kcl.ac.uk/>

² <http://www.eclipse.org/>

³ <http://sourceforge.net/projects/pliny/>

⁴ <http://groups.lis.illinois.edu/openannotation/>

contain other notes. Notes always have titles, which display in the "title bar" of the applicable display rectangle. Notes may have text, which displays in the body portion of the applicable display rectangle, if the note is not minimized. If a note both has text and contains other notes, only one of those display modes may be active at any moment, at the user's selection.)

When the annotation target is a PDF or image file, the user may designate a rectangular region within that file, which we here refer to as simply "region." Such a designation implicitly and unavoidably also creates a note, which is pictorially attached to that region with an arrow. (The type of note, and therefore the display color of both the note and the arrow, is that most recently selected using Pliny's Type Manager pull-down list.)

Modeling

Although relations between objects may be considered a single type of object to be modeled, Pliny has mixed mechanisms for modeling both objects and relations between objects. This can be understood, as Pliny was not designed to be a general document modeling tool, but a facility for a certain style of note-taking and organizing.

The field definitions and the roles of those tables which were involved in the RDF export are provided in Attachment 1. The pseudocode for conversion to RDF in Attachment 2 may be useful to programmers in attempting to follow the pointer and record mechanisms employed. Attachment 3 provides illustrated example annotation, dumps of the associated Derby database contents, and a listing of the RDF produced, and Attachment 4 provides the Java source code used in producing the RDF example presented herein.

The dissimilar kinds of relationship modeling within Pliny, and their consequences, are described following.

1. Possibly the most obvious relation, linking an annotation (note) to an external target document, is implemented by creating an entry in the Resource table for the external target document, and then linking annotations to that entry through the use of the DisplayedInKey field of the LinkableObject table. In this case the associated Identifier and IDStart field values within the Resource table will contain a URL.
2. The contains/contained_in relation is also modeled using the DisplayedInKey field of the LinkableObject table, however the associated Identifier and IDStart field values within the Resource table will in this case be null. If those fields instead contain a URL (as in the case just preceding), the annotation is said to be a top-level annotation within the worksheet, but it seems incorrect to say this implicitly suggests a form of contained_in relation involving the external target document as superordinate.
3. Various forms of is_related_to relations are supported through user-defined entries in the LOType table, naming a type and specifying the rendering color, however the contains/contained_in relation does not utilize that table, nor the color codes associated therewith. (Contains/contained_in utilizes primarily the DisplayedInKey field of the LinkableObject table. And, although the LinkableObject table contains a link (TypeKey) into the

LOType table, that entry simply duplicates information, rather than allowing it to differ.) So, contains/contained_in may not be subdivided (e.g., so as to indicate why a given note is declared "contained" where it is).

4. The more precise type of annotation targeting supported for PDFs permits users to designate a region within a certain page of the PDF display, however that region is not modeled using an entry in the Resource table, which would make the region an entity in its own right, but through a double use of the LinkableObject table and the generation of a mandatory entry in the Link table. (An entry in the LinkableObject table having a null SurrogateForKey indicates the relation does not follow the above mechanisms. Instead, this entry in the LinkableObject table necessarily links to an entry in the Resource table via the DisplayedInKey field to indicate the PDF file target, and a corresponding entry in the Link table indicates that the region-designating entry in the LinkableObject table is linked with a conventional note which was unavoidably created.)
5. Contains/contained_in does not necessarily match the semantics of part/part_of, but if the display is understood to be somewhat of a Venn diagram, one might get that impression. There are no built-in mechanisms for specifying part/part_of, and there are no mechanisms for specifying sequence or completeness of enumeration.

Database Storage

Pliny retains all its annotation information using Apache Derby⁵, an SQL-compliant database. To investigate the restatement of Pliny annotations in RDF under the OAC model, the optimal access to the information is not via reverse-engineering of the Pliny code and the injection of modifications thereto, but in simply utilizing the database schema. Implementing the translation code outside of Pliny also avoids the necessity to port forward the translation code in the event Pliny is updated.

Table Schema

Pliny employs these tables; Favourite, GlobalData, Llnk, LinkableObject, LOType, Note, ObjectType, PlugIn, Resource. However, the tables Favourite, GlobalData, and PlugIn contain no information which is useful outside of the originating Pliny installation and were accordingly not used in the process of translation to RDF. The field definitions and the roles of those tables which were involved in the RDF export are provided in Attachment 1.

Consequences of Single-User Design Assumptions

Although Derby can be run as a Web-accessible service, Pliny makes exclusive use of it. This is consistent with the design philosophy that Pliny supports a single user, as a note-taking and organizing tool. Derby access provisions aside, many consequences of the single-user implementation philosophy will call for modification before Pliny can well support the collaborative interchange of annotations.

⁵ <http://db.apache.org/derby/>

One collaboration mechanism could be implemented via remote access at the Derby layer. Other mechanisms could be built on the exchange of RDF-encoded graphs, as postulated by the OAC project.

The closest approximation of annotation interchange currently available in Pliny is to temporarily relocate one's own Derby database contents and then inject a copy of the colleague's Derby database in the default location. Doing so would allow the viewing and use of the colleague's annotations, although all the annotations, not just selected ones⁶. The moving of databases must then be undone when one wishes to return to one's own annotations.

Documents Pliny Annotates

Pliny currently supports annotations of webpages, locally resident image files, and locally resident Adobe PDF document files.

Webpages

Webpages are referenced by URL and are displayed in a window using an embedded Web browser. Only the URL is stored, with the webpage being re-acquired upon subsequent Pliny sessions. So, changes to the webpages subsequent to the annotation creation might render moot or obfuscate the annotation.

The URL and HTML Title tag contents are stored in the worksheet, along with the date and time the annotation was done. There can be many worksheets in Pliny, each referencing one URL.

Locally Resident Files

Adobe PDF document files and image files must first be copied onto the user's computer, before being designated as a Pliny annotation target. For example, if a PDF file resides on the Web, it is the user's responsibility to download a copy, then designate within Pliny that the copy is the annotation target. This was done to avoid the webpage situation where the target document is subject to change without notice. Interestingly, webpages are not correspondingly cached, although capture as a PDF file (e.g., via external means such as Adobe Acrobat), followed by local storage, would be a possibility.

Concluding Remarks and Observations

Pliny uses an annotation graph structure which, despite some quirks and limitations, is quite general in nature. Accordingly, the relationships between annotations and annotated documents, and issues of how those can be encoded in RDF, can be examined in some depth using Pliny examples. Pliny only allows one external document (i.e., webpage or file) for each page of annotation notes, and so does not

⁶ If some material is to be kept private, it would be possible for the colleague to delete it from Derby before sending the copy of the database. However, doing so would require the colleague to also make a pre-deletion copy of the database, and then to restore that copy once the transmission had occurred.

support at a high level of abstraction the "multi-target annotations" being discussed by OAC. However, Pliny does permit intra-worksheet links of arbitrary number, and nodes of arbitrary in-bound and out-bound degree, and as such supports a form of multi-target annotation sufficient for modeling discussion. Notes can also be referenced multiple times, however necessarily all from within the same Pliny worksheet.

It is important to consider the possibility of annotations as documents in their own right, as this is necessary to support colleagues being able to make specific comments on those annotations. The RDF model appears to be well on the way to supporting that, when one recursively applies the model down to the artifacts of individual annotation actions. In the worked example provided here, all the notes are brief, and only a large handful of relationship types are defined. However, the size of the annotation is immaterial in modeling annotations in general. Further, there is not necessarily a way to tell from a graph display how large the text (or other media) body is from the upper-level display of graph connectedness.

For example, consider if the images in Attachment 3 were not Pliny screen captures at all, but a form of graph visualization, where, say, only the first line or two of the annotation document is displayed (e.g., an extract from the abstracts of papers), and provision exists for a form of "drill down" to read an arbitrarily large narrative. (Pliny actually supports very large annotation text, using the mechanism of the scroll bar, like some of the examples in the image example of Attachment 3.) Locally written annotations, of arbitrary length, need to be supported via UUID or some other form of URI-based publication in order to be targets for annotations for others. However, all that ultimately requires is some form of connectivity of one's annotation tool (e.g., Pliny) to a Web server. An annotation model should not make assumptions concerning minimum or maximum sizes of the artifacts of individual acts of annotation. Not only are small graph nodes sufficient for graph connectedness, but they might only be small temporarily, as part of a "work in progress."

As an annotation could be, or come to be, a whole paper in itself, a mechanism for external reference is needed. If some of the annotations happen to be very small, that does not affect the modeling in that they still stand in relationships with documents and other annotations, the same as though they were a complete scholarly paper. The model definition needs to be understood as being recursive. Conversely, cutting off the graph-based modeling of Pliny (et al) annotations when some smallness threshold is reached would require the inclusion of a variety of leaf-like or terminal node definitions within the model, where these nodes are restricted in the roles which they can play. If all the Pliny-based annotations of a document are themselves understood, on a supposition of small size, to constitute in aggregation one document, then the associated annotation model has reduced to that of citation practice between papers, and an opportunity to investigate a finer-granularity form of scholarly communication will have been missed.

ATTACHMENT 1 -

Applicable Database Table Definition Excerpts

The order of presentation of these table descriptions was chosen for explanatory purposes. SQL details of the fields are omitted as they are available to implementers within the Pliny download package. Fields not involved in the RDF export process are omitted here.

Resource

Each worksheet and each note engender the creation of an entry in the Resource table. The ResourceKey field is widely used, as the only means of reference into this table.

If a Resource entry is a worksheet, the FullName field contains the content of the HTML Title tag of the referenced webpage. Otherwise, its contents are null.

The ObjectTypeKey field points into the ObjectType table, fundamentally telling Pliny how the object is to be displayed.

If a Resource entry is a worksheet, both the Identifier field and the IDStart field contain the URL of the annotation-target webpage.

The fields CreationDate and CreationTime contain the date and time the annotation was created, respectively.

LinkableObject

The key for this table (LinkableObjectKey) is used only by the Link table, for both the source and destination objects associated with a link.

The type designator (TypeKey) links into the LOType table and thereby prescribes the colors to be used in the display of associated notes.

The DisplPageNo field is only used to indicate page number within a PDF document, for annotations involving PDF document targets.

The SurrogateForKey field points to the associated entry in the Resource table, if one exists. For annotations at the top-most level and associated with a PDF file, this field is null.

The DisplayedInKey field points to the associated entry in the Resource table. That entry is either a worksheet, when this annotation is at the top-most level of annotations of the worksheet, or is the ResourceKey value of the next-superordinate note, when this annotation is contained within a superordinate.

The Position field specifies, for notes, the region within the Pliny annotations window where that note is to be drawn. The contents of the Position field are exported to RDF, although it may be that a collaborator uses a different display mechanism, possibly rendering the coordinates moot.

Link

Each arrow drawn between displayed objects (i.e., notes and regions) has an origin, a destination, and a type. The origin (FromLink) and destination (ToLink) contain indices into the LinkableObject table. The type (TypeKey) contains an index into the LOType table.

Although there is a key for this table (LinkKey), it is not used in the RDF export process. Applicable links are instead identified by SQL queries based on the values within the FromLink and ToLink fields. The other Pliny tables also do not reference links by LinkKey.

LOType (Linkable Object Type)

Type definitions defined by entries in this table. This table, and all defined types, are shared by both notes and arrows. Types are most obvious in that they control the color of displayed frames and arrows. Pliny provides two pre-defined types, and users may create more. Each type has an entry in this table, referred to in other tables by the value of the LOTypeKey field. Each type has an arbitrary text name (Name), and associated foreground and background colors for both the title and body portion of a note (TitleForeColour, TitleBackColour, BodyForeColour, BodyBackColour). As other users may prefer other color schemes, we do not export the color (RGB) values, but only the type Name. (The color fields use the familiar webpage color description mechanism where 8 bits each are allocated for red, then green, then blue intensity. The resulting integer is stored in the various color fields just listed.)

Some sort of standardized vocabulary of Names, and some kind of personal stylesheet implementation to map Names onto colors seems useful in collaborative annotating. Type (color) usage conventions may need to be established, as, for example, it is possible for a note to be of one type, while arrows to or from that note are of differing type, and the semantics of so doing are not obvious.

Note

The Note table provides storage for the user-supplied text (Content) of all notes. There is no key into this table. Applicable notes are identified by SQL query based on matching the contents of the ResourceKey field to the corresponding ResourceKey field in the Resource table. The date and time of Content creation or revision (TStamp) are also stored here.

Object Type

The key into this table (ObjectTypeKey) is the only item of interest in the RDF translation process as the other fields relate to Pliny accessing its own Java methods and display icons. The field Name comes close to being useful, but its contents are not based on any exportable standard. As a practical matter then, an ObjectTypeKey value of 1 indicates a note, 2 indicates a webpage, 3 indicates an image, and 4 indicates a PDF file. As only the value of the key is useful in the RDF exporting application, the ObjectType table itself need not be incorporated in the SQL queries.

ATTACHMENT 2 - Pseudocode with SQL Queries

Traversing the Pliny annotations graph, as stored within Derby tables, and as annotations are currently understood by the OAC project, proceeds through a combination of hierarchical and recursive traversal. The hierarchical portion provides a convenient means to group the resulting RDF based on the external target document/file. Recursion is then necessary as notes can be nested inside other notes to an arbitrary depth.

Hierarchical Traversal

Translation of Pliny database entries to OAC RDF proceeds in this way:

```
Determine all external documents which are targets of Pliny annotations using the SQL query
SELECT pliny.Resource.ResourceKey AS WorksheetResourceKey,
pliny.Resource.FullName AS WebpageTitle, pliny.Resource.Identifier AS
WebpageURI, pliny.Resource.ObjectTypeKey AS ObjectTypeKey,
pliny.Resource.CreationDate AS CreationDate, pliny.Resource.Attributes
AS PdfAttributes, pliny.Resource.CreationTime AS CreationTime FROM
pliny.Resource WHERE ( pliny.Resource.ObjectTypeKey = 2 OR
pliny.Resource.ObjectTypeKey = 3 OR pliny.Resource.ObjectTypeKey = 4 );
```

Repeat for every item in the result set {

 Retain the variable WorksheetResourceKey.

 If ObjectTypeKey matches Pliny's code for a webpage target (i.e., 2), retain as the variable WebpageTargetURI the value of WebpageURI. Otherwise, if ObjectTypeKey matches Pliny's code for an image target (i.e., 3) or a PDF target (i.e., 4), retain as the variable WebpageTargetURI the URI substring from within the value of PdfAttributes.

 Write the self-terminating tag <oac:Annotation> for the WorksheetResourceKey.

 Write the <dc:title> element, with the contents WebpageTitle.

 Write the self-terminating tag <oac:hasTarget>, specifying the WebpageTargetURI.

 Write the self-terminating <oac:contextAbout> tag specifying the WebpageTargetURI, the <oac:when> element with contents CreationDate and CreationTime, and the <dc:type> element with static contents based on the ObjectTypeKey value; all of these are wrapped in the elements <oac:hasTargetContext> and <oac:TargetContext>.

 Write as constants the elements <rdf:type>, <oac:predicate>, and <dcterms:creator>.

 Determine all top-level annotations associated with this WorksheetResourceKey using the SQL query
 SELECT RTop.CreationDate AS CreationDate, RTop.CreationTime AS

```
CreationTime, pliny.Note.Content AS Content, pliny.Note.TStamp AS
ContentTimeStamp, pliny.LinkableObject.Position AS DisplayPosition,
RTop.ResourceKey AS TopLevelResourceKey, RTop.FullName AS
TopFullName, pliny.LOType.Name AS AnnoTypeName FROM pliny.Resource
AS RTop, pliny.LinkableObject, pliny.Note, pliny.LOType WHERE
pliny.LinkableObject.DisplayedInKey = WorksheetResourceKey AND
RTop.ResourceKey = pliny.LinkableObject.SurrogateForKey AND
pliny.LinkableObject.SurrogateForKey > 0 AND
pliny.LinkableObject.TypeKey = pliny.LOType.LOTypeKey AND
pliny.Note.ResourceKey = RTop.ResourceKey;
```

Repeat for every item in this result set {

Retain the variable TopLevelResourceKey. Begin the elements <oac:hasContent> and <pl:Note>, where <pl:Note> uses TopLevelResourceKey in the value of its rdf:about attribute.

Write the self-terminating <rdf:type> element, using AnnoTypeName in its rdf:resource attribute value. Write the <dc:title> element using the value TopFullName. Write the <pl:body> element using the value Content. Write the <dcterms:modified> element using the value ContentTimeStamp.

Write the <dcterms:modified> element using the CreationDate and CreationTime values, and the <pl:elaborates> element using the values of WorksheetResourceKey and TopLevelResourceKey, and then wrapping these in the elements <dc:relation> and <pl:Elaboration>.

Write the element <pl:DisplayPosition> using the value TopDisplayPosition.

Close the <oac:hasContent> element.

Determine the notes contained within this top-level note using SQL query

```
SELECT pliny.LinkableObject.SurrogateForKey AS OneKid FROM
pliny.LinkableObject WHERE pliny.LinkableObject.DisplayedInKey =
TopLevelAnnotationResourceKey AND
pliny.LinkableObject.SurrogateForKey > 0;
```

Note that top-level notes themselves have already been exported to RDF.

Repeat for every item in this result set {

Retain the variable OneKid.

Determine all the notes contained within that one top-level annotation using the SQL query

```
SELECT pliny.LOType.Name AS LinkType, FromLO.SurrogateForKey
AS FromResource, ToLO.SurrogateForKey AS ToResource FROM
pliny.Link, pliny.LOType, pliny.LinkableObject AS FromLO,
pliny.LinkableObject AS ToLO WHERE pliny.LOType.LoTypeKey =
pliny.Link.TypeKey AND pliny.Link.FromLink =
```

```
FromLO.LinkableObjectKey AND pliny.Link.ToLink =  
ToLO.LinkableObjectKey AND ToLO.SurrogateForKey = OneKid AND  
FromLO.SurrogateForKey > 0 AND ToLO.SurrogateForKey > 0 ORDER  
BY FromResource, ToResource
```

Repeat for every element in this result set {

- Begin the <oac:Annotates> element using the value ToResource.
- Print the self-terminating <oac:Annotation> element using the value FromResource in the value of the rdf:about attribute.
- Print the <rdf:type> element using the value LinkType.
- Close the <oac:Annotates> element.

}

Call the recursive routine PursueNestedAnnotation (described following) with the node identifier OneKid, which will extrapolate all notes nested within the note identified by OneKid.

For annotated images or annotated PDF files, do this {

Determine all the user-selected regions within the PDF or image display using the SQL query

```
SELECT ParentLO.Position AS Position, ParentLO.DisplPageNo  
AS PageNumber, pliny.LOType.Name AS LinkType,  
MyLO.SurrogateForKey AS Target, pliny.Link.FromLink AS  
LONumber FROM pliny.Link, pliny.LOType,  
pliny.LinkableObject AS ParentLO, pliny.LinkableObject AS  
MyLO WHERE ParentLO.DisplayedInKey = WorksheetResourceKey  
AND MyLO.DisplayedInKey = WorksheetResourceKey AND  
ParentLO.SurrogateForKey = 0 AND MyLO.SurrogateForKey > 0  
AND ParentLO.TypeKey = pliny.LOType.LOTypeKey AND  
ParentLO.LinkableObjectKey = pliny.Link.FromLink AND  
MyLO.LinkableObjectKey = pliny.Link.ToLink;
```

For every element in that result set, do this {

- Begin the element oac:Annotates, with an rdf:about attribute identifying WorksheetResourceKey.
- Print the element SpecificPosition with the value Position.
- Print the element SpecificPageNumber with the value PageNumber.
- Print the element oac:Annotation with the rdf:about attribute identifying the UUID for LONumber.
- Print the element rdf:type with a constant value (for now, though Pliny might someday make MIME type information available).
- Close the oac:Annotates element.
- Begin the element oac:Annotates with the rdf:about attribute reflecting LONumber.

Print the element oac:Annotation with the rdf:about attribute reflecting the UUID of LONumber.

Print the element rdf:type with the rdf:resource attribute giving a URI associated with Target.

Close the oac:Annotates element.

}

}

Print the Derby provenance information, identifying the Derby product name and version, and the date/time of the exporting to RDF.

}

}

}

Recursive Traversal

The recursive graph traversal routine PursueNestedAnnotation proceeds in this way, when called with a node-identifying value in the variable RelativeRoot.

Look up the parameters for the RelativeRoot node by executing this SQL query (which will return a result set with one entry).

```
SELECT pliny.LinkableObject.DisplayedInKey AS MyParent,
pliny.Resource.FullName AS MyFullName, pliny.Resource.CreationDate AS
MyCreationDate, pliny.Resource.CreationTime AS MyCreationTime,
pliny.LinkableObject.Position AS MyDisplayPosition, pliny.Note.Content
AS MyContent, pliny.note.TStamp AS MyContentTimeStamp,
pliny.LOType.Name AS MyType FROM pliny.LinkableObject, pliny.Resource,
pliny.Note, pliny.LOType WHERE pliny.LinkableObject.SurrogateForKey =
RelativeRoot AND pliny.Resource.ResourceKey = RelativeRoot AND
pliny.Note.ResourceKey = RelativeRoot AND pliny.LOType.LOTypeKey =
pliny.LinkableObject.TypeKey;
```

Begin the element oac:hasContent.

Print the self-terminating element pl:Note, with the rdf:about attribute reflecting RelativeRoot.

Print the rdf:type element reflecting a URI describing MyType.

Print the dc:title element reflecting MyFullName.

Print the pl:body element reflecting MyContent.

Print the dcterms:modified element reflecting MyContentTimeStamp.

Begin the element dc:relation.

Begin the element pl:Elaboration.

Print the element `dc:terms:modified`, reflecting `MyCreationDate` and `MyCreationTime`.

Print the element `pl:elaborates`, with an `rdf:resource` attribute reflecting the UUID of `MyParent`.

Close the element `pl:Elaboration`.

Close the element `dc:relation`.

Print the element `pl:DisplayPosition` reflecting `MyDisplayPosition`.

Close the element `oac:hasContent`.

Determine all the nodes nested within the node specified by `RelativeRoot` by executing the SQL query

```
SELECT pliny.LinkableObject.SurrogateForKey AS AKid FROM  
pliny.LinkableObject WHERE pliny.LinkableObject.DisplayedInKey =  
RelativeRoot;
```

For each element in that result set{

 Recursively call the routine `PursueNestedAnnotations` for the value `AKid`.

}

ATTACHMENT 3 - Worked Example

A worked example was created including two annotated webpages, one annotated PDF file, and one annotated image file. Several notes were generated, with type codes, titles, and contents which plausibly accompany the associated document. In the case of the image file, an attempt was made to mimic a Pliny onlike annotation example⁷.

Pliny supports user-definable types, used by both notes and arrows, and reflected in the color displayed. These types have user-selected character string labels and codes for colors. Several plausible annotation types were also created and used in these examples with content thought intellectually comparable to their label.

Pliny Displays

Four screen captures follow, showing the Pliny displays of the worked example group. The white-on-maroon rectangles were added to the screenshot, supplying Derby table record keys by way of annotation, facilitating the reader linking between these figures, the Derby data table listing, and the generated RDF, all of which follow. The screen captures may not provide enough resolution to read all the text; if so, the section Derby Table Contents below may be used supplementally.

⁷ <http://pliny.cch.kcl.ac.uk/intro.html>, based on annotations of the frontispiece of Vico's *New Science*.

Webpage example 1

A series of plausible annotations were created around the webpage <http://ediillinois.org/ppa/help/About.html>. A screen capture of the Pliny display is as follows. The white-on-maroon rectangles identify the Resource table entry ("R-") associated with each note or document. Note R-20 contains notes R-23, R-24, and R-25. R-16 is the worksheet record for the external target document.

The screenshot displays the Pliny application interface. The main window shows a webpage titled "Electronic Documents of Illinois - about the website" with various sections like "Documents of Illinois About the Website", "EDI Policy", and "AccessKeys". Several annotations are overlaid on the page, each with a white-on-maroon rectangle labeled with a resource ID (R-17 through R-27). These annotations include notes like "EDI 'about' page 1", "Not the State Archives", "Boards and Commissions", "Why Not a 'Department'", "Regional Offices...", "More mergers?", "Single-County", "Multi-County", and "Total Orphan".

At the bottom of the application, a "Containment View" shows a hierarchical tree structure of the resource table. The root node is "Electronic Documents of Illinois - about ...". It branches into several nodes: "EDI 'about' page 1", "double-checked", "Not the State Archives", "Example Regional Offices", "Why Not a 'Department'", "Boards and Commissions", "Regional Offices too", and "Total Orphan". The "Example Regional Offices" node further branches into "More mergers?", "Multi-County", and "Single-County".

Webpage example 2

A series of plausible annotations were created around the webpage <http://ediillinois.org/ppa/help/OtherSearch.html>. A screen capture of the Pliny display is as follows. The white-on-maroon rectangles identify the Resource table entry ("R-") associated with each note or document. Note R-30 contains notes R-31, R-32, R-33, and R-34. R-28 is the worksheet record for the external target document.

The screenshot displays the Pliny application interface. The main window shows a webpage titled "Documents of Illinois Searching Other Illinois Document Collections" with a sidebar containing navigation links like "Homepage", "by Subject", "by Issuing agency", "Website search", "Questions", "what's New", "Other collections", and "About". The main content area features the "Find-It! Illinois" logo and a list of resources including "Illinois Digital Archives (IDA)", "I-Share", "IGI", and "SILC".

Annotations are represented by white-on-maroon rectangles:

- R-28**: A large maroon box at the top of the page.
- R-29**: A pink box over the "Familiar with these webpages" section.
- R-30**: A large maroon box covering the main content area.
- R-31**: A maroon box over the "IDA" link.
- R-32**: A maroon box over the "IGI" link.
- R-33**: A maroon box over the "SILC" link.
- R-34**: A maroon box over the "I-Share" link.
- R-35**: A yellow box over the "Ask a Librarian" link.

The "Containment View" at the bottom shows a hierarchical tree structure of the annotated resources:

```

graph TD
    Root["WWW Electronic Documents of Illinois - search..."]
    Root --> R28["N Project Nesting"]
    Root --> R29["N Ask a Librarian"]
    Root --> R30["N Familiar with these webpages"]
    R28 --> R31["N IDA"]
    R28 --> R32["N I-Share"]
    R28 --> R33["N IGI"]
    R28 --> R34["N SILC"]
    
```


PDF example

A series of plausible annotations were created around the second page of the PDF document described and linked to at <http://ediillinois.org/ppa/meta/html/00/00/00/01/77/31.html>. A screen capture of the Pliny display is as follows. The white-on-maroon rectangles identify the Resource table entry ("R-") associated with each note or document, or the LinkableObject table entry ("LO-") associated with each region. Note R-39 contains notes R-40 and R-41. R-36 is the worksheet record for the external target document. Regions within this PDF document page are designated by LO-31, LO-34, and LO-39.

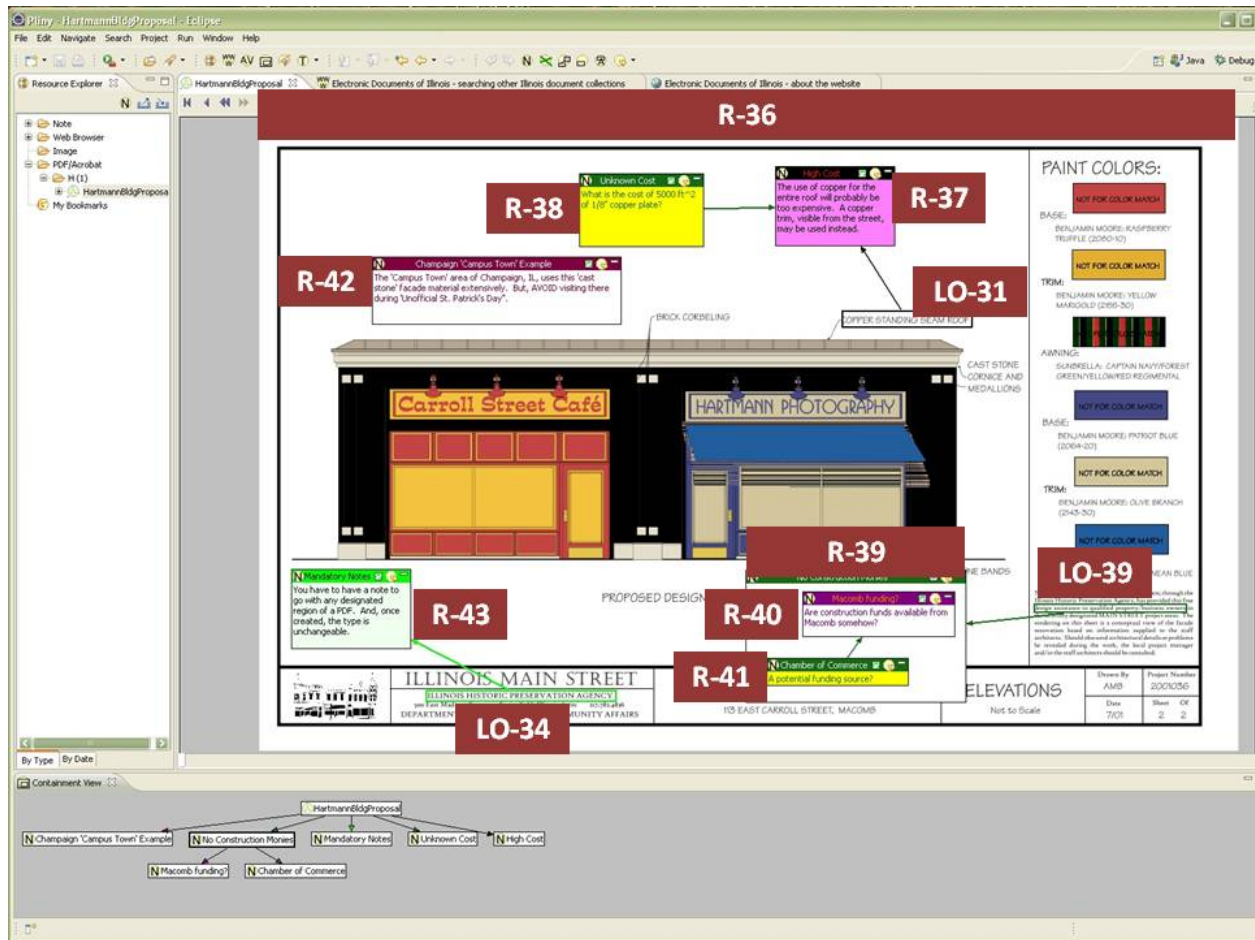
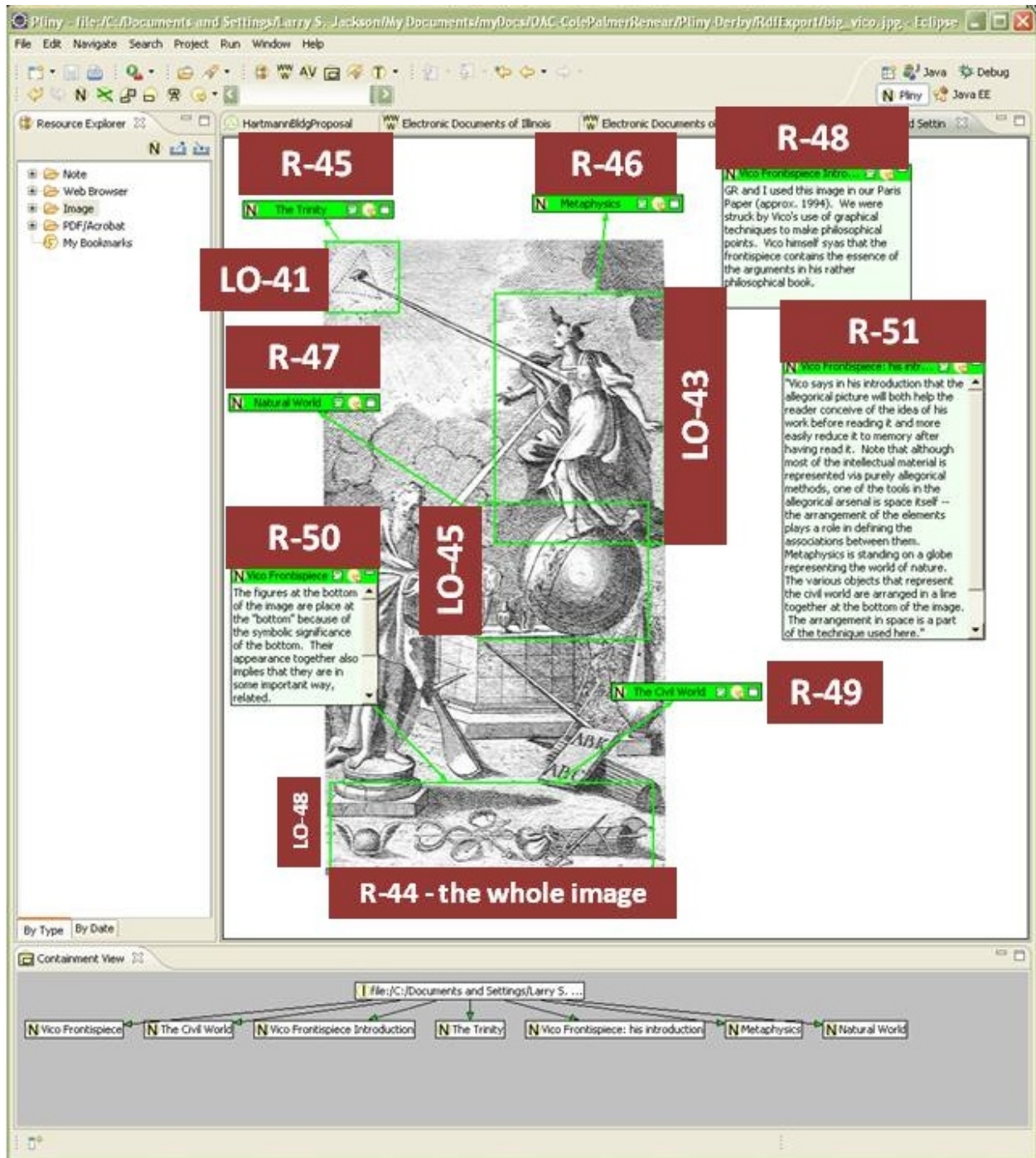


Image example

A series of plausible annotations were created to mimic the illustration addressing the frontispiece of Vico's *New Science* provided in Bradley's webpage⁸. A screen capture of the Pliny display is as follows. The white-on-maroon rectangles identify the Resource table entry ("R-") associated with each note or document, or the LinkableObject table entry ("LO-") associated with each region.



⁸ <http://pliny.cch.kcl.ac.uk/intro.html>

Derby Table Contents

The following contents, dumped here in XML, exist within the principal Derby tables associated with Pliny as a result of the above annotation pages. Many of these fields are of no concern outside of Pliny (i.e., they are not involved in representing the annotation graph). The fields of particular interest in modeling the annotation as a graph are as enumerated in Attachment 1.

```
<?xml version='1.0' encoding='UTF-8'?>
<PlinyDerbyDump Date='2010-02-18 10:47:05'>
  <Resource>
    <Record>
      <ResourceKey>16</ResourceKey>
      <FullName>Electronic Documents of Illinois - about the website</FullName>
      <InitChar>E</InitChar>
      <ObjectTypeKey>2</ObjectTypeKey>
      <Identifier>url:http://ediillinois.org/ppa/help/About.html</Identifier>
      <IDStart>url:http://ediillinois.org/ppa/help/About.html</IDStart>
      <Attributes>sash=53</Attributes>
      <CreationDate>2010-02-01</CreationDate>
      <CreationTime>14:19:10</CreationTime>
    </Record>
    <Record>
      <ResourceKey>17</ResourceKey>
      <FullName>EDI 'about' page 1</FullName>
      <InitChar>E</InitChar>
      <ObjectTypeKey>1</ObjectTypeKey>
      <Identifier></Identifier>
      <IDStart></IDStart>
      <Attributes></Attributes>
      <CreationDate>2010-02-01</CreationDate>
      <CreationTime>14:20:35</CreationTime>
    </Record>
    <Record>
      <ResourceKey>18</ResourceKey>
      <FullName>Boards and Commissions</FullName>
      <InitChar>B</InitChar>
      <ObjectTypeKey>1</ObjectTypeKey>
      <Identifier></Identifier>
      <IDStart></IDStart>
      <Attributes></Attributes>
      <CreationDate>2010-02-01</CreationDate>
      <CreationTime>14:22:12</CreationTime>
    </Record>
    <Record>
      <ResourceKey>19</ResourceKey>
      <FullName>Regional Offices too</FullName>
      <InitChar>R</InitChar>
      <ObjectTypeKey>1</ObjectTypeKey>
      <Identifier></Identifier>
      <IDStart></IDStart>
      <Attributes></Attributes>
      <CreationDate>2010-02-01</CreationDate>
      <CreationTime>14:25:30</CreationTime>
    </Record>
    <Record>
      <ResourceKey>20</ResourceKey>
      <FullName>Example Regional Offices</FullName>
      <InitChar>E</InitChar>
      <ObjectTypeKey>1</ObjectTypeKey>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<Identifier></Identifier>
<IDStart></IDStart>
<Attributes></Attributes>
<CreationDate>2010-02-01</CreationDate>
<CreationTime>14:26:45</CreationTime>
</Record>
<Record>
  <ResourceKey>21</ResourceKey>
  <FullName>Why Not a 'Department'?</FullName>
  <InitChar>W</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-01</CreationDate>
  <CreationTime>14:28:04</CreationTime>
</Record>
<Record>
  <ResourceKey>22</ResourceKey>
  <FullName>double-check</FullName>
  <InitChar>D</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-01</CreationDate>
  <CreationTime>14:31:00</CreationTime>
</Record>
<Record>
  <ResourceKey>23</ResourceKey>
  <FullName>Single-County</FullName>
  <InitChar>S</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-01</CreationDate>
  <CreationTime>14:32:17</CreationTime>
</Record>
<Record>
  <ResourceKey>24</ResourceKey>
  <FullName>Multi-County</FullName>
  <InitChar>M</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-01</CreationDate>
  <CreationTime>14:32:31</CreationTime>
</Record>
<Record>
  <ResourceKey>25</ResourceKey>
  <FullName>More mergers?</FullName>
  <InitChar>M</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-01</CreationDate>
  <CreationTime>14:38:27</CreationTime>
</Record>
<Record>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<ResourceKey>26</ResourceKey>
<FullName>Not the State Archives</FullName>
<InitChar>N</InitChar>
<ObjectTypeKey>1</ObjectTypeKey>
<Identifier></Identifier>
<IDStart></IDStart>
<Attributes></Attributes>
<CreationDate>2010-02-01</CreationDate>
<CreationTime>14:40:27</CreationTime>
</Record>
<Record>
  <ResourceKey>27</ResourceKey>
  <FullName>Total Orphan</FullName>
  <InitChar>T</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-22</CreationDate>
  <CreationTime>13:34:43</CreationTime>
</Record>
<Record>
  <ResourceKey>28</ResourceKey>
  <FullName>Electronic Documents of Illinois - searching other Illinois document
collections</FullName>
  <InitChar>E</InitChar>
  <ObjectTypeKey>2</ObjectTypeKey>
  <Identifier>url:http://ediillinois.org/ppa/help/OtherSearch.html</Identifier>
  <IDStart>url:http://ediillinois.org/ppa/help/OtherSearch.html</IDStart>
  <Attributes>sash=55</Attributes>
  <CreationDate>2010-02-22</CreationDate>
  <CreationTime>13:36:32</CreationTime>
</Record>
<Record>
  <ResourceKey>29</ResourceKey>
  <FullName>Familiar with these webpages</FullName>
  <InitChar>F</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-22</CreationDate>
  <CreationTime>13:37:11</CreationTime>
</Record>
<Record>
  <ResourceKey>30</ResourceKey>
  <FullName>Project Nesting</FullName>
  <InitChar>P</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-22</CreationDate>
  <CreationTime>13:38:43</CreationTime>
</Record>
<Record>
  <ResourceKey>31</ResourceKey>
  <FullName>IDA</FullName>
  <InitChar>I</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<Attributes></Attributes>
<CreationDate>2010-02-22</CreationDate>
<CreationTime>13:39:46</CreationTime>
</Record>
<Record>
  <ResourceKey>32</ResourceKey>
  <FullName>IGI</FullName>
  <InitChar>I</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-22</CreationDate>
  <CreationTime>13:40:30</CreationTime>
</Record>
<Record>
  <ResourceKey>33</ResourceKey>
  <FullName>SILC</FullName>
  <InitChar>S</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-22</CreationDate>
  <CreationTime>13:41:17</CreationTime>
</Record>
<Record>
  <ResourceKey>34</ResourceKey>
  <FullName>i-Share</FullName>
  <InitChar>I</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-22</CreationDate>
  <CreationTime>13:42:11</CreationTime>
</Record>
<Record>
  <ResourceKey>35</ResourceKey>
  <FullName>Ask A Librarian</FullName>
  <InitChar>A</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-22</CreationDate>
  <CreationTime>13:43:45</CreationTime>
</Record>
<Record>
  <ResourceKey>36</ResourceKey>
  <FullName>HartmannBldgProposal</FullName>
  <InitChar>H</InitChar>
  <ObjectTypeKey>4</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes>#attr
#Mon Feb 22 14:50:20 CST 2010
cache=36
url=http\://ediillinois.org/ppa/docs/00/00/00/01/77/31/20090519195707_HARTMANNBUILDING-
113E.CARROLLST..pdf
scale=1.0
</Attributes>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<CreationDate>2010-02-22</CreationDate>
<CreationTime>14:10:37</CreationTime>
</Record>
<Record>
  <ResourceKey>37</ResourceKey>
  <FullName>High Cost</FullName>
  <InitChar>H</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-22</CreationDate>
  <CreationTime>14:24:22</CreationTime>
</Record>
<Record>
  <ResourceKey>38</ResourceKey>
  <FullName>Unknown Cost</FullName>
  <InitChar>U</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-22</CreationDate>
  <CreationTime>14:26:04</CreationTime>
</Record>
<Record>
  <ResourceKey>39</ResourceKey>
  <FullName>No Construction Monies</FullName>
  <InitChar>N</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-22</CreationDate>
  <CreationTime>14:29:27</CreationTime>
</Record>
<Record>
  <ResourceKey>40</ResourceKey>
  <FullName>Macomb funding?</FullName>
  <InitChar>M</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-22</CreationDate>
  <CreationTime>14:31:46</CreationTime>
</Record>
<Record>
  <ResourceKey>41</ResourceKey>
  <FullName>Chamber of Commerce</FullName>
  <InitChar>C</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-22</CreationDate>
  <CreationTime>14:33:36</CreationTime>
</Record>
<Record>
  <ResourceKey>42</ResourceKey>
  <FullName>Champaign 'Campus Town' Example</FullName>
  <InitChar>C</InitChar>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<ObjectTypeKey>1</ObjectTypeKey>
<Identifier></Identifier>
<IDStart></IDStart>
<Attributes></Attributes>
<CreationDate>2010-02-22</CreationDate>
<CreationTime>14:34:39</CreationTime>
</Record>
<Record>
  <ResourceKey>43</ResourceKey>
  <FullName>Mandatory Notes</FullName>
  <InitChar>M</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-02-25</CreationDate>
  <CreationTime>14:17:07</CreationTime>
</Record>
<Record>
  <ResourceKey>44</ResourceKey>
  <FullName>file:/C:/Documents and Settings/Larry S. Jackson/My Documents/myDocs/OAC-
ColePalmerRear/Pliny-Derby/RdfExport/big_vico.jpg</FullName>
  <InitChar>F</InitChar>
  <ObjectTypeKey>3</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes>#attr
#Thu Mar 18 10:03:25 CDT 2010
cache=44
url=file\:/C:/Documents and Settings/Larry S. Jackson/My Documents/myDocs/OAC-
ColePalmerRear/Pliny-Derby/RdfExport/big_vico.jpg
imgPos=rect\:/0,0,339,632
extension=jpg
</Attributes>
  <CreationDate>2010-03-18</CreationDate>
  <CreationTime>10:03:24</CreationTime>
</Record>
<Record>
  <ResourceKey>45</ResourceKey>
  <FullName>The Trinity</FullName>
  <InitChar>T</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-03-18</CreationDate>
  <CreationTime>10:04:52</CreationTime>
</Record>
<Record>
  <ResourceKey>46</ResourceKey>
  <FullName>Metaphysics</FullName>
  <InitChar>M</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-03-18</CreationDate>
  <CreationTime>10:07:34</CreationTime>
</Record>
<Record>
  <ResourceKey>47</ResourceKey>
  <FullName>Natural World</FullName>
```


GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<InitChar>N</InitChar>
<ObjectTypeKey>1</ObjectTypeKey>
<Identifier></Identifier>
<IDStart></IDStart>
<Attributes></Attributes>
<CreationDate>2010-03-18</CreationDate>
<CreationTime>10:09:03</CreationTime>
</Record>
<Record>
  <ResourceKey>48</ResourceKey>
  <FullName>Vico Frontispiece Introduction</FullName>
  <InitChar>V</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-03-18</CreationDate>
  <CreationTime>10:10:20</CreationTime>
</Record>
<Record>
  <ResourceKey>49</ResourceKey>
  <FullName>The Civil World</FullName>
  <InitChar>T</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-03-18</CreationDate>
  <CreationTime>10:13:01</CreationTime>
</Record>
<Record>
  <ResourceKey>50</ResourceKey>
  <FullName>Vico Frontispiece</FullName>
  <InitChar>V</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-03-18</CreationDate>
  <CreationTime>10:14:13</CreationTime>
</Record>
<Record>
  <ResourceKey>51</ResourceKey>
  <FullName>Vico Frontispiece: his introduction</FullName>
  <InitChar>V</InitChar>
  <ObjectTypeKey>1</ObjectTypeKey>
  <Identifier></Identifier>
  <IDStart></IDStart>
  <Attributes></Attributes>
  <CreationDate>2010-03-18</CreationDate>
  <CreationTime>10:17:48</CreationTime>
</Record>
</Resource>
<Link>
  <Record>
    <LinkKey>5</LinkKey>
    <Attributes></Attributes>
    <FromLink>14</FromLink>
    <ToLink>13</ToLink>
    <TypeKey>7</TypeKey>
  </Record>
```

```

<Record>
  <LinkKey>6</LinkKey>
  <Attributes></Attributes>
  <FromLink>15</FromLink>
  <ToLink>14</ToLink>
  <TypeKey>6</TypeKey>
</Record>
<Record>
  <LinkKey>7</LinkKey>
  <Attributes></Attributes>
  <FromLink>16</FromLink>
  <ToLink>15</ToLink>
  <TypeKey>7</TypeKey>
</Record>
<Record>
  <LinkKey>8</LinkKey>
  <Attributes></Attributes>
  <FromLink>17</FromLink>
  <ToLink>14</ToLink>
  <TypeKey>5</TypeKey>
</Record>
<Record>
  <LinkKey>9</LinkKey>
  <Attributes></Attributes>
  <FromLink>18</FromLink>
  <ToLink>17</ToLink>
  <TypeKey>10</TypeKey>
</Record>
<Record>
  <LinkKey>10</LinkKey>
  <Attributes></Attributes>
  <FromLink>21</FromLink>
  <ToLink>19</ToLink>
  <TypeKey>8</TypeKey>
</Record>
<Record>
  <LinkKey>11</LinkKey>
  <Attributes></Attributes>
  <FromLink>22</FromLink>
  <ToLink>13</ToLink>
  <TypeKey>6</TypeKey>
</Record>
<Record>
  <LinkKey>12</LinkKey>
  <Attributes></Attributes>
  <FromLink>18</FromLink>
  <ToLink>22</ToLink>
  <TypeKey>10</TypeKey>
</Record>
<Record>
  <LinkKey>13</LinkKey>
  <Attributes></Attributes>
  <FromLink>29</FromLink>
  <ToLink>28</ToLink>
  <TypeKey>7</TypeKey>
</Record>
<Record>
  <LinkKey>14</LinkKey>
  <Attributes></Attributes>
  <FromLink>31</FromLink>
  <ToLink>32</ToLink>
  <TypeKey>5</TypeKey>

```

```

</Record>
<Record>
  <LinkKey>15</LinkKey>
  <Attributes></Attributes>
  <FromLink>33</FromLink>
  <ToLink>32</ToLink>
  <TypeKey>6</TypeKey>
</Record>
<Record>
  <LinkKey>16</LinkKey>
  <Attributes></Attributes>
  <FromLink>34</FromLink>
  <ToLink>35</ToLink>
  <TypeKey>6</TypeKey>
</Record>
<Record>
  <LinkKey>17</LinkKey>
  <Attributes></Attributes>
  <FromLink>37</FromLink>
  <ToLink>36</ToLink>
  <TypeKey>6</TypeKey>
</Record>
<Record>
  <LinkKey>18</LinkKey>
  <Attributes></Attributes>
  <FromLink>39</FromLink>
  <ToLink>40</ToLink>
  <TypeKey>1</TypeKey>
</Record>
<Record>
  <LinkKey>19</LinkKey>
  <Attributes></Attributes>
  <FromLink>41</FromLink>
  <ToLink>42</ToLink>
  <TypeKey>1</TypeKey>
</Record>
<Record>
  <LinkKey>20</LinkKey>
  <Attributes></Attributes>
  <FromLink>43</FromLink>
  <ToLink>44</ToLink>
  <TypeKey>1</TypeKey>
</Record>
<Record>
  <LinkKey>21</LinkKey>
  <Attributes></Attributes>
  <FromLink>45</FromLink>
  <ToLink>46</ToLink>
  <TypeKey>1</TypeKey>
</Record>
<Record>
  <LinkKey>22</LinkKey>
  <Attributes></Attributes>
  <FromLink>48</FromLink>
  <ToLink>49</ToLink>
  <TypeKey>1</TypeKey>
</Record>
<Record>
  <LinkKey>23</LinkKey>
  <Attributes></Attributes>
  <FromLink>50</FromLink>
  <ToLink>48</ToLink>

```

```

    <TypeKey>1</TypeKey>
  </Record>
</Link>
<LinkableObject>
  <Record>
    <LinkableObjectKey>13</LinkableObjectKey>
    <TypeKey>9</TypeKey>
    <Position>rect:29,53,364,59</Position>
    <DisplPageNo>0</DisplPageNo>
    <SurrPageNo>0</SurrPageNo>
    <DisplayedInKey>16</DisplayedInKey>
    <SurrogateForKey>17</SurrogateForKey>
    <IsOpen>Y</IsOpen>
    <ShowingMap>N</ShowingMap>
  </Record>
  <Record>
    <LinkableObjectKey>14</LinkableObjectKey>
    <TypeKey>7</TypeKey>
    <Position>rect:203,181,185,99</Position>
    <DisplPageNo>0</DisplPageNo>
    <SurrPageNo>0</SurrPageNo>
    <DisplayedInKey>16</DisplayedInKey>
    <SurrogateForKey>18</SurrogateForKey>
    <IsOpen>Y</IsOpen>
    <ShowingMap>N</ShowingMap>
  </Record>
  <Record>
    <LinkableObjectKey>15</LinkableObjectKey>
    <TypeKey>6</TypeKey>
    <Position>rect:303,340,161,84</Position>
    <DisplPageNo>0</DisplPageNo>
    <SurrPageNo>0</SurrPageNo>
    <DisplayedInKey>16</DisplayedInKey>
    <SurrogateForKey>19</SurrogateForKey>
    <IsOpen>Y</IsOpen>
    <ShowingMap>N</ShowingMap>
  </Record>
  <Record>
    <LinkableObjectKey>16</LinkableObjectKey>
    <TypeKey>7</TypeKey>
    <Position>rect:159,460,254,338</Position>
    <DisplPageNo>0</DisplPageNo>
    <SurrPageNo>0</SurrPageNo>
    <DisplayedInKey>16</DisplayedInKey>
    <SurrogateForKey>20</SurrogateForKey>
    <IsOpen>Y</IsOpen>
    <ShowingMap>Y</ShowingMap>
  </Record>
  <Record>
    <LinkableObjectKey>17</LinkableObjectKey>
    <TypeKey>5</TypeKey>
    <Position>rect:128,309,170,105</Position>
    <DisplPageNo>0</DisplPageNo>
    <SurrPageNo>0</SurrPageNo>
    <DisplayedInKey>16</DisplayedInKey>
    <SurrogateForKey>21</SurrogateForKey>
    <IsOpen>Y</IsOpen>
    <ShowingMap>N</ShowingMap>
  </Record>
  <Record>
    <LinkableObjectKey>18</LinkableObjectKey>

```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<TypeKey>10</TypeKey>
<Position>rect:10,437,115,83</Position>
<DisplPageNo>0</DisplPageNo>
<SurrPageNo>0</SurrPageNo>
<DisplayedInKey>16</DisplayedInKey>
<SurrogateForKey>22</SurrogateForKey>
<IsOpen>Y</IsOpen>
<ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>19</LinkableObjectKey>
  <TypeKey>7</TypeKey>
  <Position>rect:15,132,204,86</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>20</DisplayedInKey>
  <SurrogateForKey>23</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>20</LinkableObjectKey>
  <TypeKey>7</TypeKey>
  <Position>rect:44,235,182,70</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>20</DisplayedInKey>
  <SurrogateForKey>24</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>21</LinkableObjectKey>
  <TypeKey>8</TypeKey>
  <Position>rect:107,9,137,51</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>20</DisplayedInKey>
  <SurrogateForKey>25</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>22</LinkableObjectKey>
  <TypeKey>6</TypeKey>
  <Position>rect:15,176,175,77</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>16</DisplayedInKey>
  <SurrogateForKey>26</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>23</LinkableObjectKey>
  <TypeKey>1</TypeKey>
  <Position>rect:30,706,106,72</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>16</DisplayedInKey>
  <SurrogateForKey>27</SurrogateForKey>
  <IsOpen>Y</IsOpen>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>24</LinkableObjectKey>
  <TypeKey>9</TypeKey>
  <Position>rect:60,67,299,54</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>28</DisplayedInKey>
  <SurrogateForKey>29</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>25</LinkableObjectKey>
  <TypeKey>6</TypeKey>
  <Position>rect:66,203,296,422</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>28</DisplayedInKey>
  <SurrogateForKey>30</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>Y</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>26</LinkableObjectKey>
  <TypeKey>6</TypeKey>
  <Position>rect:109,33,150,45</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>30</DisplayedInKey>
  <SurrogateForKey>31</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>27</LinkableObjectKey>
  <TypeKey>6</TypeKey>
  <Position>rect:107,136,-1,-1</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>30</DisplayedInKey>
  <SurrogateForKey>32</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>28</LinkableObjectKey>
  <TypeKey>6</TypeKey>
  <Position>rect:92,230,135,74</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>30</DisplayedInKey>
  <SurrogateForKey>33</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>29</LinkableObjectKey>
  <TypeKey>7</TypeKey>
  <Position>rect:37,331,191,52</Position>
  <DisplPageNo>0</DisplPageNo>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<SurrPageNo>0</SurrPageNo>
<DisplayedInKey>30</DisplayedInKey>
<SurrogateForKey>34</SurrogateForKey>
<IsOpen>Y</IsOpen>
<ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>30</LinkableObjectKey>
  <TypeKey>8</TypeKey>
  <Position>rect:82,668,263,112</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>28</DisplayedInKey>
  <SurrogateForKey>35</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>31</LinkableObjectKey>
  <TypeKey>5</TypeKey>
  <Position>rect:728,242,164,22</Position>
  <DisplPageNo>2</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>36</DisplayedInKey>
  <SurrogateForKey>0</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>Y</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>32</LinkableObjectKey>
  <TypeKey>5</TypeKey>
  <Position>rect:645,62,150,100</Position>
  <DisplPageNo>2</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>36</DisplayedInKey>
  <SurrogateForKey>37</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>33</LinkableObjectKey>
  <TypeKey>6</TypeKey>
  <Position>rect:400,71,156,92</Position>
  <DisplPageNo>2</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>36</DisplayedInKey>
  <SurrogateForKey>38</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>34</LinkableObjectKey>
  <TypeKey>6</TypeKey>
  <Position>rect:968,608,192,12</Position>
  <DisplPageNo>2</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>36</DisplayedInKey>
  <SurrogateForKey>0</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>Y</ShowingMap>
</Record>
<Record>
```

```

<LinkableObjectKey>35</LinkableObjectKey>
<TypeKey>6</TypeKey>
<Position>rect:608,566,276,166</Position>
<DisplPageNo>2</DisplPageNo>
<SurrPageNo>0</SurrPageNo>
<DisplayedInKey>36</DisplayedInKey>
<SurrogateForKey>39</SurrogateForKey>
<IsOpen>Y</IsOpen>
<ShowingMap>Y</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>36</LinkableObjectKey>
  <TypeKey>10</TypeKey>
  <Position>rect:70,10,191,57</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>39</DisplayedInKey>
  <SurrogateForKey>40</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>37</LinkableObjectKey>
  <TypeKey>6</TypeKey>
  <Position>rect:25,93,178,35</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>39</DisplayedInKey>
  <SurrogateForKey>41</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>38</LinkableObjectKey>
  <TypeKey>7</TypeKey>
  <Position>rect:141,175,312,85</Position>
  <DisplPageNo>2</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>36</DisplayedInKey>
  <SurrogateForKey>42</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>39</LinkableObjectKey>
  <TypeKey>1</TypeKey>
  <Position>rect:208,716,239,15</Position>
  <DisplPageNo>2</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>36</DisplayedInKey>
  <SurrogateForKey>0</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>Y</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>40</LinkableObjectKey>
  <TypeKey>1</TypeKey>
  <Position>rect:40,565,150,100</Position>
  <DisplPageNo>2</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>36</DisplayedInKey>
  <SurrogateForKey>43</SurrogateForKey>

```


GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<IsOpen>Y</IsOpen>
<ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>41</LinkableObjectKey>
  <TypeKey>1</TypeKey>
  <Position>rect:2,3,74,72</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>44</DisplayedInKey>
  <SurrogateForKey>0</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>Y</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>42</LinkableObjectKey>
  <TypeKey>1</TypeKey>
  <Position>rect:-80,-37,150,100</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>44</DisplayedInKey>
  <SurrogateForKey>45</SurrogateForKey>
  <IsOpen>N</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>43</LinkableObjectKey>
  <TypeKey>1</TypeKey>
  <Position>rect:169,54,170,249</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>44</DisplayedInKey>
  <SurrogateForKey>0</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>Y</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>44</LinkableObjectKey>
  <TypeKey>1</TypeKey>
  <Position>rect:207,-43,150,100</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>44</DisplayedInKey>
  <SurrogateForKey>46</SurrogateForKey>
  <IsOpen>N</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>45</LinkableObjectKey>
  <TypeKey>1</TypeKey>
  <Position>rect:153,261,170,137</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>44</DisplayedInKey>
  <SurrogateForKey>0</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>Y</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>46</LinkableObjectKey>
  <TypeKey>1</TypeKey>
  <Position>rect:-94,154,150,100</Position>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<DisplPageNo>0</DisplPageNo>
<SurrPageNo>0</SurrPageNo>
<DisplayedInKey>44</DisplayedInKey>
<SurrogateForKey>47</SurrogateForKey>
<IsOpen>N</IsOpen>
<ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>47</LinkableObjectKey>
  <TypeKey>1</TypeKey>
  <Position>rect:395,-73,188,143</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>44</DisplayedInKey>
  <SurrogateForKey>48</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>48</LinkableObjectKey>
  <TypeKey>1</TypeKey>
  <Position>rect:6,538,322,89</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>44</DisplayedInKey>
  <SurrogateForKey>0</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>Y</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>49</LinkableObjectKey>
  <TypeKey>1</TypeKey>
  <Position>rect:285,440,150,100</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>44</DisplayedInKey>
  <SurrogateForKey>49</SurrogateForKey>
  <IsOpen>N</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>50</LinkableObjectKey>
  <TypeKey>1</TypeKey>
  <Position>rect:-92,325,147,138</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>44</DisplayedInKey>
  <SurrogateForKey>50</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
<Record>
  <LinkableObjectKey>51</LinkableObjectKey>
  <TypeKey>1</TypeKey>
  <Position>rect:455,118,201,280</Position>
  <DisplPageNo>0</DisplPageNo>
  <SurrPageNo>0</SurrPageNo>
  <DisplayedInKey>44</DisplayedInKey>
  <SurrogateForKey>51</SurrogateForKey>
  <IsOpen>Y</IsOpen>
  <ShowingMap>N</ShowingMap>
</Record>
```

</LinkableObject>

<LOType>

```

<Record>
  <LOTypeKey>1</LOTypeKey>
  <Name></Name>
  <TitleForeColour>0</TitleForeColour>
  <TitleBackColour>65280</TitleBackColour>
  <BodyForeColour>0</BodyForeColour>
  <BodyBackColour>15794160</BodyBackColour>
  <SourceRoleKey>0</SourceRoleKey>
  <TargetRoleKey>0</TargetRoleKey>
</Record>
<Record>
  <LOTypeKey>2</LOTypeKey>
  <Name>source document</Name>
  <TitleForeColour>16777215</TitleForeColour>
  <TitleBackColour>255</TitleBackColour>
  <BodyForeColour>0</BodyForeColour>
  <BodyBackColour>15790335</BodyBackColour>
  <SourceRoleKey>0</SourceRoleKey>
  <TargetRoleKey>0</TargetRoleKey>
</Record>
<Record>
  <LOTypeKey>3</LOTypeKey>
  <Name>derivation</Name>
  <TitleForeColour>16776960</TitleForeColour>
  <TitleBackColour>0</TitleBackColour>
  <BodyForeColour>16777215</BodyForeColour>
  <BodyBackColour>0</BodyBackColour>
  <SourceRoleKey>0</SourceRoleKey>
  <TargetRoleKey>0</TargetRoleKey>
</Record>
<Record>
  <LOTypeKey>4</LOTypeKey>
  <Name>concurrency</Name>
  <TitleForeColour>255</TitleForeColour>
  <TitleBackColour>16776960</TitleBackColour>
  <BodyForeColour>16777215</BodyForeColour>
  <BodyBackColour>255</BodyBackColour>
  <SourceRoleKey>0</SourceRoleKey>
  <TargetRoleKey>0</TargetRoleKey>
</Record>
<Record>
  <LOTypeKey>5</LOTypeKey>
  <Name>disagreement</Name>
  <TitleForeColour>16711680</TitleForeColour>
  <TitleBackColour>0</TitleBackColour>
  <BodyForeColour>0</BodyForeColour>
  <BodyBackColour>16744703</BodyBackColour>
  <SourceRoleKey>0</SourceRoleKey>
  <TargetRoleKey>0</TargetRoleKey>
</Record>
<Record>
  <LOTypeKey>6</LOTypeKey>
  <Name>elaboration</Name>
  <TitleForeColour>16777215</TitleForeColour>
  <TitleBackColour>1338642</TitleBackColour>
  <BodyForeColour>1338642</BodyForeColour>
  <BodyBackColour>16776960</BodyBackColour>
  <SourceRoleKey>0</SourceRoleKey>
  <TargetRoleKey>0</TargetRoleKey>

```

```

</Record>
<Record>
  <LOTypeKey>7</LOTypeKey>
  <Name>examples</Name>
  <TitleForeColour>16777215</TitleForeColour>
  <TitleBackColour>8388672</TitleBackColour>
  <BodyForeColour>8388672</BodyForeColour>
  <BodyBackColour>16777215</BodyBackColour>
  <SourceRoleKey>0</SourceRoleKey>
  <TargetRoleKey>0</TargetRoleKey>
</Record>
<Record>
  <LOTypeKey>8</LOTypeKey>
  <Name>read me</Name>
  <TitleForeColour>16711680</TitleForeColour>
  <TitleBackColour>16111222</TitleBackColour>
  <BodyForeColour>16711680</BodyForeColour>
  <BodyBackColour>16776960</BodyBackColour>
  <SourceRoleKey>0</SourceRoleKey>
  <TargetRoleKey>0</TargetRoleKey>
</Record>
<Record>
  <LOTypeKey>9</LOTypeKey>
  <Name>have read</Name>
  <TitleForeColour>16111222</TitleForeColour>
  <TitleBackColour>16711808</TitleBackColour>
  <BodyForeColour>16711808</BodyForeColour>
  <BodyBackColour>16777215</BodyBackColour>
  <SourceRoleKey>0</SourceRoleKey>
  <TargetRoleKey>0</TargetRoleKey>
</Record>
<Record>
  <LOTypeKey>10</LOTypeKey>
  <Name>send to</Name>
  <TitleForeColour>16744448</TitleForeColour>
  <TitleBackColour>8388736</TitleBackColour>
  <BodyForeColour>8388736</BodyForeColour>
  <BodyBackColour>16777215</BodyBackColour>
  <SourceRoleKey>0</SourceRoleKey>
  <TargetRoleKey>0</TargetRoleKey>
</Record>
</LOType>
<Note>
  <Record>
    <ResourceKey>17</ResourceKey>
    <Content>This webpage outlines the legal basis for digital preservation activities by
the Illinois State Library.</Content>
    <TStamp>2010-02-01 14:20:35.569</TStamp>
  </Record>
  <Record>
    <ResourceKey>18</ResourceKey>
    <Content>Boards and commissions include; the State Boord of Education, the Board of
Elections, the Pollution Control Board, and the Labor Relations Board.</Content>
    <TStamp>2010-02-01 14:22:12.469</TStamp>
  </Record>
  <Record>
    <ResourceKey>19</ResourceKey>
    <Content>The State Board of Education also encompasses many regional
offices.</Content>
    <TStamp>2010-02-01 14:25:30.403</TStamp>
  </Record>

```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<Record>
  <ResourceKey>20</ResourceKey>
  <Content>Regional offices exist in/for the following counties (plus others); Bond,
Carroll, Clark, Grundy, Lake, Lee, Will.</Content>
  <TStamp>2010-02-01 14:26:45.361</TStamp>
</Record>
<Record>
  <ResourceKey>21</ResourceKey>
  <Content>As I understand the charter, the Pollution Control "Board" should really be
considered as a "Department" within the Environmental Protection Board.</Content>
  <TStamp>2010-02-01 14:28:04.835</TStamp>
</Record>
<Record>
  <ResourceKey>22</ResourceKey>
  <Content>Check this out with Connie. And, this annotation has two targets.</Content>
  <TStamp>2010-02-01 14:31:00.267</TStamp>
</Record>
<Record>
  <ResourceKey>23</ResourceKey>
  <Content>Alexander, Bond, Carroll, Logan</Content>
  <TStamp>2010-02-01 14:32:17.468</TStamp>
</Record>
<Record>
  <ResourceKey>24</ResourceKey>
  <Content>Adams-Pike
Boone-Winnebago
Macon-Piatt</Content>
  <TStamp>2010-02-01 14:32:31.909</TStamp>
</Record>
<Record>
  <ResourceKey>25</ResourceKey>
  <Content>Search to see if more mergers are pending (e.g., due to cost
pressure).</Content>
  <TStamp>2010-02-01 14:38:27.28</TStamp>
</Record>
<Record>
  <ResourceKey>26</ResourceKey>
  <Content>The Illinois State Library is distinct from the Illinois State Archives,
though both are part of the Office of the Secretary of State.</Content>
  <TStamp>2010-02-01 14:40:27.032</TStamp>
</Record>
<Record>
  <ResourceKey>27</ResourceKey>
  <Content>This annotation doesn't link to anything, visibly.</Content>
  <TStamp>2010-02-22 13:34:43.221</TStamp>
</Record>
<Record>
  <ResourceKey>29</ResourceKey>
  <Content>Find-It! Illinois, IDA, IGI, SILC, I-Share.</Content>
  <TStamp>2010-02-22 13:37:11.053</TStamp>
</Record>
<Record>
  <ResourceKey>30</ResourceKey>
  <Content></Content>
  <TStamp>2010-02-22 13:38:43.746</TStamp>
</Record>
<Record>
  <ResourceKey>31</ResourceKey>
  <Content>the Illinois Digital Archive</Content>
  <TStamp>2010-02-22 13:39:46.196</TStamp>
</Record>
<Record>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<ResourceKey>32</ResourceKey>
<Content>the Illinois State Government web search engine</Content>
<TStamp>2010-02-22 13:40:30.45</TStamp>
</Record>
<Record>
  <ResourceKey>33</ResourceKey>
  <Content>SILC WorldCat and regiona library systems</Content>
  <TStamp>2010-02-22 13:41:17.317</TStamp>
</Record>
<Record>
  <ResourceKey>34</ResourceKey>
  <Content>i-Share search engine</Content>
  <TStamp>2010-02-22 13:42:11.335</TStamp>
</Record>
<Record>
  <ResourceKey>35</ResourceKey>
  <Content>What is "Ask A Librarian"? Why is it only a footnote?</Content>
  <TStamp>2010-02-22 13:43:45.651</TStamp>
</Record>
<Record>
  <ResourceKey>37</ResourceKey>
  <Content>The use of copper for the entire roof will probably be too expensive. A
copper trim, visible from the street, may be used instead.</Content>
  <TStamp>2010-02-22 14:24:22.214</TStamp>
</Record>
<Record>
  <ResourceKey>38</ResourceKey>
  <Content>What is the cost of 5000 ft^2 of 1/8" copper plate?</Content>
  <TStamp>2010-02-22 14:26:04.071</TStamp>
</Record>
<Record>
  <ResourceKey>39</ResourceKey>
  <Content>This project provides assistance in design only. Construction funds are not
available from IHPA.</Content>
  <TStamp>2010-02-22 14:29:27.523</TStamp>
</Record>
<Record>
  <ResourceKey>40</ResourceKey>
  <Content>Are construction funds available from Macomb somehow?</Content>
  <TStamp>2010-02-22 14:31:46.393</TStamp>
</Record>
<Record>
  <ResourceKey>41</ResourceKey>
  <Content>A potential funding source?</Content>
  <TStamp>2010-02-22 14:33:36.691</TStamp>
</Record>
<Record>
  <ResourceKey>42</ResourceKey>
  <Content>The 'Campus Town' area of Champaign, IL, uses this 'cast stone' facade
material extensively. But, AVOID visiting there during 'Unofficial St. Patrick's Day'.</Content>
  <TStamp>2010-02-22 14:34:39.922</TStamp>
</Record>
<Record>
  <ResourceKey>43</ResourceKey>
  <Content>You have to have a note to go with any designated region of a PDF. And, once
created, the type is unchangeable.</Content>
  <TStamp>2010-02-25 14:17:07.629</TStamp>
</Record>
<Record>
  <ResourceKey>45</ResourceKey>
  <Content>There may have been some text in John Bradley's original example, but the
note has been minimized, so any text is not visible.</Content>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<TStamp>2010-03-18 10:04:52.865</TStamp>
</Record>
<Record>
  <ResourceKey>46</ResourceKey>
  <Content>Metaphysics is another Pliny note where John Bradley may have placed text.
But, again, the note is minimized, so any text is not visible.</Content>
  <TStamp>2010-03-18 10:07:34.968</TStamp>
</Record>
<Record>
  <ResourceKey>47</ResourceKey>
  <Content>Natural World is another minimized note.</Content>
  <TStamp>2010-03-18 10:09:03.134</TStamp>
</Record>
<Record>
  <ResourceKey>48</ResourceKey>
  <Content>GR and I used this image in our Paris Paper (approx. 1994). We were struck
by Vico's use of graphical techniques to make philosophical points. Vico himself says that the
frontispiece contains the essence of the arguments in his rather philosophical book.</Content>
  <TStamp>2010-03-18 10:10:20.145</TStamp>
</Record>
<Record>
  <ResourceKey>49</ResourceKey>
  <Content>The Civil World is the last of the minimized notes.</Content>
  <TStamp>2010-03-18 10:13:01.447</TStamp>
</Record>
<Record>
  <ResourceKey>50</ResourceKey>
  <Content>The figures at the bottom of the image are placed at the "bottom" because of
the symbolic significance of the bottom. Their appearance together also implies that they are in
some important way, related.
And, there must have been more text in the Bradley original as there's a scroll bar in the
published illustration.</Content>
  <TStamp>2010-03-18 10:14:13.07</TStamp>
</Record>
<Record>
  <ResourceKey>51</ResourceKey>
  <Content>"Vico says in his introduction that the allegorical picture will both help
the reader conceive of the idea of his work before reading it and more easily reduce it to memory
after having read it. Note that although most of the intellectual material is represented via
purely allegorical methods, one of the tools in the allegorical arsenal is space itself -- the
arrangement of the elements plays a role in defining the associations between them.
Metaphysics is standing on a globe representing the world of nature. The various objects that
represent the civil world are arranged in a line together at the bottom of the image. The
arrangement in space is a part of the technique used here."
And, there must have been more text as a scroll bar appears in the original Pliny screen
capture.</Content>
  <TStamp>2010-03-18 10:17:48.8</TStamp>
</Record>
</Note>
</PlinyDerbyDump>
```

RDF Produced

The following OAC RDF was generated as a result of translating the above annotation pages per the understanding of the OAC RDF model prevailing on the date of this report.

```
<?oxygen RNGSchema='http://www.w3.org/TR/REC-rdf-syntax/rdfxml.rnc' type='compact'?>
<rdf:RDF
  xmlns:rdf='http://www.w3.org/1999/02/22-rdf-syntax-ns#'
  xmlns:oac='http://oac.grainger.illinois.edu/'
  xmlns:dc='http://purl.org/dc/elements/1.1/'
  xmlns:dcterms='http://purl.org/dc/terms/'
  xmlns:pl='http://oac.grainger.illinois.edu/pliny'
  xml:base='urn:uuid:1'>

  <!-- WEBPAGE ANNOTATIONS -->

  <oac:Annotation rdf:about='urn:uuid:R-16#AnnotationContent' />
    <dc:title>Electronic Documents of Illinois - about the website</dc:title>
    <oac:hasTarget rdf:resource='url:http://ediillinois.org/ppa/help/About.html' />
    <oac:hasTargetContext>
      <oac:TargetContext>
        <oac:contextAbout rdf:resource='url:http://ediillinois.org/ppa/help/About.html' />
        <oac:when>2010-02-01 14:19:10</oac:when>
        <dc:type>text/html</dc:type>
      </oac:TargetContext>
    </oac:hasTargetContext>
    <rdf:type rdf:resource='http://www.w3.org/2000/10/annotation-ns#Annotation' />
    <oac:predicate rdf:resource='http://www.openannotation.org/ns/annotates' />
    <dcterms:creator>Larry Jackson</dcterms:creator>

  <!-- TOP-LEVEL ANNOTATIONS WITHIN WEBPAGE -->

  <oac:hasContent>
    <pl:Note rdf:about='urn:uuid:R-17#AnnotationContent'>
      <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/have read' />
      <dc:title>EDI 'about' page 1</dc:title>
      <pl:body>This webpage outlines the legal basis for digital preservation activities by
the Illinois State Library.</pl:body>
      <dcterms:modified>2010-02-01 14:20:35.569</dcterms:modified>
      <dc:relation>
        <pl:Elaboration>
          <dcterms:modified>2010-02-01 14:20:35</dcterms:modified>
          <pl:elaborates rdf:resource='urn:uuid:R-16#17' />
        </pl:Elaboration>
      </dc:relation>
      <pl:DisplayPosition>rect:29,53,364,59</pl:DisplayPosition>
    </oac:hasContent>
    <oac:hasContent>
      <pl:Note rdf:about='urn:uuid:R-18#AnnotationContent'>
        <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/examples' />
        <dc:title>Boards and Commissions</dc:title>
        <pl:body>Boards and commissions include; the State Boord of Education, the Board of
Elections, the Pollution Control Board, and the Labor Relations Board.</pl:body>
        <dcterms:modified>2010-02-01 14:22:12.469</dcterms:modified>
        <dc:relation>
          <pl:Elaboration>
            <dcterms:modified>2010-02-01 14:22:12</dcterms:modified>
            <pl:elaborates rdf:resource='urn:uuid:R-16#18' />
          </pl:Elaboration>
        </dc:relation>
        <pl:DisplayPosition>rect:203,181,185,99</pl:DisplayPosition>
      </oac:hasContent>

```


GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
</oac:hasContent>
<oac:hasContent>
  <pl>Note rdf:about='urn:uuid:R-19#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/elaboration' />
    <dc:title>Regional Offices too</dc:title>
    <pl:body>The State Board of Education also encompasses many regional
offices.</pl:body>
    <dcterms:modified>2010-02-01 14:25:30.403</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
        <dcterms:modified>2010-02-01 14:25:30</dcterms:modified>
        <pl:elaborates rdf:resource='urn:uuid:R-16#19' />
      </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:303,340,161,84</pl:DisplayPosition>
  </oac:hasContent>
  <oac:hasContent>
    <pl>Note rdf:about='urn:uuid:R-20#AnnotationContent'>
      <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/examples' />
      <dc:title>Example Regional Offices</dc:title>
      <pl:body>Regional offices exist in/for the following counties (plus others); Bond,
Carroll, Clark, Grundy, Lake, Lee, Will.</pl:body>
      <dcterms:modified>2010-02-01 14:26:45.361</dcterms:modified>
      <dc:relation>
        <pl:Elaboration>
          <dcterms:modified>2010-02-01 14:26:45</dcterms:modified>
          <pl:elaborates rdf:resource='urn:uuid:R-16#20' />
        </pl:Elaboration>
      </dc:relation>
      <pl:DisplayPosition>rect:159,460,254,338</pl:DisplayPosition>
    </oac:hasContent>
  <!-- NESTED ANNOTATION WITHIN WEBPAGE -->
  <oac:Annotates rdf:about='R-23'>
    <oac:Annotation rdf:about='urn:uuid:R-25#AnnotationContent' />
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/read me' />
  </oac:Annotates>
  <oac:hasContent>
    <pl>Note rdf:about='urn:uuid:R-23#AnnotationContent' />
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/examples' />
    <dc:title>Single-County</dc:title>
    <pl:body>Alexander, Bond, Carroll, Logan</pl:body>
    <dcterms:modified>2010-02-01 14:32:17.468</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
        <dcterms:modified>2010-02-01 14:32:17</dcterms:modified>
        <pl:elaborates rdf:resource='urn:uuid:R-20#23' />
      </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:15,132,204,86</pl:DisplayPosition>
  </oac:hasContent>
  <oac:hasContent>
    <pl>Note rdf:about='urn:uuid:R-24#AnnotationContent' />
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/examples' />
    <dc:title>Multi-County</dc:title>
    <pl:body>Adams-Pike
Boone-Winnebago
Macon-Piatt</pl:body>
    <dcterms:modified>2010-02-01 14:32:31.909</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
        <dcterms:modified>2010-02-01 14:32:31</dcterms:modified>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```

        <pl:elaborates rdf:resource='urn:uuid:R-20#24' />
    </pl:Elaboration>
</dc:relation>
    <pl:DisplayPosition>rect:44,235,182,70</pl:DisplayPosition>
</oac:hasContent>
<oac:hasContent>
    <pl:Note rdf:about='urn:uuid:R-25#AnnotationContent' />
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/read me' />
    <dc:title>More mergers?</dc:title>
    <pl:body>Search to see if more mergers are pending (e.g., due to cost
pressure).</pl:body>
    <dcterms:modified>2010-02-01 14:38:27.28</dcterms:modified>
    <dc:relation>
        <pl:Elaboration>
            <dcterms:modified>2010-02-01 14:38:27</dcterms:modified>
            <pl:elaborates rdf:resource='urn:uuid:R-20#25' />
        </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:107,9,137,51</pl:DisplayPosition>
</oac:hasContent>
<oac:hasContent>
    <pl:Note rdf:about='urn:uuid:R-21#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/disagreement' />
    <dc:title>Why Not a 'Department'?</dc:title>
    <pl:body>As I understand the charter, the Pollution Control "Board" should really be
considered as a "Department" within the Environmental Protection Board.</pl:body>
    <dcterms:modified>2010-02-01 14:28:04.835</dcterms:modified>
    <dc:relation>
        <pl:Elaboration>
            <dcterms:modified>2010-02-01 14:28:04</dcterms:modified>
            <pl:elaborates rdf:resource='urn:uuid:R-16#21' />
        </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:128,309,170,105</pl:DisplayPosition>
</oac:hasContent>
<oac:hasContent>
    <pl:Note rdf:about='urn:uuid:R-22#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/send to' />
    <dc:title>double-check</dc:title>
    <pl:body>Check this out with Connie. And, this annotation has two targets.</pl:body>
    <dcterms:modified>2010-02-01 14:31:00.267</dcterms:modified>
    <dc:relation>
        <pl:Elaboration>
            <dcterms:modified>2010-02-01 14:31:00</dcterms:modified>
            <pl:elaborates rdf:resource='urn:uuid:R-16#22' />
        </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:10,437,115,83</pl:DisplayPosition>
</oac:hasContent>
<oac:hasContent>
    <pl:Note rdf:about='urn:uuid:R-26#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/elaboration' />
    <dc:title>Not the State Archives</dc:title>
    <pl:body>The Illinois State Library is distinct from the Illinois State Archives,
though both are part of the Office of the Secretary of State.</pl:body>
    <dcterms:modified>2010-02-01 14:40:27.032</dcterms:modified>
    <dc:relation>
        <pl:Elaboration>
            <dcterms:modified>2010-02-01 14:40:27</dcterms:modified>
            <pl:elaborates rdf:resource='urn:uuid:R-16#26' />
        </pl:Elaboration>
    </dc:relation>

```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<pl:DisplayPosition>rect:15,176,175,77</pl:DisplayPosition>
</oac:hasContent>
<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-27#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/'/>
    <dc:title>Total Orphan</dc:title>
    <pl:body>This annotation doesn't link to anything, visibly.</pl:body>
    <dcterms:modified>2010-02-22 13:34:43.221</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
        <dcterms:modified>2010-02-22 13:34:43</dcterms:modified>
        <pl:elaborates rdf:resource='urn:uuid:R-16#27'/>
      </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:30,706,106,72</pl:DisplayPosition>
  </oac:hasContent>

<!-- PROVENANCE -->
<dcterms:provenance>
  <dcterms:ProvenanceStatement>
    <dc:title>Export of annotation data from Pliny's Apache Derby database.</dc:title>
    <dcterms:hasVersion>10.5.1.1 - (764942)</dcterms:hasVersion>
    <dcterms:available>2010-02-18 10:40:59</dcterms:available>
  </dcterms:ProvenanceStatement>
</dcterms:provenance>
</oac:Annotation>
<oac:Annotation rdf:about='urn:uuid:R-28#AnnotationContent'/>
  <dc:title>Electronic Documents of Illinois - searching other Illinois document
collections</dc:title>
  <oac:hasTarget rdf:resource='url:http://ediillinois.org/ppa/help/OtherSearch.html'/>
  <oac:hasTargetContext>
    <oac:TargetContext>
      <oac:contextAbout
rdf:resource='url:http://ediillinois.org/ppa/help/OtherSearch.html'/>
      <oac:when>2010-02-22 13:36:32</oac:when>
      <dc:type>text/html</dc:type>
    </oac:TargetContext>
  </oac:hasTargetContext>
  <rdf:type rdf:resource='http://www.w3.org/2000/10/annotation-ns#Annotation'/>
  <oac:predicate rdf:resource='http://www.openannotation.org/ns/annotates'/>
  <dcterms:creator>Larry Jackson</dcterms:creator>

<!-- TOP-LEVEL ANNOTATIONS WITHIN WEBPAGE -->

<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-29#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/have read'/>
    <dc:title>Familiar with these webpages</dc:title>
    <pl:body>Find-It! Illinois, IDA, IGI, SILC, I-Share.</pl:body>
    <dcterms:modified>2010-02-22 13:37:11.053</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
        <dcterms:modified>2010-02-22 13:37:11</dcterms:modified>
        <pl:elaborates rdf:resource='urn:uuid:R-28#29'/>
      </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:60,67,299,54</pl:DisplayPosition>
  </oac:hasContent>
<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-30#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/elaboration'/>
    <dc:title>Project Nesting</dc:title>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<pl:body></pl:body>
<dcterms:modified>2010-02-22 13:38:43.746</dcterms:modified>
<dc:relation>
  <pl:Elaboration>
    <dcterms:modified>2010-02-22 13:38:43</dcterms:modified>
    <pl:elaborates rdf:resource='urn:uuid:R-28#30' />
  </pl:Elaboration>
</dc:relation>
<pl:DisplayPosition>rect:66,203,296,422</pl:DisplayPosition>
</oac:hasContent>
<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-31#AnnotationContent' />
  <rdf:type
rdf:resource='http://oac.grainger.illinois.edu/pliny/elaboration</rdf:type>
  <dc:title>IDA</dc:title>
  <pl:body>the Illinois Digital Archive</pl:body>
  <dcterms:modified>2010-02-22 13:39:46.196</dcterms:modified>
  <dc:relation>
    <pl:Elaboration>
      <dcterms:modified>2010-02-22 13:39:46</dcterms:modified>
      <pl:elaborates rdf:resource='urn:uuid:R-30#31' />
    </pl:Elaboration>
  </dc:relation>
  <pl:DisplayPosition>rect:109,33,150,45</pl:DisplayPosition>
</oac:hasContent>
<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-32#AnnotationContent' />
  <rdf:type
rdf:resource='http://oac.grainger.illinois.edu/pliny/elaboration</rdf:type>
  <dc:title>IGI</dc:title>
  <pl:body>the Illinois State Government web search engine</pl:body>
  <dcterms:modified>2010-02-22 13:40:30.45</dcterms:modified>
  <dc:relation>
    <pl:Elaboration>
      <dcterms:modified>2010-02-22 13:40:30</dcterms:modified>
      <pl:elaborates rdf:resource='urn:uuid:R-30#32' />
    </pl:Elaboration>
  </dc:relation>
  <pl:DisplayPosition>rect:107,136,-1,-1</pl:DisplayPosition>
</oac:hasContent>

<!-- NESTED ANNOTATION WITHIN WEBPAGE -->
<oac:Annotates rdf:about='R-33'>
  <oac:Annotation rdf:about='urn:uuid:R-34#AnnotationContent' />
  <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/examples</rdf:type>
</oac:Annotates>
<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-33#AnnotationContent' />
  <rdf:type
rdf:resource='http://oac.grainger.illinois.edu/pliny/elaboration</rdf:type>
  <dc:title>SILC</dc:title>
  <pl:body>SILC WorldCat and regiona library systems</pl:body>
  <dcterms:modified>2010-02-22 13:41:17.317</dcterms:modified>
  <dc:relation>
    <pl:Elaboration>
      <dcterms:modified>2010-02-22 13:41:17</dcterms:modified>
      <pl:elaborates rdf:resource='urn:uuid:R-30#33' />
    </pl:Elaboration>
  </dc:relation>
  <pl:DisplayPosition>rect:92,230,135,74</pl:DisplayPosition>
</oac:hasContent>
<oac:hasContent>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<pl:Note rdf:about='urn:uuid:R-34#AnnotationContent' />
<rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/examples</rdf:type>
<dc:title>i-Share</dc:title>
<pl:body>i-Share search engine</pl:body>
<dcterms:modified>2010-02-22 13:42:11.335</dcterms:modified>
<dc:relation>
  <pl:Elaboration>
    <dcterms:modified>2010-02-22 13:42:11</dcterms:modified>
    <pl:elaborates rdf:resource='urn:uuid:R-30#34' />
  </pl:Elaboration>
</dc:relation>
<pl:DisplayPosition>rect:37,331,191,52</pl:DisplayPosition>
</oac:hasContent>
<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-35#AnnotationContent'>
  <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/read me' />
  <dc:title>Ask A Librarian</dc:title>
  <pl:body>What is "Ask A Librarian"? Why is it only a footnote?</pl:body>
  <dcterms:modified>2010-02-22 13:43:45.651</dcterms:modified>
  <dc:relation>
    <pl:Elaboration>
      <dcterms:modified>2010-02-22 13:43:45</dcterms:modified>
      <pl:elaborates rdf:resource='urn:uuid:R-28#35' />
    </pl:Elaboration>
  </dc:relation>
  <pl:DisplayPosition>rect:82,668,263,112</pl:DisplayPosition>
</oac:hasContent>

<!-- PROVENANCE -->
<dcterms:provenance>
  <dcterms:ProvenanceStatement>
    <dc:title>Export of annotation data from Pliny's Apache Derby database.</dc:title>
    <dcterms:hasVersion>10.5.1.1 - (764942)</dcterms:hasVersion>
    <dcterms:available>2010-02-18 10:40:59</dcterms:available>
  </dcterms:ProvenanceStatement>
</dcterms:provenance>
</oac:Annotation>
<oac:Annotation rdf:about='urn:uuid:R-44#AnnotationContent' />
  <dc:title>file:/C:/Documents and Settings/Larry S. Jackson/My Documents/myDocs/OAC-
ColePalmerRear/Pliny-Derby/RdfExport/big_vico.jpg</dc:title>
  <oac:hasTarget rdf:resource='url=file:/C:/Documents and Settings/Larry S. Jackson/My
Documents/myDocs/OAC-ColePalmerRear/Pliny-Derby/RdfExport/big_vico.jpg' />
  <oac:hasTargetContext>
    <oac:TargetContext>
      <oac:contextAbout rdf:resource='url=file:/C:/Documents and Settings/Larry S.
Jackson/My Documents/myDocs/OAC-ColePalmerRear/Pliny-Derby/RdfExport/big_vico.jpg' />
      <oac:when>2010-03-18 10:03:24</oac:when>
      <dc:type>image/jpeg</dc:type>
    </oac:TargetContext>
  </oac:hasTargetContext>
  <rdf:type rdf:resource='http://www.w3.org/2000/10/annotation-ns#Annotation' />
  <oac:predicate rdf:resource='http://www.openannotation.org/ns/annotates' />
  <dcterms:creator>Larry Jackson</dcterms:creator>

<!-- TOP-LEVEL ANNOTATIONS WITHIN WEBPAGE -->

<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-45#AnnotationContent'>
  <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/' />
  <dc:title>The Trinity</dc:title>
  <pl:body>There may have been some text in John Bradley's original example, but the
note has been minimized, so any text is not visible.</pl:body>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<dcterms:modified>2010-03-18 10:04:52.865</dcterms:modified>
<dc:relation>
  <pl:Elaboration>
    <dcterms:modified>2010-03-18 10:04:52</dcterms:modified>
    <pl:elaborates rdf:resource='urn:uuid:R-44#45' />
  </pl:Elaboration>
</dc:relation>
<pl:DisplayPosition>rect:-80,-37,150,100</pl:DisplayPosition>
</oac:hasContent>
<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-46#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/' />
    <dc:title>Metaphysics</dc:title>
    <pl:body>Metaphysics is another Pliny note where John Bradley may have placed text.
But, again, the note is minimized, so any text is not visible.</pl:body>
    <dcterms:modified>2010-03-18 10:07:34.968</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
        <dcterms:modified>2010-03-18 10:07:34</dcterms:modified>
        <pl:elaborates rdf:resource='urn:uuid:R-44#46' />
      </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:207,-43,150,100</pl:DisplayPosition>
  </oac:hasContent>
<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-47#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/' />
    <dc:title>Natural World</dc:title>
    <pl:body>Natural World is another minimized note.</pl:body>
    <dcterms:modified>2010-03-18 10:09:03.134</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
        <dcterms:modified>2010-03-18 10:09:03</dcterms:modified>
        <pl:elaborates rdf:resource='urn:uuid:R-44#47' />
      </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:-94,154,150,100</pl:DisplayPosition>
  </oac:hasContent>
<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-48#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/' />
    <dc:title>Vico Frontispiece Introduction</dc:title>
    <pl:body>GR and I used this image in our Paris Paper (approx. 1994). We were struck
by Vico's use of graphical techniques to make philosophical points. Vico himself says that the
frontispiece contains the essence of the arguments in his rather philosophical book.</pl:body>
    <dcterms:modified>2010-03-18 10:10:20.145</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
        <dcterms:modified>2010-03-18 10:10:20</dcterms:modified>
        <pl:elaborates rdf:resource='urn:uuid:R-44#48' />
      </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:395,-73,188,143</pl:DisplayPosition>
  </oac:hasContent>
<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-49#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/' />
    <dc:title>The Civil World</dc:title>
    <pl:body>The Civil World is the last of the minimized notes.</pl:body>
    <dcterms:modified>2010-03-18 10:13:01.447</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<dcterms:modified>2010-03-18 10:13:01</dcterms:modified>
  <pl:elaborates rdf:resource='urn:uuid:R-44#49' />
</pl:Elaboration>
</dc:relation>
  <pl:DisplayPosition>rect:285,440,150,100</pl:DisplayPosition>
</oac:hasContent>
<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-50#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/' />
    <dc:title>Vico Frontispiece</dc:title>
    <pl:body>The figures at the bottom of the image are place at the "bottom" because of
the symbolic significance of the bottom. Their appearance together also implies that they are in
some important way, related.
And, there must have been more text in the Bradley original as there's a scroll bar in the
published illustration.</pl:body>
    <dcterms:modified>2010-03-18 10:14:13.07</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
        <dcterms:modified>2010-03-18 10:14:13</dcterms:modified>
        <pl:elaborates rdf:resource='urn:uuid:R-44#50' />
      </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:-92,325,147,138</pl:DisplayPosition>
  </oac:hasContent>
<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-51#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/' />
    <dc:title>Vico Frontispiece: his introduction</dc:title>
    <pl:body>"Vico says in his introduction that the allegorical picture will both help
the reader conceive of the idea of his work before reading it and more easily reduce it to memory
after having read it. Note that although most of the intellectual material is represented via
purely allegorical methods, one of the tools in the allegorical arsenal is space itself -- the
arrangement of the elements plays a role in defining the associations between them.
Metaphysics is standing on a globe representing the world of nature. The various objects that
represent the civil world are arranged in a line together at the bottom of the image. The
arrangement in space is a part of the technique used here."
And, there must have been more text as a scroll bar appears in the original Pliny screen
capture.</pl:body>
    <dcterms:modified>2010-03-18 10:17:48.8</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
        <dcterms:modified>2010-03-18 10:17:48</dcterms:modified>
        <pl:elaborates rdf:resource='urn:uuid:R-44#51' />
      </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:455,118,201,280</pl:DisplayPosition>
  </oac:hasContent>

<!-- PDF/IMAGE AREA LINKS -->

  <oac:Annotates rdf:about='R-44'>
    <SpecificPosition>rect:2,3,74,72</SpecificPosition>
    <SpecificPageNumber>0</SpecificPageNumber>
    <oac:Annotation rdf:about='urn:uuid:R-41#AnnotationContent' />
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/' />
    <dc:type>Pliny-designated PDF/image region</dc:type>
  </oac:Annotates>
  <oac:Annotates rdf:about='LO-41'>
    <oac:Annotation rdf:about='urn:uuid:R-41#AnnotationContent' />
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/45' />
  </oac:Annotates>
<oac:Annotates rdf:about='R-44'>
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
<SpecificPosition>rect:169,54,170,249</SpecificPosition>
<SpecificPageNumber>0</SpecificPageNumber>
<oac:Annotation rdf:about='urn:uuid:R-43#AnnotationContent' />
<rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/'></rdf:type>
<dc:type>Pliny-designated PDF/image region</dc:type>
</oac:Annotates>
<oac:Annotates rdf:about='LO-43'>
  <oac:Annotation rdf:about='urn:uuid:R-43#AnnotationContent' />
  <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/46'></rdf:type>
</oac:Annotates>
<oac:Annotates rdf:about='R-44'>
  <SpecificPosition>rect:153,261,170,137</SpecificPosition>
  <SpecificPageNumber>0</SpecificPageNumber>
  <oac:Annotation rdf:about='urn:uuid:R-45#AnnotationContent' />
  <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/'></rdf:type>
  <dc:type>Pliny-designated PDF/image region</dc:type>
</oac:Annotates>
<oac:Annotates rdf:about='LO-45'>
  <oac:Annotation rdf:about='urn:uuid:R-45#AnnotationContent' />
  <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/47'></rdf:type>
</oac:Annotates>
<oac:Annotates rdf:about='R-44'>
  <SpecificPosition>rect:6,538,322,89</SpecificPosition>
  <SpecificPageNumber>0</SpecificPageNumber>
  <oac:Annotation rdf:about='urn:uuid:R-48#AnnotationContent' />
  <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/'></rdf:type>
  <dc:type>Pliny-designated PDF/image region</dc:type>
</oac:Annotates>
<oac:Annotates rdf:about='LO-48'>
  <oac:Annotation rdf:about='urn:uuid:R-48#AnnotationContent' />
  <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/49'></rdf:type>
</oac:Annotates>

<!-- PROVENANCE -->
<dcterms:provenance>
  <dcterms:ProvenanceStatement>
    <dc:title>Export of annotation data from Pliny's Apache Derby database.</dc:title>
    <dcterms:hasVersion>10.5.1.1 - (764942)</dcterms:hasVersion>
    <dcterms:available>2010-02-18 10:40:59</dcterms:available>
  </dcterms:ProvenanceStatement>
</dcterms:provenance>
</oac:Annotation>
<oac:Annotation rdf:about='urn:uuid:R-36#AnnotationContent' />
  <dc:title>HartmannBldgProposal</dc:title>
  <oac:hasTarget
rdf:resource='url=http://ediillinois.org/ppa/docs/00/00/00/01/77/31/20090519195707_HARTMANNBUILD
ING-113E.CARROLLST..pdf' />
  <oac:hasTargetContext>
    <oac:TargetContext>
      <oac:contextAbout
rdf:resource='url=http://ediillinois.org/ppa/docs/00/00/00/01/77/31/20090519195707_HARTMANNBUILD
ING-113E.CARROLLST..pdf' />
      <oac:when>2010-02-22 14:10:37</oac:when>
      <dc:type>application/pdf</dc:type>
    </oac:TargetContext>
  </oac:hasTargetContext>
  <rdf:type rdf:resource='http://www.w3.org/2000/10/annotation-ns#Annotation' />
  <oac:predicate rdf:resource='http://www.openannotation.org/ns/annotates' />
  <dcterms:creator>Larry Jackson</dcterms:creator>

<!-- TOP-LEVEL ANNOTATIONS WITHIN WEBPAGE -->
```


GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```

<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-37#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/disagreement'/>
    <dc:title>High Cost</dc:title>
    <pl:body>The use of copper for the entire roof will probably be too expensive. A
copper trim, visible from the street, may be used instead.</pl:body>
    <dcterms:modified>2010-02-22 14:24:22.214</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
        <dcterms:modified>2010-02-22 14:24:22</dcterms:modified>
        <pl:elaborates rdf:resource='urn:uuid:R-36#37' />
      </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:645,62,150,100</pl:DisplayPosition>
  </oac:hasContent>
<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-38#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/elaboration'/>
    <dc:title>Unknown Cost</dc:title>
    <pl:body>What is the cost of 5000 ft^2 of 1/8" copper plate?</pl:body>
    <dcterms:modified>2010-02-22 14:26:04.071</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
        <dcterms:modified>2010-02-22 14:26:04</dcterms:modified>
        <pl:elaborates rdf:resource='urn:uuid:R-36#38' />
      </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:400,71,156,92</pl:DisplayPosition>
  </oac:hasContent>
<oac:hasContent>
  <pl:Note rdf:about='urn:uuid:R-39#AnnotationContent'>
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/elaboration'/>
    <dc:title>No Construction Monies</dc:title>
    <pl:body>This project provides assistance in design only. Construction funds are not
available from IHPA.</pl:body>
    <dcterms:modified>2010-02-22 14:29:27.523</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
        <dcterms:modified>2010-02-22 14:29:27</dcterms:modified>
        <pl:elaborates rdf:resource='urn:uuid:R-36#39' />
      </pl:Elaboration>
    </dc:relation>
    <pl:DisplayPosition>rect:608,566,276,166</pl:DisplayPosition>
  </oac:hasContent>

<!-- NESTED ANNOTATION WITHIN WEBPAGE -->
  <oac:Annotates rdf:about='R-40'>
    <oac:Annotation rdf:about='urn:uuid:R-41#AnnotationContent' />
    <rdf:type
rdf:resource='http://oac.grainger.illinois.edu/pliny/elaboration</rdf:type>
  </oac:Annotates>
  <oac:hasContent>
    <pl:Note rdf:about='urn:uuid:R-40#AnnotationContent' />
    <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/send to</rdf:type>
    <dc:title>Macomb funding?</dc:title>
    <pl:body>Are construction funds available from Macomb somehow?</pl:body>
    <dcterms:modified>2010-02-22 14:31:46.393</dcterms:modified>
    <dc:relation>
      <pl:Elaboration>
        <dcterms:modified>2010-02-22 14:31:46</dcterms:modified>
        <pl:elaborates rdf:resource='urn:uuid:R-39#40' />
      </pl:Elaboration>

```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```

        </dc:relation>
        <pl:DisplayPosition>rect:70,10,191,57</pl:DisplayPosition>
    </oac:hasContent>
    <oac:hasContent>
        <pl:Note rdf:about='urn:uuid:R-41#AnnotationContent' />
        <rdf:type
rdf:resource='http://oac.grainger.illinois.edu/pliny/elaboration</rdf:type>
        <dc:title>Chamber of Commerce</dc:title>
        <pl:body>A potential funding source?</pl:body>
        <dcterms:modified>2010-02-22 14:33:36.691</dcterms:modified>
        <dc:relation>
            <pl:Elaboration>
                <dcterms:modified>2010-02-22 14:33:36</dcterms:modified>
                <pl:elaborates rdf:resource='urn:uuid:R-39#41' />
            </pl:Elaboration>
        </dc:relation>
        <pl:DisplayPosition>rect:25,93,178,35</pl:DisplayPosition>
    </oac:hasContent>
    <oac:hasContent>
        <pl:Note rdf:about='urn:uuid:R-42#AnnotationContent'>
        <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/examples' />
        <dc:title>Champaign 'Campus Town' Example</dc:title>
        <pl:body>The 'Campus Town' area of Champaign, IL, uses this 'cast stone' facade
material extensively. But, AVOID visiting there during 'Unofficial St. Patrick's Day'.</pl:body>
        <dcterms:modified>2010-02-22 14:34:39.922</dcterms:modified>
        <dc:relation>
            <pl:Elaboration>
                <dcterms:modified>2010-02-22 14:34:39</dcterms:modified>
                <pl:elaborates rdf:resource='urn:uuid:R-36#42' />
            </pl:Elaboration>
        </dc:relation>
        <pl:DisplayPosition>rect:141,175,312,85</pl:DisplayPosition>
    </oac:hasContent>
    <oac:hasContent>
        <pl:Note rdf:about='urn:uuid:R-43#AnnotationContent'>
        <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/' />
        <dc:title>Mandatory Notes</dc:title>
        <pl:body>You have to have a note to go with any designated region of a PDF. And, once
created, the type is unchangeable.</pl:body>
        <dcterms:modified>2010-02-25 14:17:07.629</dcterms:modified>
        <dc:relation>
            <pl:Elaboration>
                <dcterms:modified>2010-02-25 14:17:07</dcterms:modified>
                <pl:elaborates rdf:resource='urn:uuid:R-36#43' />
            </pl:Elaboration>
        </dc:relation>
        <pl:DisplayPosition>rect:40,565,150,100</pl:DisplayPosition>
    </oac:hasContent>

<!-- PDF/IMAGE AREA LINKS -->

    <oac:Annotates rdf:about='R-36'>
        <SpecificPosition>rect:728,242,164,22</SpecificPosition>
        <SpecificPageNumber>2</SpecificPageNumber>
        <oac:Annotation rdf:about='urn:uuid:R-31#AnnotationContent' />
        <rdf:type
rdf:resource='http://oac.grainger.illinois.edu/pliny/disagreement</rdf:type>
        <dc:type>Pliny-designated PDF/image region</dc:type>
    </oac:Annotates>
    <oac:Annotates rdf:about='LO-31'>
        <oac:Annotation rdf:about='urn:uuid:R-31#AnnotationContent' />
        <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/37</rdf:type>

```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
</oac:Annotates>
<oac:Annotates rdf:about='R-36'>
  <SpecificPosition>rect:968,608,192,12</SpecificPosition>
  <SpecificPageNumber>2</SpecificPageNumber>
  <oac:Annotation rdf:about='urn:uuid:R-34#AnnotationContent' />
  <rdf:type
rdf:resource='http://oac.grainger.illinois.edu/pliny/elaboration</rdf:type>
  <dc:type>Pliny-designated PDF/image region</dc:type>
</oac:Annotates>
<oac:Annotates rdf:about='LO-34'>
  <oac:Annotation rdf:about='urn:uuid:R-34#AnnotationContent' />
  <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/39</rdf:type>
</oac:Annotates>
<oac:Annotates rdf:about='R-36'>
  <SpecificPosition>rect:208,716,239,15</SpecificPosition>
  <SpecificPageNumber>2</SpecificPageNumber>
  <oac:Annotation rdf:about='urn:uuid:R-39#AnnotationContent' />
  <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/</rdf:type>
  <dc:type>Pliny-designated PDF/image region</dc:type>
</oac:Annotates>
<oac:Annotates rdf:about='LO-39'>
  <oac:Annotation rdf:about='urn:uuid:R-39#AnnotationContent' />
  <rdf:type rdf:resource='http://oac.grainger.illinois.edu/pliny/43</rdf:type>
</oac:Annotates>

<!-- PROVENANCE -->
<dcterms:provenance>
  <dcterms:ProvenanceStatement>
    <dc:title>Export of annotation data from Pliny's Apache Derby database.</dc:title>
    <dcterms:hasVersion>10.5.1.1 - (764942)</dcterms:hasVersion>
    <dcterms:available>2010-02-18 10:40:59</dcterms:available>
  </dcterms:ProvenanceStatement>
</dcterms:provenance>
</oac:Annotation>
</rdf:RDF>
```

ATTACHMENT 4 - Java Source Code

The following Java program produced the RDF outputs in this report.

```
// ConvertPlinyDerbyToRdf.java - by Larry S. Jackson, Ph.D.
//
// Illinois Open Source License
//
// University of Illinois/NCSA
// Open Source License
//
// Copyright © 2010, Board of Trustees, University of Illinois. All rights reserved.
//
// Developed by:
//
// Larry S. Jackson, Ph.D. <lsjackso@illinois.edu> <Larry.Jackson@alumni.illinois.edu>
// Open Archive Collaboration project
// http://http://groups.lis.illinois.edu/openannotation/
// Graduate School of Library and Information Science
// http://www.lis.illinois.edu/
// University of Illinois at Urbana-Champaign
//
// Permission is hereby granted, free of charge, to any person obtaining a copy of this software
// and associated documentation files (the "Software"), to deal with the Software without
// restriction, including without limitation the rights to use, copy, modify, merge, publish,
// distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the
// Software is furnished to do so, subject to the following conditions:
//
// * Redistributions of source code must retain the above copyright notice, this list of
// conditions and the following disclaimers.
//
// * Redistributions in binary form must reproduce the above copyright notice, this list of
// conditions and the following disclaimers in the documentation and/or other materials provided
// with the distribution.
//
// * Neither the names of the Open Archive Collaboration project, the Graduate School of
// Library and Information Science, the University of Illinois, nor the names of its contributors
// may be used to endorse or promote products derived from this Software without specific prior
// written permission.
//
// THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING
// BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
// NONINFRINGEMENT. IN NO EVENT SHALL THE CONTRIBUTORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
// CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
// FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS WITH THE SOFTWARE.
//
//
//
// This program accesses Pliny's Apache-Derby database on the local computer, traverses the
// entire annotation graph
// stored therein, and writes RDF to stdout. The RDF model is not agreed to completely, as of
// March 18, 2010.
// However, the graph traversal aspect of this program is complete, so the RDF elements/tags
// could be revised once
// agreed upon.
//
import java.sql.SQLException;
import java.sql.SQLWarning;
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
import java.sql.*;
import java.sql.DatabaseMetaData;
import java.net.*;
import java.io.*;
import java.util.*;
import java.text.*;

public class ConvertPlinyDerbyToRdf {

    private static final String driver = "org.apache.derby.jdbc.ClientDriver"; // which JDBC
    driver to use

    private static final String localDerbyDatabaseLocation = // The address by which Java
    addresses Derby via JDBC.
        // Larry's laptop uses the first value following. Yan's uses the second. Un-comment
    one, and comment-out the other.
        "C:\\Documents and Settings\\Larry S.
    Jackson\\EclipseWorkspace\\.metadata\\.plugins\\uk.ac.kcl.cch.jb.pliny\\pliny";
        // "C:\\Documents and
    Settings\\sony\\pliny\\.metadata\\.plugins\\uk.ac.kcl.cch.jb.pliny\\pliny";
    private static final String localDerbyUrl = "jdbc:derby://localhost:1527/"
        + localDerbyDatabaseLocation
        + ";create=false";
        // The address by which Java addresses Derby, when using networked JDBC (which is not the
    case here).
    private static final Integer PlinyNoteCode = 1;
    private static final Integer PlinyWebpageCode = 2;
    private static final Integer PlinyImageCode = 3;
    private static final Integer PlinyPdfCode = 4;

    private static Connection con = null; // the working connection to the DBMS
    private static Statement stmtLookMeUp = null; // used in recursion
    private static Statement stmtMyKids = null; // used in recursion

    public static void main(String[] args) {
        DatabaseMetaData dbmd = null;
        Statement stmtWorksheetToWebpage = null;
        ResultSet rsWorksheetToWebpage = null;
        Statement stmtAllTopLevelAnnosInWorksheet = null;
        ResultSet rsAllTopLevelAnnosInWorksheet = null;
        Statement stmtKidsOfOneTopLevelAnno = null;
        ResultSet rsKidsOfOneTopLevelAnno = null;
        Statement stmtAllLinksToOneSpecificTarget = null;
        ResultSet rsAllLinksToOneSpecificTarget = null;
        Statement stmtAllPdfRegions = null;
        ResultSet rsAllPdfRegions = null;
        String WebpageTargetURI = ""; // used with webpages only
        Integer WorksheetResourceKey = 0;
        Integer TopLevelResourceKey = 0;
        Integer OneKid = 0;
        Calendar CurrentTime = Calendar.getInstance();
        DecimalFormat LeadingZeros = new DecimalFormat("00");
        LeadingZeros.setDecimalSeparatorAlwaysShown(false);
        Integer NewlineIndex = 0;
        Integer ObjectTypeKey = 0;

        try {
            Class.forName(driver) ;

            // con = DriverManager.getConnection(localDerbyUrl);
            // Disable the network approach; use a direct connect.
            con = DriverManager.getConnection("jdbc:derby:"+localDerbyDatabaseLocation);
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```

dbmd = con.getMetaData() ;
stmtWorksheetToWebpage = con.createStatement();
stmtAllTopLevelAnnosInWorksheet = con.createStatement();
stmtKidsOfOneTopLevelAnno = con.createStatement();
stmtAllLinksToOneSpecificTarget = con.createStatement();
stmtLookMeUp = con.createStatement();
stmtMyKids = con.createStatement();
stmtAllPdfRegions = con.createStatement();

System.out.println("<?oxygen RNGSchema='http://www.w3.org/TR/REC-rdf-
syntax/rdfxml.rnc' type='compact'>");
System.out.println("<rdf:RDF");
System.out.println("\txmlns:rdf='http://www.w3.org/1999/02/22-rdf-syntax-ns#'");
System.out.println("\txmlns:oac='http://oac.grainger.illinois.edu/'");
System.out.println("\txmlns:dc='http://purl.org/dc/elements/1.1/'");
System.out.println("\txmlns:dcterms='http://purl.org/dc/terms/'");
System.out.println("\txmlns:pl='http://oac.grainger.illinois.edu/pliny'");
System.out.println("\txml:base='urn:uuid:1'>");

//
////////////////////////////////////
// Start with each entry in pliny.resource having a WebpageURI, and then expand from
there.
//
////////////////////////////////////

System.out.println(" ");
System.out.println("\t<!-- WEBPAGE ANNOTATIONS -->");
System.out.println(" ");

rsWorksheetToWebpage = stmtWorksheetToWebpage.executeQuery(
    "SELECT pliny.Resource.ResourceKey AS WorksheetResourceKey,"
    + " pliny.Resource.FullName AS WebpageTitle,"
    + " pliny.Resource.Identifier AS WebpageURI,"
    + " pliny.Resource.ObjectTypeKey AS ObjectTypeKey,"
    + " pliny.Resource.CreationDate AS CreationDate,"
    + " pliny.Resource.Attributes AS PdfAttributes,"
    + " pliny.Resource.CreationTime AS CreationTime"
    + " FROM pliny.Resource"
    + " WHERE "
    + " ( pliny.Resource.ObjectTypeKey="
    + PlinyWebpageCode
    + " OR pliny.Resource.ObjectTypeKey="
    + PlinyPdfCode
    + " OR pliny.Resource.ObjectTypeKey="
    + PlinyImageCode
    + " )"
);

// One entry results, for each annotated webpage, PDF/image.
// There can be any number of annotated things with their annotations stored in the
database.

while(rsWorksheetToWebpage.next()) {
    WorksheetResourceKey = rsWorksheetToWebpage.getInt("WorksheetResourceKey");
    ObjectTypeKey = rsWorksheetToWebpage.getInt("ObjectTypeKey");

    if (ObjectTypeKey.equals(PlinyWebpageCode)) {
        WebpageTargetURI = rsWorksheetToWebpage.getString("WebpageURI");
    } else if ( (ObjectTypeKey.equals(PlinyPdfCode))

```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
    || (ObjectTypeKey.equals(PlinyImageCode)) ) {

        WebpageTargetURI = rsWorksheetToWebpage.getString("PdfAttributes");
        // Now strip newlines. Example contents:
        // #attr\n#Mon Feb 22 14:50:20 CST
2010\ncache=36\nurl=http\://ediillinois.org/ppa/docs/00/00/00/01/77/31/20090519195707_HARTMANN&
        NewlineIndex = WebpageTargetURI.indexOf("\n", 0);
        WebpageTargetURI = new String(WebpageTargetURI.substring(NewlineIndex + 1));
        NewlineIndex = WebpageTargetURI.indexOf("\n", 0);
        WebpageTargetURI = new String(WebpageTargetURI.substring(NewlineIndex + 1));
        NewlineIndex = WebpageTargetURI.indexOf("\n", 0);
        WebpageTargetURI = new String(WebpageTargetURI.substring(NewlineIndex + 1));
        NewlineIndex = WebpageTargetURI.indexOf("\n", 0);
        WebpageTargetURI = new String(WebpageTargetURI.substring(0, NewlineIndex -
1));

    } else {
        WebpageTargetURI = new String("FAULT");
    }
    System.out.println("\t<oac:Annotation rdf:about='urn:uuid:R-'
        + WorksheetResourceKey
        + "#AnnotationContent' />");
    System.out.println("\t\t<dc:title>"
        + rsWorksheetToWebpage.getString("WebpageTitle")
        + "</dc:title>");
    System.out.println("\t\t<oac:hasTarget rdf:resource='"
        + WebpageTargetURI
        + "' />");
    System.out.println("\t\t<oac:hasTargetContext>");
    System.out.println("\t\t\t<oac:TargetContext>");
    System.out.println("\t\t\t\t<oac:contextAbout rdf:resource='"
        + WebpageTargetURI
        + "' />");
    System.out.println("\t\t\t\t\t<oac:when>"
        + rsWorksheetToWebpage.getString("CreationDate")
        + " "
        + rsWorksheetToWebpage.getString("CreationTime")
        + "</oac:when>");
    if (ObjectTypeKey.equals(PlinyWebpageCode)) {
        System.out.println("\t\t\t\t\t<dc:type>text/html</dc:type>");
    } else if (ObjectTypeKey.equals(PlinyPdfCode)) {
        System.out.println("\t\t\t\t\t<dc:type>application/pdf</dc:type>");
    } else if (ObjectTypeKey.equals(PlinyImageCode)) {
        System.out.println("\t\t\t\t\t<dc:type>image/jpeg</dc:type>");
        // Pliny may be capable of displaying images of other formats, but does not
        // seem to keep track of the format. There may be a means to infer a format
        // through the use of the ObjectType table to identify when a new viewer is
being used.
    }
    System.out.println("\t\t\t\t</oac:TargetContext>");
    System.out.println("\t\t</oac:hasTargetContext>");

    // OAC constants
    System.out.println("\t\t<rdf:type
rdf:resource='http://www.w3.org/2000/10/annotation-ns#Annotation' />");
    System.out.println("\t\t<oac:predicate
rdf:resource='http://www.openannotation.org/ns/annotates' />");
    System.out.println("\t\t<dcterms:creator>Larry Jackson</dcterms:creator>");
    // Eventually, it would be good to modify Pliny's global data table, adding
another field.

    //
////////////////////////////////////
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```

// Top-level Pliny annotations are currently said by OAC to annotate the target
webpage.

// Find all such, and write "oac:Annotates" elements for each.
// Note that Pliny does not provide a mechanism whereby the type of
// annotation may be indicated for these top-level annotations.
//
////////////////////////////////////

rsAllTopLevelAnnosInWorksheet = stmtAllTopLevelAnnosInWorksheet.executeQuery(
    "SELECT RTop.CreationDate AS CreationDate, "
    + "RTop.CreationTime AS CreationTime, "
    + "pliny.Note.Content AS Content, "
    + "pliny.Note.TStamp AS ContentTimeStamp, "
    + "pliny.LinkableObject.Position AS DisplayPosition, "
    + "RTop.ResourceKey AS TopLevelResourceKey, "
    + "RTop.FullName AS TopFullName, "
    + "pliny.LOType.Name AS AnnoTypeName "
    + "FROM "
    + "pliny.Resource AS RTop, "
    + "pliny.LinkableObject, pliny.Note, pliny.LOType "
    + "WHERE "
    + "pliny.LinkableObject.DisplayedInKey=" + WorksheetResourceKey + " "
    + "AND RTop.ResourceKey=pliny.LinkableObject.SurrogateForKey "
    + "AND pliny.LinkableObject.SurrogateForKey>0 "
    + "AND pliny.LinkableObject.TypeKey=pliny.LOType.LOTypeKey "
    + "AND pliny.Note.ResourceKey=RTop.ResourceKey"
);

System.out.println(" ");
System.out.println("\t\t<!-- TOP-LEVEL ANNOTATIONS WITHIN WEBPAGE -->");
System.out.println(" ");

while (rsAllTopLevelAnnosInWorksheet.next()) {
    TopLevelResourceKey =
rsAllTopLevelAnnosInWorksheet.getInt("TopLevelResourceKey");

    System.out.println("\t\t<oac:hasContent>");
    System.out.println("\t\t\t<pl>Note rdf:about='urn:uuid:R-"
        + TopLevelResourceKey
        + "#AnnotationContent'>");

    System.out.println("\t\t\t\t<rdf:type
rdf:resource='http://oac.grainger.illinois.edu/pliny/"
        + rsAllTopLevelAnnosInWorksheet.getString("AnnoTypeName")
        + "'/>");

    // The above will need to be thought through, then revised. In the example
worked through, the AnnoTypeName field contained 'elaboration', but that term is just made up.
Pliny allows users to make up arbitrary character string labels for types (of links, and notes),
including characters which are illegal, unescaped, in XML, and/or ill-advised for use in URIs, so
there will be no way to predict the values of these strings, nor to force users to conform with
an OAC vocabulary. So, the element example following, 'pl:Elaboration' will need to be revised
to some permanent label, with 'elaboration' provided in some attribute or elemen.

    System.out.println("\t\t\t\t<dc:title>"
        + rsAllTopLevelAnnosInWorksheet.getString("TopFullName")
        + "</dc:title>");

    System.out.println("\t\t\t\t<pl:body>"
        + rsAllTopLevelAnnosInWorksheet.getString("Content")
        + "</pl:body>");

    System.out.println("\t\t\t\t<dc:terms:modified>"

```


GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
+ rsAllTopLevelAnnosInWorksheet.getString("ContentTimeStamp")
+ "</dcterms:modified>");

System.out.println("\t\t\t<dc:relation>");
System.out.println("\t\t\t\t<pl:Elaboration>");
System.out.println("\t\t\t\t\t<dcterms:modified>"
+ rsAllTopLevelAnnosInWorksheet.getString("CreationDate")
+ " "
+ rsAllTopLevelAnnosInWorksheet.getString("CreationTime")
+ "</dcterms:modified>");
System.out.println("\t\t\t\t\t\t<pl:elaborates rdf:resource='urn:uuid:R-"
+ WorksheetResourceKey
+ "#"
+ TopLevelResourceKey
+ "'>");
System.out.println("\t\t\t\t\t\t</pl:Elaboration>");
System.out.println("\t\t\t\t</dc:relation>");

System.out.println("\t\t\t\t<pl:DisplayPosition>"
+ rsAllTopLevelAnnosInWorksheet.getString("DisplayPosition")
+ "</pl:DisplayPosition>");

System.out.println("\t\t\t</oac:hasContent>");

//
////////////////////////////////////
// In passing, call the recursive routine for each child of a top-level
annotation.
//
////////////////////////////////////

rsKidsOfOneTopLevelAnno = stmtKidsOfOneTopLevelAnno.executeQuery(
"SELECT pliny.LinkableObject.SurrogateForKey AS OneKid "
+ "FROM pliny.LinkableObject "
+ "WHERE pliny.LinkableObject.DisplayedInKey=" + TopLevelResourceKey + " "
+ "AND pliny.LinkableObject.SurrogateForKey>0"
);
while (rsKidsOfOneTopLevelAnno.next()) {
OneKid = rsKidsOfOneTopLevelAnno.getInt("OneKid");
rsAllLinksToOneSpecificTarget =
stmtAllLinksToOneSpecificTarget.executeQuery(
"SELECT pliny.LOType.Name AS LinkType, "
+ "FromLO.SurrogateForKey AS FromResource, "
+ "ToLO.SurrogateForKey AS ToResource "
+ "FROM pliny.Link, pliny.LOType, "
+ "pliny.LinkableObject AS FromLO, "
+ "pliny.LinkableObject AS ToLO "
+ "WHERE pliny.LOType.LoTypeKey = pliny.Link.TypeKey "
+ "AND pliny.Link.FromLink = FromLO.LinkableObjectKey "
+ "AND pliny.Link.ToLink = ToLO.LinkableObjectKey "
+ "AND ToLO.SurrogateForKey = " + OneKid + " "
+ "AND FromLO.SurrogateForKey > 0 "
+ "AND ToLO.SurrogateForKey > 0 "
+ "ORDER BY FromResource, ToResource"
);
while(rsAllLinksToOneSpecificTarget.next()) {
System.out.println(" ");
System.out.println("\t\t\t<!-- NESTED ANNOTATION WITHIN WEBPAGE -->");
System.out.println("\t\t\t\t<oac:Annotates rdf:about='R-"
+ rsAllLinksToOneSpecificTarget.getInt("ToResource")
+ "'>");
```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```

        System.out.println("\t\t\t\t<oac:Annotation rdf:about='urn:uuid:R-"
            + rsAllLinksToOneSpecificTarget.getInt("FromResource")
            + "#AnnotationContent' />");

        System.out.println("\t\t\t\t<rdf:type
rdf:resource='http://oac.grainger.illinois.edu/pliny/"
            + rsAllLinksToOneSpecificTarget.getString("LinkType")
            + "</rdf:type>");
        System.out.println("\t\t\t\t</oac:Annotates>");
    }
    PursueNestedAnnotation(OneKid);
}
}

// ////////////////////////////////////////
// Now display all inter-annotation links to a target on the current webpage.
// ////////////////////////////////////////

if ( (ObjectTypeKey.equals(PlinyPdfCode)) ||
    (ObjectTypeKey.equals(PlinyImageCode)) ) {

    // Process the annotations which are the designated regions within a PDF or,
    // it turns out, an image.
    // In Pliny, a PDF/image subsumes the role of (webpage) "worksheet".
    // Also, and more awkwardly for translation into RDF, there is really a form
of
designated
the
entries in

    // 'implied annotation object' in Pliny PDF/image annotations, in that the
    // area within the PDF_page/image is then used as the 'from' end of a link to
    // a typical 'note' annotation box. But, the region designator does not use

    // Pliny Resource table, so Pliny ResourceKey numbers cannot be used as the
    // unique identifier. Instead, Pliny ResourceKey numbers are here given
    // an "R-" prefix, while these PDF/image regions (which are implemented as

    // the LinkableObject table) are given the prefix "LO-".
    System.out.println(" ");
    System.out.println("\t\t\t\t<!-- PDF/IMAGE AREA LINKS -->");
    System.out.println(" ");

    rsAllPdfRegions = stmtAllPdfRegions.executeQuery(
        "SELECT
        + " ParentLO.Position AS Position," // The rectangle's
coordinates within the PDF page.
        + " ParentLO.DisplPageNo AS PageNumber," // The page of
the PDF doc where this Position applies.
        + " pliny.LOType.Name AS LinkType," // The type
(semantics, a.k.a. color) of link.
        + " MyLO.SurrogateForKey AS Target," // The Resource number
of the destination of the arrow.
        + " pliny.Link.FromLink AS LONumber" // The closest thing
to a resource number for the PDF area.
        + " FROM"
        + " pliny.Link,"
        + " pliny.LOType,"
        + " pliny.LinkableObject AS ParentLO," // this is for access
to the parent's Resource entry
        + " pliny.LinkableObject AS MyLO"
        + " WHERE"
        + " ParentLO.DisplayedInKey=" + WorksheetResourceKey // This is how we know
this annotation applies to the current doc.

```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```

// Note the Resource table is not itself
necessary.
+ " AND MyLO.DisplayedInKey=" + WorksheetResourceKey
+ " AND ParentLO.SurrogateForKey=0" // This is how we know
the current doc is a PDF.
+ " AND MyLO.SurrogateForKey>0"
+ " AND ParentLO.TypeKey=pliny.LOType.LOTypeKey" // Associate
the type/color with this relationship.
+ " AND ParentLO.LinkableObjectKey=pliny.Link.FromLink" // The 'from'
link portion equates to the PDF area.
+ " AND MyLO.LinkableObjectKey=pliny.Link.ToLink" // The destination of
the link arrow.
);
while (rsAllPdfRegions.next()) {
System.out.println("\t\t\t<oac:Annotates rdf:about='R-"
+ WorksheetResourceKey // We really have to say that this region
'annotates' the PDF.
// We seem to then also have to say something linking this
region
// with the applicable Pliny 'Note' box.
+ ">");
System.out.println("\t\t\t\t<SpecificPosition>"
+ rsAllPdfRegions.getString("Position")
+ "</SpecificPosition>");
System.out.println("\t\t\t\t<SpecificPageNumber>"
+ rsAllPdfRegions.getString("PageNumber")
+ "</SpecificPageNumber>");
System.out.println("\t\t\t\t<oac:Annotation rdf:about='urn:uuid:R-"
+ rsAllPdfRegions.getInt("LONumber")
+ "#AnnotationContent' />");
System.out.println("\t\t\t\t<rdf:type
rdf:resource='http://oac.grainger.illinois.edu/pliny/"
+ rsAllPdfRegions.getString("LinkType")
+ "</rdf:type>");
System.out.println("\t\t\t\t<dc:type>Pliny-designated PDF/image
region</dc:type>");
System.out.println("\t\t\t</oac:Annotates>");
// Also need to write a link from Target to this LO#, so that the text in
the 'note'
// gets associated with the appropriate region of the PDF/image.
System.out.println("\t\t\t<oac:Annotates rdf:about='LO-"
+ rsAllPdfRegions.getInt("LONumber")
+ ">");
System.out.println("\t\t\t\t<oac:Annotation rdf:about='urn:uuid:R-"
+ rsAllPdfRegions.getInt("LONumber")
+ "#AnnotationContent' />");
System.out.println("\t\t\t\t<rdf:type
rdf:resource='http://oac.grainger.illinois.edu/pliny/"
+ rsAllPdfRegions.getInt("Target")
+ "</rdf:type>");
System.out.println("\t\t\t</oac:Annotates>");
}
}

// ////////////////////////////////////////
System.out.println(" ");
System.out.println("\t\t<!-- PROVENANCE -->");
// ////////////////////////////////////////

// Other fields which may be useful someday:

```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```

// System.out.println("Driver Name      = " + dbmd.getDriverName());
// System.out.println("Driver Version  = " + dbmd.getDriverVersion());
// System.out.println("Database URL    = " + dbmd.getURL());

System.out.println("\t\t<dcterms:provenance>");
System.out.println("\t\t\t<dcterms:ProvenanceStatement>");
System.out.println("\t\t\t\t<dc:title>Export of annotation data from Pliny's "
    + dbmd.getDatabaseProductName()
    + " database.</dc:title>");
System.out.println("\t\t\t\t<dcterms:hasVersion>"
    + dbmd.getDatabaseProductVersion()
    + "</dcterms:hasVersion>");
System.out.println("\t\t\t\t\t<dcterms:available>"
    + CurrentTime.get(Calendar.YEAR) + "-"
    + LeadingZeros.format(CurrentTime.get(Calendar.MONTH)) + "-"
    + LeadingZeros.format(CurrentTime.get(Calendar.DAY_OF_MONTH)) + " "
    + LeadingZeros.format(CurrentTime.get(Calendar.HOUR_OF_DAY)) + ":"
    + LeadingZeros.format(CurrentTime.get(Calendar.MINUTE)) + ":"
    + LeadingZeros.format(CurrentTime.get(Calendar.SECOND))
    + "</dcterms:available>");
System.out.println("\t\t\t\t</dcterms:ProvenanceStatement>");
System.out.println("\t\t</dcterms:provenance>");

System.out.println("\t</oac:Annotation>");
}

System.out.println("</rdf:RDF>");

} catch(Exception se) { se.printStackTrace();
} finally {
    if(con != null){
        try { con.close() ;
        } catch (SQLException se) { printSQLException(se) ;
        }
    }
}
} // main

static void PursueNestedAnnotation(Integer RelativeRoot) {
    // This routine, when called with an index number into the Resource table, will
    // print the RDF for that annotation, and for all the annotations nested inside that
    // annotation.
    // Note that, in OAC applications, it is not called for annotations at the top of the
    // worksheet
    // as those are said to annotate the URL, not the annotation worksheet object.

    // System.out.println("PursueNestedAnnotation: RelativeRoot='" + RelativeRoot + "'.");

    ResultSet rsMe = null; // This copy is local to this invocation of this recursive
    routine.
    ResultSet rsMyKids = null; // Ditto.

    try {
        // //////////////////////////////////////
        // Determine everything about me.
        // //////////////////////////////////////

        rsMe = stmtLookMeUp.executeQuery(
            "SELECT pliny.LinkableObject.DisplayedInKey AS MyParent, "
            + "pliny.Resource.FullName AS MyFullName, "
            + "pliny.Resource.CreationDate AS MyCreationDate, "
            + "pliny.Resource.CreationTime AS MyCreationTime, "

```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```

+ "pliny.LinkableObject.Position AS MyDisplayPosition, "
+ "pliny.Note.Content AS MyContent, "
+ "pliny.note.TStamp AS MyContentTimeStamp, "
+ "pliny.LOType.Name AS MyType "
+ "FROM pliny.LinkableObject, pliny.Resource, pliny.Note, pliny.LOType "
+ "WHERE pliny.LinkableObject.SurrogateForKey=" + RelativeRoot + " "
+ "AND pliny.Resource.ResourceKey=" + RelativeRoot + " "
+ "AND pliny.Note.ResourceKey=" + RelativeRoot + " "
+ "AND pliny.LOType.LOTypeKey=pliny.LinkableObject.TypeKey"
);
while (rsMe.next()) { // There'd better be only one element in this result set!

// //////////////////////////////////////
// Print the RDF for the current node.
// //////////////////////////////////////

System.out.println("\t\t\t<oac:hasContent>");

System.out.println("\t\t\t\t<pl>Note rdf:about='urn:uuid:R-"
+ RelativeRoot
+ "#AnnotationContent' />");

System.out.println("\t\t\t\t\t<rdf:type
rdf:resource='http://oac.grainger.illinois.edu/pliny/"
+ rsMe.getString("MyType")
+ "</rdf:type>");

System.out.println("\t\t\t\t\t<dc:title>"
+ rsMe.getString("MyFullName")
+ "</dc:title>");

System.out.println("\t\t\t\t\t<pl:body>"
+ rsMe.getString("MyContent")
+ "</pl:body>");

System.out.println("\t\t\t\t\t<dcterms:modified>"
+ rsMe.getString("MyContentTimeStamp")
+ "</dcterms:modified>");

System.out.println("\t\t\t\t\t<dc:relation>");
System.out.println("\t\t\t\t\t\t<pl:Elaboration>");
System.out.println("\t\t\t\t\t\t\t<dcterms:modified>"
+ rsMe.getString("MyCreationDate")
+ " "
+ rsMe.getString("MyCreationTime")
+ "</dcterms:modified>");
System.out.println("\t\t\t\t\t\t\t<pl:elaborates rdf:resource='urn:uuid:R-"
+ rsMe.getInt("MyParent")
+ "#"
+ RelativeRoot
+ "' />");
System.out.println("\t\t\t\t\t\t\t</pl:Elaboration>");
System.out.println("\t\t\t\t\t\t</dc:relation>");

System.out.println("\t\t\t\t\t<pl:DisplayPosition>"
+ rsMe.getString("MyDisplayPosition")
+ "</pl:DisplayPosition>");

System.out.println("\t\t\t\t</oac:hasContent>");

// //////////////////////////////////////
// Determine all my kids, and re-call this routine about each of them.

```

GSLIS Technical Report #ISRN UIUCLIS--2010/2+OAC

```
// ////////////////////////////////////////

rsMyKids = stmtMyKids.executeQuery(
    "SELECT pliny.LinkableObject.SurrogateForKey AS AKid "
    + "FROM pliny.LinkableObject "
    + "WHERE pliny.LinkableObject.DisplayedInKey=" + RelativeRoot
    );
while (rsMyKids.next()) {
    PursueNestedAnnotation( rsMyKids.getInt("AKid") );
}
} catch (Exception se) { se.printStackTrace();
} finally {
    if(con != null){
    }
}
}

static void printSQLWarning(SQLWarning sw) {
    while(sw != null) {
        System.out.print("SQLWarning: State=" + sw.getSQLState() );
        System.out.println(", Severity = " + sw.getErrorCode() );
        System.out.println(sw.getMessage());
        sw = sw.getNextWarning();
    }
}

static void printSQLException(SQLException se) {
    while(se != null) {
        System.out.print("SQLException: State: " + se.getSQLState());
        System.out.println("Severity: " + se.getErrorCode());
        System.out.println(se.getMessage());
        se = se.getNextException();
    }
}
}
```