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Methodology for Creating Digital Scholarship Projects

Charles W. Kann

Gettysburg College

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Abstract

Colloquium talk describing a methodology for creating Digital Scholarship projects.

Keywords

Digital Scholarship, Digital Humanities, digital technologies, technology in education, social media, higher education, Web 2.0, digital representation of research, digital presentation

Disciplines

Digital Humanities | Public History

Methodology for Creating Digital Scholarship Projects:
Colloquium Talk
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Dr. Charles W. Kann

My Background

- A Civil War and History buff (common to Gettysburg)

- Started playing around with tools which could be used to document the war and battle.

  - Time Maps

  - Geographic Information Systems (historicgettysburg.us, http://historicantietam.us).

Common Misconceptions

- Humanities and Social Scientists generally have a number of misconceptions about Digital Tools:
    - Too difficult to use
    - Can be use to enhance existing research products
    - Teaching tools is teaching skills (especially if it is skills that can be used on a job)
    - Digital tools have the potential to change everything

Digital tools are too difficult to use

- I have taught non-majors computer science classes for 10 years. Every other faculty member and TA I have taught with have come to the same conclusion.

- HTML (static context) is easy for the majority of students.

- Javascript (dynamic context) is very hard.

- Most digital tools work with static content.

- I firmly believe that digital tools are not too difficult for the majority of students. The same might not be true for their faculty, and might be why this idea has adherents.

Problem: No Methodology for Creating Digital Humanities content.

- To integrate digital tools into a research process, a research process that includes those tools has to be defined.
- Computer Science have dealt with this problem for years doing systems development.
  - Waterfall, Agile Methods, Extreme Programming, Test Driven Development, etc.
- I could find no equivalent methodology for doing undergraduate research into which digital tools could be easily incorporated.

Suggest a methodology

- Start with [research methodology](#) (note, more about hypothesis proving).

- Merge with [Data-Information-Knowledge-Wisdom](#) (DIKW) model

- Create a new model for undergraduate student research.

Proposed Research Methodology

- Identify Research Problem
- Provide a Functional Description of the Research
- Collect the Raw Information
- Organize the Information
- Represent the Information
- Create the Final Research Product

Identify the research problem

- This is simply a topic that the student is interested in. In a student research topic, it is often important that this topic be discussed with the teacher in order to obtain a proper scope for a paper.   Developing the topic step will likely not use digital tools.

- The best output from this process is a single sentence, which can be referred to focus and limit the scope of the research product(s).

Provide a functional description of the research

- The concept of a functional description comes from Software Design Methodology.
- This step is a combination of the Literature Review, Specification of the purpose of research, and Determination specific research questions or hypotheses. It is heavily influenced the teacher, who should be a professional researcher.
- The functional description provides the central questions which will be asked by the research, the scope of the research, and the methods which will be used to defined the research.
- The functional description is a basic outline of what will be in the paper, and thus defines what type of data will be collected, how the paper will be organized, and provide a direction on how to represent the research and how to present the final conclusions.

Collection the raw information

- Collection of information is a fairly mechanized step, so can be influenced by digital tools.
- Rather than using index cards, students can keep tract of notes in digital tools made to gather data and make it accessible to other digital tools.
  - If a book or article is online, it might be possible to hyperlink directly to the source document.
  - If data values need to be collected and manipulated, often large repositories of data are available online, and digital tools like spreadsheets were made to collect and manipulate data sets.
  - Pictures can be collected and tagged into online photo albums.

Organization of the information.

- Once the initial data has been collected electronically, there are many of tools for organizing it around almost anything.
  - Data can be grouped by time, geospatial coordinates, themes, hyperlinks, photo albums, or just about any relationship
  - Different organizations can be tried to see how that impacts the raw data.
  - Organizations will use tools and formats such as XML, HTML, Spreadsheets, etc, which will be directly usable in the next Representation step.
- Digital tools have a marked advantage over traditional non-digital research in information organization

Representation of the data.

- Once the data have been organized, they can be represented.
  - Timelines can be created, and pictures placed at appropriate points.
  - Tables of themes can be created, and supported by including the data from a primary source.
- If a representation does not quite fit the purpose, it can be easily changed.
- At this point the power of having the created in a digital format can be realized.

Creation of the final product

- This final product could be a paper, online web presentation, talk, etc. It is created by coming to conclusions based on the patterns found in the represented data

- The final product should be organized around the representations which have been created to support those conclusions.

- This greatly simplifies the creation of the final product, as all the steps in the research process have been building towards the final product.

Representation of the information

- This step occurs at the end of the process just before beginning the research products.

- However what types of representations must be defined early in the process while developing the functional description.

So What's the Problem with Digital Scholarship?

- Most digital scholarship is seen as an add on to add value to the content of a paper or project.

- Of course, it seems hard to do, does not really add much value, and appears to pasted on, not an intrinsic part of the research.

- Well, it is not an intrinsic part of the research, so it is pasted on, and really does not fit the research problem.

What I Believe will work for Digital Scholarshp, and Why

Type of Research Product

- The type of the research product will determine the type(s) of representations:
  - A research paper will mean that all representations must be passive (e.g. pictures)
  - A pdf research paper published to the web can have limited interaction, such as web links.
  - A talk, such as a Power Point Presentation, can have interactions like animations.
  - A web product can have large amounts of interaction.

Passive/Active Interaction

- Passive/Active interaction with representations describes how much a reader can interact with the representation.

- At one end, a passive interaction would be a simple picture or image.

- At the other end, an active interaction would be Goggle maps, where the user can select new points, get directions, move paths, zoom in/out, etc.

Static verses Dynamic Information

- Static and dynamic information represent a different dimension from interaction.
- Static information is information that is defined once before it is presented. It can still have interaction.
  - Time maps
  - Generally consists of spreadsheet data, XML data, etc. Information is coded and reused, but only coded once and does not change (information is static)

Dynamic Information

- Dynamic Information is generated when the information is presented.
  - Dynamic information can be passive
    - Looking up movies on a web site
  - Dynamic information generally requires a server side process of some type
    - Information is sent and results generated
    - Google maps directions
    - SQL queries

Representation of the data

- Representations can exist of static or dynamic content, and active or passive interaction.

Static Content, Passive Interaction	Static Content, Active Interaction
Dynamic Content, Passive Interaction	Dynamic Content, Dynamic Interaction

- Observation – Most non-programmers can deal with static content, regardless of the interactivity. Most non-programmers cannot deal with dynamic content (e.g. Javascript)

Programmers and Content

- Static content implies an organization of information, a skill most non-programmers can quickly acquire.

- Dynamic content requires skills which normally take an advanced user or programmer to accomplish.

What this means?

- Static content does not mean passive interaction!

- When non-programmers say something is too hard to understand, it is almost always about generating dynamic content.

- While it can require some learning to understand tools to encode static content, generally most student can learn HTML, XML, spreadsheets and templates, etc.

Conjecture

- Non programmers can easily add active content to research with no programming support.

- It is more important to categorize tools in terms on type of content (static or dynamic content) than on type of interactivity.

- Tools should be built around using static content.

Categorizing Media

- This two dimensional table of interactivity and content generation gives a method to categorize representations.

- These categorizations will be useful when deciding on the type of representations to use.

Things that can be represented

- Images
- Graphs
- Video
- Sounds
- Geographic Information Systems
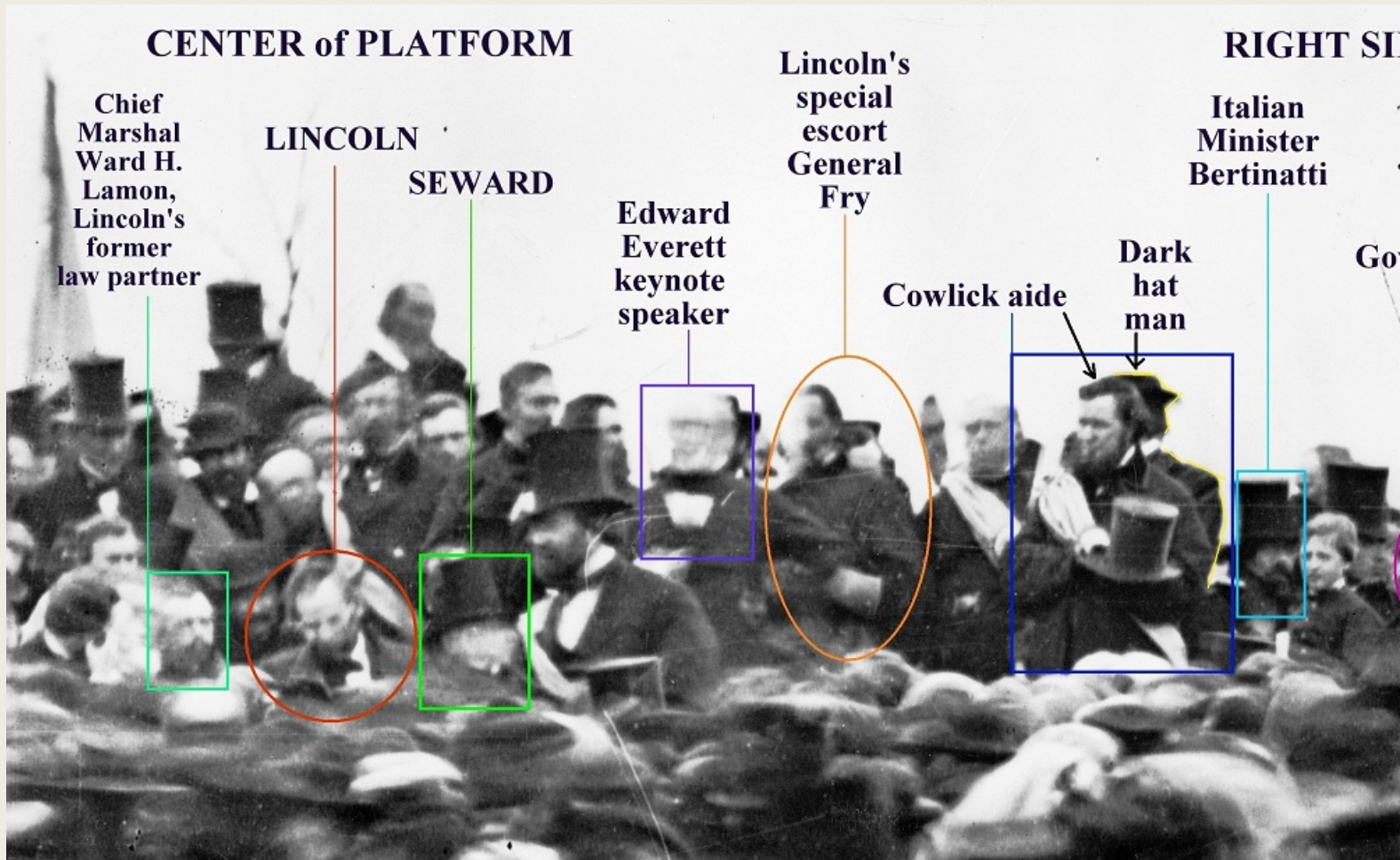 - Tours
- Time

An Example

An Example

- The simplest yet perhaps the most powerful type of media to represent is an image.

- Start with a static image, Alexander Gardner's picture of Lincoln at Gettysburg

Lincoln At Gettysburg

Marked Up Picture

Some interactivity

- http://www.whatwasthere.com/browse.aspx#!/ll/39.820884,-77.229208/id/47949/info/details/zoom/14/

Better interactivity

- http://www.smithsonianmag.com/history/Interactive_Seeking_Abraham_Lincoln_at_the_Gettysburg_Address-180947919/?no-ist
- Uses "image-map" type technology, some overlaying

Simple Tools like Prezi

- https://prezi.com/gwdwyanojoxo/dissecting-one-of-americas-most-powerful-speeches-lincolns-gettysburg-address/

Other things which can be done with images

- Virtual Tours
- Fading and
- 3-D sites
  - http://www.historicgettysburg.us/3d/First_Ohio_Artillery/

Where things stand

- Basic methodology is defined.
- Starting to define representations which are static content and active or passive interactions to categorize tools which can be used.
- Need to start to define organization tools (XML, spread sheets, photo albums, dbms, etc.
- Start evaluating tools for collecting the data.