

Curation, Curation, Curation

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ABSTRACT

The media curation craze has spawned a multitude of new sites that help users to collect and share web content. Some market themselves as spaces to explore a common interest through different types of related media. Others are promoted as a means for creating and sharing stories, or producing personalized newspapers. Still others target the education market, claiming that curation can be a powerful learning tool for web-based content. But who really benefits from the curation task: the content curator or the content consumer? This paper will argue that for curation to fully support learning, on either side, then the curation site has to allow the content curator to research and tell stories through their selected content and for the consumer to rewrite the story for themselves. This brings the curation task inline with museum practice, where museum professionals tell stories through careful selection, organization and presentation of objects in an exhibition, backed up by research. This paper introduces the notion of ‘recuration’ to describe a process in which shared content can be used as part of learning.

Categories and Subject Descriptors

H.5.4 [Information Systems]: Hypertext/Hypermedia - architectures, theory, user issues

General Terms

Experimentation, Human Factors, Theory

Keywords

recuration, curation, narrative, story telling, learning, web content, curatorial inquiry

1. INTRODUCTION

Improved web infrastructure and storage has opened up a multitude of possibilities for the re-use of web-content in the past few years. Users can select, collect, annotate, tailor, organize and present content of multiple media types. A single piece of content can ultimately be used in many different contexts to the one for which it was originally intended. These types of processes are not at all dissimilar to those of museum curators. Thus, curation seems a reasonable term to adopt to describe it.

However, digging deeper there is more behind the process of

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museum curation that is not always addressed or supported by web content curation sites. A curated exhibition is based on the knowledge and research of one or more experts in the field. This research informs both the selection and organization of the objects. Importantly, the curator offers an interpretation of the how the objects relate to one another. Essentially, they tell a story: about a period in history, about a culture, the life of an artist, about scientific discovery. The story can be conveyed explicitly through the narrative of text panels, but is sometimes only hinted at, for example through the grouping, proximity and placement of objects in a physical space. This reflects a move in museum exhibitions towards a more visitor-centered experience, based on Constructivist views of learning [4]. Instead of imposing a grand narrative for a visitor to passively experience, the visitor is encouraged to actively explore and build their own connections and stories and, in the process of active engagement, to learn [6]. See [8] for an example in practice.

Therefore, curation is often about knowledge and learning, where the result of a curators' own learning is an output that is carefully designed to prompt and facilitate learning of others [2][9]. A secondary learner need not follow the same path as the curator, nor reach the same conclusion. Instead they might choose to access the story in a different way and make different interpretations. This learner might even bring in additional knowledge and personal interests, backed up by further research to produce a completely new output of their own. This paper proposes this as a *curatorial inquiry learning cycle*, with the act of learning from a curated output being referred to as *recuration*.

The remainder of this paper will explore these terms and will assess existing curation tools in terms of the extent to which they support this cycle. The paper will speculate as to when learning occurs during the act of curating. For example, does learning occur simply from selecting content, or as the user annotates it, or as they explore underlying connections to tell a story, or as they create a coherent presentation of their content for an audience.

2. CURATORIAL PROCESSES

Analysis of museum practice has revealed that there are several stages to creating a museum narrative, such as a curated exhibition.

The first stage is *research*, which includes forming a *question/topic* around which to build the narrative, this could be based on one or more objects that are available, or on the particular area of expertise of the curator, or a topic of interest to the local community, etc. [2] This sets up an area of inquiry that the curator continues to explore and develop throughout the rest of the curation/narrative building process [9][5]. The curator begins to select and collect objects related to this inquiry topic, which provide some kind of evidence about the story they want to tell. Objects may be annotated according to many different properties,

such as when they were made, who by, what they are made of. The curator might add their own annotations, interpreting the object in the context of the narrative that is being developed [3]. For example, should the painting be described according to when it was painted and who by, or should it be described according to what is depicted in it? The curator might write a story about an object, based on which perspective is relevant for this object when it is being viewed in the context of other objects in the exhibition [6], to be displayed alongside the object when it is on display.

In addition to the descriptions of the individual objects, the curator will investigate how objects relate to each other, possibly bringing in contextualizing information. This type of information is often presented in a physical exhibition via text panels, or in an exhibition handout. It draws together the different strands of part, or all, of an exhibition into a more coherent story that addresses the topic/question addressed through the exhibition narrative.

The final stage of the process involves the display and presentation of a completed museum narrative, in effect sharing the story with a wider audience. The narrative output is not limited to a physical exhibition, but encompasses diverse outputs such as online galleries and museum websites, handouts, exhibition catalogues, educational activities, lectures, tours and audio guides. Depending on the medium and the target audience, the curator must decide how to present the story [5]. This includes determining an organization of the objects, as well as choosing how much of the individual object stories and over-arching main exhibition story to make explicit. When the story is not overtly told, there is more opportunity for the visitor/reader to make their own interpretations, restarting the cycle, and undertaking for themselves some or all of the above curatorial processes.

2.1 A Curatorial Inquiry Learning Cycle

This same process can be demonstrated to support other tasks outside a museum setting, particularly inquiry-based learning tasks such as a historical inquiry where there isn't a single correct interpretation. A good example of this is a historical inquiry from primary and secondary sources. QrAte proposes an approach to support historical inquiry through a curation task, in which a learner is assisted in building stories around the primary and secondary source evidence [10]. Learning occurs through the process of developing a coherent story in response to the inquiry question and in curating the web-based source materials to reflect this understanding.

The QrAte approach is aimed at producing an output that communicates the learner's own understanding of the task through a coherent response to the inquiry question, whilst also providing a curated 'reference list' of sources that can feed into a new learners inquiry. The goal of the new learners inquiry is to *recurate* these objects into a new presentation, during which process they may discover logical inconsistencies and other possible interpretations to be reflected in their own outputs.

This can be conceived of as a curatorial inquiry learning cycle (see figure 1), which follows the same processes as a museum curation.

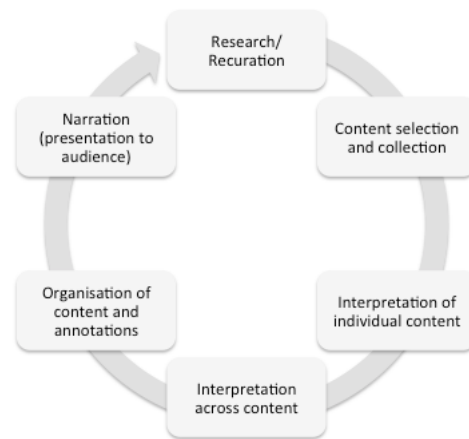


Figure 1. A Curatorial Inquiry Learning cycle

To summarise, the stages of a curatorial inquiry learning process using web content are:

- Research – choose a learning goal and define the task boundaries.
- Content selection and collection – filtering out the bad resources and highlighting the good.
- Interpretation of individual content – annotate individual content to identify important points.
- Interpretation across content – annotate from a task perspective, finding the important relations linking content and annotations.
- Organization - organising the content and annotations in respect to an underlying coherent story addressing the learning goal.
- Narration - presentation to an audience through a chosen medium.
- Research/recuration - the process through which the audience become participants in a narrative construction based on a previously curated output. Includes reflection (the author can recurate to improve understanding).

While preliminary learning goal and question setting occurs during initial research, new questions or focus may emerge during the process of finding, interpreting and organising content. This in turn may prompt additional collection and re-interpretation. Although not explicitly shown in Figure 1, the learner may return at any point in the inquiry to an earlier point and recontinue the cycle from there.

2.2 The linking of curation to learning

The notion that curation and learning are somehow linked is well-supported informally.

Jeff Cobb¹ says:

'If you really want to learn a body of knowledge or skills (or whatever other learning area you define), it is really hard to beat becoming a curator for that area. In a sense, this is what academics have always done.'

¹ <http://www.missiontolearn.com/2010/03/content-curator/>

It is the topic not only of many blogs, but also of many ‘curated’ sites. One of the authors of this paper made one using Bag the Web: <http://www.bagtheweb.com/b/GkSOpo>. This contains links to a number of web-based reference materials on this subject. Another example created by someone else using ‘Scoop.it’ (and taken from the above ‘bag’) can be found at <http://www.scoop.it/t/content-curation-for-online-students>. A common theme from these pages is that for learning, content curation cannot be merely about collecting, but must include the interpretation and organisation as well, for example, from Beth’s Blog²:

‘Content curation is not about collecting links or being an information pack rat, it is more about putting them into a context with organization, annotation, and presentation.’

3. CONTENT CURATION TOOLS

If principles of museum curation combined with inquiry learning can inform how a user can best learn across a set of content, then content curation tools might be a readily available means to support such learning. But in order for this to be the case, then there may be certain key features that the tool must support.

Currently, there are multitudes of content curation tools available, many with different specialities. These fall under five basic categories. A few examples of tools available under each category are given. Whilst the examples are by no means exhaustive, they encompass a large range of features and cover a good range of what is currently available. This representative sample will therefore be used to assess curation tools in the remainder of the paper. The categories and examples are:

- Storytelling: creating stories by linking web content, particularly social media such as twitter
 - storify
- Collecting: collecting web content under thematic headings, often includes theme-linking
 - bag the web, pearltrees, Pinterest
- Learning: create learning tasks from web content
 - learnist, Livebinders
- Clipping: collect web-clippings, such as text portions and images from pages
 - clipboard
- Publishing: curate your own newspaper by selecting news stories from diverse sources around a common topic
 - paper.li, Scoop.it

In order to know which of these can be best used to support learning from web content, it is necessary to understand which parts of the curation process are critical for learning to occur. The key questions are:

- 1) Is there a relationship between the extent to which content is curated and how much is learnt? Specifically, does learning increase as the user travels further along

the curation path from collecting content -> interpreting individual content -> interpreting it with respect to other content -> organising it to tell a story -> narrating/sharing the story.

- 2) Can a learner benefit by using a previous learners output as a starting point for learning, or is it better for each learner to start from a blank slate. If recurating someone elses output is better than starting from scratch, then is there an optimal amount of pre-curated information to provide at each stage of the curatorial inquiry?
- 3) To what extent are these processes supported by social curation tools? Does the tool support a user to recurate existing content?

Understanding the issues around questions 1 and 2 will inform how we analyse curation tools to answer question 3. These three questions are now examined in more depth.

3.1 The relationship between curating and learning

The first key question is which curation processes are most essential to assist learning. These processes are examined in turn. In each case a proposal is made as to the role of the process in assisting the learner. At the end of the paper, a proposal will be made as to how to test some of these assumptions.

3.1.1 Research

The research and initial task setting, either by the learner or a teacher, is important throughout all stages of the inquiry as it defines the boundaries of the task and is used for assessing progress.

3.1.2 Content selection and collection

Content collection involves deciding which content is relevant to a task and which is not. Whilst it should involve at least some assessment of the content, to decide if it is relevant or not, as mentioned previously much speculation exists as to whether simply collecting links is enough for learning. It seems reasonable to suggest that deeper processing of the source materials will occur as the user annotates each piece of content.

3.1.3 Interpretation of individual content (content annotation)

Interpretation of content should occur in the context of the learning goal: like the museum examples mentioned previously, a piece of content can be subject to multiple different interpretations depending on the context it is being viewed in. Interpretation can be realized through **content annotation**. This is aimed at identifying the relevant parts of each unit of content and minimizing the distraction of information that is redundant to the task at hand. Incorrect annotations that include task-irrelevant details may need be corrected as the learner gains more understanding throughout the task.

3.1.4 Interpretation across content (task annotation)

Content cannot be viewed in isolation, but must be considered against the other selected items. When interpreting across the resources to understand the relations between them, the learner might find it useful to make annotations that belong to a task, rather than to an individual unit of content. Interpretations about groups of content can be realized through **task annotations**.

² <http://www.bethkanter.org/content-curation-101/>

Annotation can be *tagging, writing notes, or selecting the relevant part or parts of the resource*. Since it is part of an ongoing learning process, there must be the *facility to easily change the annotations* as new information comes to light.

Creating annotations through interpretation has parallels with story-building when viewed from a structuralist [1] viewpoint. The annotations can be thought of as events of the story, and the relations are the emplotment according to the authors personal viewpoint.

Based on the above, the proposal is that the quality of content annotations with respect to a given task will be better if the learner provides interpretations across content than if they annotate each item individually. The quality of annotations reflect the learners understanding.

3.1.5 Organisation

As the learner annotates and interprets content, a logical part of this process is the physical organisation of content and annotations to reflect the underlying story. This not only assists the learner in building a coherent understanding, but is also a vital step towards the next stage of presentation. Organisation can be part of interpretation. If the user can move content and annotations around and consider different items in proximity, or in different groupings, this might help the learner in interpreting across content. In fact, Leat [7] has found that this type of organising is a natural strategy to schoolchildren doing this type of task on paper. Taking this into consideration, it seems possible that being able to organize the content will benefit learning from it.

3.1.6 Narration

Whilst the organization in the previous step is aimed at helping the learner to understand and make clear the relationships in the story for their own purposes, the narration stage is aimed at communicating this understanding to other people. This is the *narrative output* of the story and underlying plot. Creating the narrative presentation might be as simple as pressing a 'publish' or 'share' button, making all of the task materials publically available, or the learner might use other output mediums, such as essays or posters. During narration, the learner may reflect on their output and the extent to which they have addressed the task.

Some principles of narration could potentially affect future learners. For example, if the goal is to produce an output from which others can easily learn, then an internet output where the future learners can directly obtain the materials for themselves is better than a poster - unless the poster is backed up by access to all of the source materials.

To understand these issues about narration, it is necessary to answer the second key question, which asks whether better learning occurs when using a previous learners (or teachers) output to guide the task, or if starting from scratch is better. If learning from someone elses output, what should the learner have access to: the content; the interpretations in the form of content and task annotation; their organization; their narrative output?

It is possible to conceive of an experiment to try to answer these questions. The experiment would compare the output of learners on the same task, in different conditions. Output would be assessed according to a marking scheme. Additionally, learning and understanding would also be assessed through a series of questions aimed to test not only how well the learner has understood individual content but the extent to which they have

applied interpretations across content, as an example if they have recognized contradictory or confirmatory information in two different sources. Conditions would include:

- 1) Learning by collection
- 2) Learning by individual content interpretation
- 3) Learning by Interpretation across content
- 4) Learning by Organisation
- 5) Learning by Narration
- 6) Learning from Blank slate
- 7) Learning from collected content
- 8) Learning from curated content

Rather than examining each curation process in isolation, stages 1->5 are accumulative, i.e. when learning by annotation, first the learner must collect. In cases 6->8, the learner addresses the same task goal but with varying support given by prior learner output at each stage. Specifically, in case 7 the learner is working from an output that might be produced from learners in condition 1. In 8, the learner is working from an output that might be produced by learners in condition 4. Similarly, it is possible to think of further conditions along these lines where annotations are/are not given. The study would also compare the quality of annotations of learners in the 'learning by annotation' group with those in the 'learning by interpretation' group.

3.2 The support of current curation tools to key learning processes

Through exploring the processes by which learning through curation might occur, it is possible to propose specific functionalities that will support the important aspects. With this in mind, the social curation tools mentioned in the beginning of section 3 will be analysed according to the extent to which they support the following features:

- F1: Collection: collect content under a task heading (also considering the source of content, e.g. You Tube, Twitter)
- F2: Interpret individual content: annotate content (tagging, note-making, clipping)
- F3: Interpret across content: make task annotations, i.e. annotations that apply to sub-groups of content
- F4: Editing of existing annotations: revisiting and refining is an important part of the process
- F5: Organisation: facility to organise both content and annotations
- F6: Narration: presentation of output in a way that facilitates *recuration*

The results can be seen in Table 1. As can be seen from this table, most sites support some kind of content annotation, although the extent to which notes were easily viewable alongside content, or could be edited, varied a great deal. Storify was the only tool that provided good functionality for providing interpretation across content through task-related annotations that weren't tied to a particular piece of content. This goes some way to mitigating the key issue with Storify, which is that individual content annotation wasn't very flexible. Very few sites allow the collected content to be flexibly organised by the user. This is particularly surprising when looking at the sites specifically targeted towards learners.

Pearltrees is the only site to allow a non-linear organisation of the content. All sites promote the re-use of their content making it easy to take items that have been selected by another user and add them to the users own topic.

4. CONCLUSION

This paper explores a link between curation and learning. Curation is the process of selecting content and telling a story about it. Curation commonly involves research and inquiry methods. Each stage of the curatorial process builds meaning upon a previous stage, therefore this paper proposes that the further along the curation path the curator goes, the more they learn. Contrasting this with many social curation tools that facilitate nothing more than collection, a conclusion can be drawn that many social curation tools do not fully exploit the potential of curation, even those that are targeted towards learners. This is not intended as a critique of social curation tools - each has been designed to fit a specific purpose - but as a way to propose potential new directions for development or useful features that would help people who want to use the tool as part of a learning

task. An experiment is proposed that could validate the assumptions made. Does the learner really learn more when they can annotate content, then even more if they can talk about what links the content and physically organize everything to reflect their developing understanding? Can a curated output improve a future learner's chances of understanding and building upon the same topic? What stage of curation is best (e.g. most effective) for support: the collection stage which filters out bad or irrelevant content and highlights the most useful, or a fully curated output where the content is ordered according to an underlying logic of how the items are linked, including the original learners own explanations?

While the paper does not offer any concrete answers to these questions, it hopefully prompts some thought around the subject that will lead to research in this topic.

Table 1. An analysis of social curation tools

<i>Tool focus</i>	Tool	F1 ³ : collect	F2: interpret (individual)	F4: interpret (across)	F3: editing annotations	F5: organise	F6: narrate/ recurate
<i>story-telling</i>	storify	W, SM	Notes – but only viewable in some contexts	Yes – can add text nodes	Yes – task No - content	Yes	Yes
<i>collect</i>	bag the web	W	Notes	No	Yes	Yes	Yes
	pearltrees	W	Notes – see also notes from other user	No	Yes – own only	Yes – non-linear	Yes
	pinterest	I	Notes	No	Yes	No	Yes
<i>learn</i>	learnist	W, O	Notes	No	Yes	No	Yes
	Livebinders	W, SM, O	Notes, tagging	No	Yes	No	Yes
<i>clip</i>	clipboard	W	Notes, clips	No	Yes	No	Yes
<i>publish</i>	paper.li	W, SM	No	No	N/A	No	Yes
	scoop.it	W, SM	Notes, tags	No	Yes	No	Yes

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³ W= web content

SM = Social Media (Facebook, Twitter, Youtube, Flickr)

O= own content

I = images