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ABSTRACT

The process of emplotment refers to the selection of significant events in a story and the identification of pertinent relations between them, in order to produce a plot providing an interpretation of those events. We are investigating how models of emplotment can be applied to develop web-based tools for creating and interpreting narratives. In particular, we are focusing on the process undertaken by art gallery professionals to design and present exhibitions. This paper presents a set of plot relations developed in collaboration with museum professionals from two national galleries in Ireland, and shows how theories of narrative and digital cultural heritage research have informed the development of an ontology and system to support the authoring of curatorial narratives.

Categories and Subject Descriptors

H.1.0 [**Information Systems**]: Models and Principles

General Terms

Design, Documentation, Human Factors.

Keywords

Cultural heritage, emplotment, event-based representation, interpretation, narrative.

1. INTRODUCTION

Recent research on cultural heritage applications have used a range of event-based representations to generate narratives from events sharing common properties, such as events involving the same person, occurring in the same place, or of a common type [1,7,8,15,16]. However, little work has been done in this context on the use of plot relations, and how they can be applied to help users construct and interpret narratives. Structuralist approaches to the analysis of narrative distinguish between story, plot and discourse [2,6,14], where the story identifies a set of events relevant to the theme of the narrative, the plot selects a subset of the story events and offers a set of relations between them that provide an interpretation of the events, and the discourse communicates the story and plot to the reader.

This paper focuses on the development of plot relations and their application within the context of curating art gallery exhibitions. Through working with curators and other museum professionals in two national art galleries in Ireland an ontology for constructing curatorial narratives has been developed, along with a web-based system, which uses the ontology to support the curatorial design process. Our overall goal is to develop tools which can be used by curators to support their selection and organisation of art works, and by other museum professionals to facilitate the authoring of supporting exhibition texts (e.g. exhibition audio guides, room descriptions and educational materials). In turn, these tools can also be used to support the visitor's interpretation of the exhibition and further exploration of the associated objects and events. The plot relations proposed here were informed by related work on narrative structures [2,6] event ontologies and relations [4,9,10,13] and cultural heritage applications [1,3,5,7,8].

2. CURATE ONTOLOGY

The curate ontology was proposed for describing aspects of curatorial narratives and their underlying conceptual structure [11,17]. A story (i.e. what can be told) is conceptualised as a set of events that can be described according to facets such as time, location and theme. A plot (i.e. an interpretation of the story) is then represented as the specification of a network of significant relationships between the events of the story, thereby, imposing a particular interpretation on the story. Finally, the narrative discourse (i.e. its presentational form) refers to the structure of the presentation that could be, for example, a physical or hypermedia space.

Two types of narrative are distinguished within the curate ontology: heritage object narratives and curatorial narratives. A heritage object narrative tells a story about an object. These may be, for example, the description of the heritage object in an exhibition catalogue, or the text label or audio guide description associated with the object in a gallery. A curatorial narrative weaves threads across events in order to create a narrative, such as a museum exhibition. In this way, a curatorial narrative makes relationships across a set of exhibits, yielding richer and more complex insights than could be made from the exhibits individually.

The plots, events and story components are used to represent story emplotment. As noted previously, different narratives and plots can be formed from the same story (e.g. in order to tell the story in a different media, or to emphasise different points of view). Considering the organisation and exploration of story events, an event included in a story has an associated event description that characterises the event according to the facets of the story. The facets are used here as descriptive dimensions. From a narrative inquiry perspective [12] this allows us to move from a chronicle (i.e. a set of events that just have a position in time), to what is called a 'storyline'. A storyline describes the events in other ways relevant to the investigation. For example, if changing patterns in the location of events over time were of interest then location would be a facet of the story used to describe the events. Similarly, if the investigation was considering the incidence of certain types of activity, then the activity type would be a story facet.

3. PLOT RELATIONS

Through working with two groups of museum professionals we have developed a set of relations that can be applied to describe the narratives used in gallery tours and art appreciation texts. Although the vocabulary within the texts varies, the types of

relations can be grouped in just five plot description types, namely: 'related', 'influenced', 'motivated', 'in reaction to' and 'inspired'. Within curate, these are specialisations of the plot description.

These plot description types are organised hierarchically, where 'related' is the most general non-committal relationship, indicating that a set of one or more events relates to another set of one or more events. The 'influenced' relationship (also used in CIDOC CRM) is more specific, as it indicates a directed relationship, where the first set of events has some bearing on the second set (i.e. there are 'influencing' and 'influenced by' events). This is further specialised as 'motivated' (again used in the CIDOC CRM), which also indicates some form of reason or justification for an influence. The 'in reaction to' plot relation is a more specific form of motivation, which denotes that the second set of events were intentionally carried out in response to the first set. Finally, the 'inspired' plot relation carries the additional meaning that the second set of events build on the first set, reacting to them in a positive way. In each plot relation, the sets of one or more events are represented by an event type, where for example, the 'influenced' plot relation connects the 'influencing' and 'influenced_by' event types.

To test the coverage of our plot relations we applied them to represent a set of explanatory descriptions taken from exhibit guides and secondary school textbooks. The descriptive terms used within the texts where found to be indicative of events, event properties, or plot relations (see Table 1).

Descriptive terms from established texts	Curate modeling approach
admired; appreciated; associated; absorbed; copied; father figure (led); followed; interested; led; impressed; interested in; learned/taught	Modeled primarily as events that feature in plot relations (e.g. 'Eileen Gray learned the craft of oriental lacquering from working with Seizo Sugawara').
affected by; based on; encouraged by; inspired by; influenced by; reacted against (i.e. rejection)	Modeled as properties of existing events. The events the properties are used in then feature in plot relations (e.g. 'Mainie Jellett's painting of Portrait of a Young Woman in 1921 was influenced by Cubism').
related; influenced; motivated; in reaction to; inspired	Modeled as plot relations between events or sets of events showing changes over time (e.g. 'Eileen Gray's furniture designs were influenced by her work with Seizo Sugawara').

Table 1. An illustrative set of descriptive terms used in art history narratives and a description of how they have been used to develop the plot.

Several descriptions were direct examples of events (Table 1, first row), that is, they described actions such as: someone being 'taught by' (or 'learning from') another artist; someone 'admiring' or 'appreciating' the work of another artist; and someone 'following', 'being impressed by', or 'interested in' another artist or groups of artists (e.g. an art movement). Typically, the purpose of describing these events within the texts was to indicate a plot relation between these and other events. For example, one artist 'admiring' the work of another is an event that can be used as a potential source of influence.

Other descriptions included examples of event properties (Table 1, second row). These included references to other people, objects or events to be associated with an event. For example, an event describing the creation of an artwork by an artist could also refer to other artists, artworks or world events that affected it. Typical terms indicating potential event properties, included: 'affected by', 'based on', 'encouraged by', 'inspired by', 'influenced by', and 'reacted against'. As with the descriptions modelled as events, the event properties were explicitly mentioned in the text because they were relevant to the plot and therefore, the corresponding event would typically be included in a plot relation.

Descriptions that used terms such as 'changed', 'influenced', 'foresaw', 'impacted', or 'inspired' could be represented directly as plot relations (Table 1, third row). These terms were directly indicative of a plot relation between two or more sets of events. The direction, reason, intentionality and valence of the relation inferred from the corresponding section of text were used to identify the applicable plot relation. For example, terms like 'changed' or 'influenced' indicate a relation between an artist's work and work that followed. The relation is directed, but where no indication is given as to reason, intentionality or valence, these would be attributed as an influenced plot relation.

4. STORYSPACE

Storyspace is comprised of a set of modules for the Drupal content management platform that provide content types for authoring and viewing: curatorial stories, heritage object stories, events, plot descriptions (including plot description types and event types), and narratives. As well as maintaining a MySQL database of Drupal nodes, the modules also store the content in a Sesame RDF triple store, which provides a SPARQL endpoint for the system. Visualization support for exploring events is currently supported by the SIMILE Exhibit widget library. Data can be fed into Exhibit as a JSON data feed, either as a JSON data feed view (supported within Drupal) or as a dataset from SPARQL queries (supported through Sesame). The modular approach used within the storyspace system, enables the separation of content, data, data model and visualization, such that alternate or additional visualization tools can be included with minimal change to the system.

Storyspace supports the process of developing curatorial narratives through the selection, organisation and description of pertinent events. Authenticated users can add and edit their own content, as well as view the existing content. The primary navigation menu provides access to the four main areas of the site, namely: stories, plots, narratives and resources (Figure 1 and Figure 3, top). The stories area provides access to listings of the curatorial stories and heritage object stories, from which the user can either view and then edit an existing item, or add a new item. The plots and narratives areas list the existing set of plots and narratives (respectively), and also provide opportunities for adding new and editing existing items. The resources area provides access to the events, facets, references, and heritage objects recorded in the system. For example, events associated with the life and work of relevant artists are either input manually, copied from existing collection records, or imported from supported online sources (currently via the Freebase API). These resources are created and maintained independently of any specific story, and can be used across multiple stories, plots and narratives.

5. EXAMPLE

The following example, taken from the Moderns Exhibition held at the Irish Museum of Modern Art, illustrates the use of the curate ontology and storyspace system for supporting the authoring of narratives by museum professionals. The exhibition presented an exploration of Irish Modern Art from 1900 to 1975.

The curator creates a new curatorial story by entering a working title and description for the story, and selecting relevant events and facets for the story topic. For example, one of the themes included within the exhibition relates to Irish women modernists, this curatorial story includes events associated with the lives and work of women artists and designers from Ireland that were influenced and participated in the modern art movement (see Figure 1). To help organize these events, facets are used to identify the time, location, creative medium and style referred to in each event; along with their associated visualizations providing timelines, maps and lists.
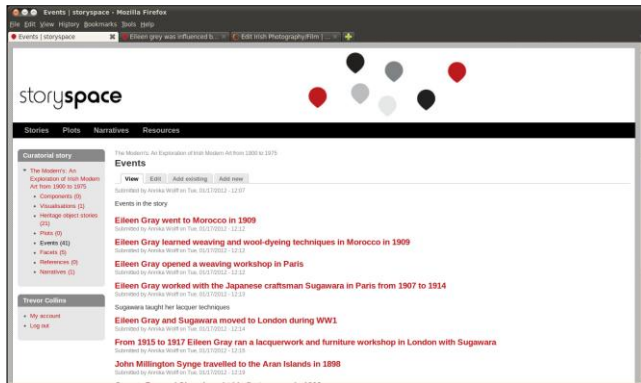

Figure 1. A storyspace screenshot showing the list of events included in a curatorial story on Irish modern art.

The curator develops the plot by exploring potential groupings and relations between events. The plot contains one or more plot descriptions that provide (subjective) explanations of the event groupings and the relations between them. Plot description type and event type nodes, correspond to the plot relations presented in the previous section, these are used by the curator to instantiate plot descriptions from a curatorial story. Figure 2 shows the dialogue box used for creating (and editing) plot descriptions that incorporates story-specific visualizations. The plot descriptions, plot types and event types are available as additional facets to support the exploration of event patterns within the visualization. The set of events used in the plot description are displayed to the right of the timeline as a list of checkboxes under each event type. Events can be added to each event type by 'Add to …' links displayed in the event balloon markers, where JavaScript functions are used to append an additional checkbox item to the corresponding event type (Figure 2, right).

To develop a narrative explaining the influences on Irish artists, plot descriptions are made showing groupings and relations between the events associated with their training and collaboration, and the events describing the creation of art works. Figure 2 (right) shows how the curator has created a plot description to evidence an influence relation between a group of collaboration events between Eileen Gray (an Irish designer) and Seizo Sugawara (an oriental lacquerwork craftsman) in Paris and London between 1907 and 1918, and a group of events referring to the creation of new works by Eileen Gray in the 1920s.
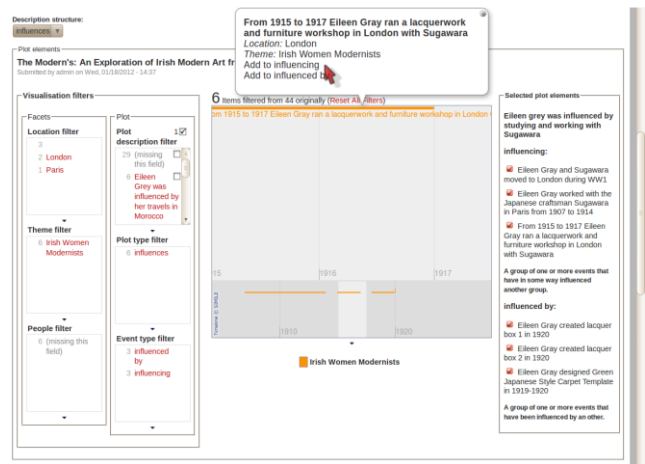

Figure 2. A screenshot showing the plot elements dialogue box for creating and editing a plot descriptions. This example is about the influence on Eileen Gray's work from studying with Seizo Sugawara, an oriental lacquerwork craftsman.

The plot descriptions are used along with a presentation template to produce curatorial narratives, for example, in the form of potential exhibition layouts of heritage objects associated with the grouped events, or descriptive texts explaining the events and their effect. The storyspace system currently produces narratives as an editable hypertext containing an ordered list of events along with their groupings and plot relations (Figure 3). Further presentation templates are also being developed.
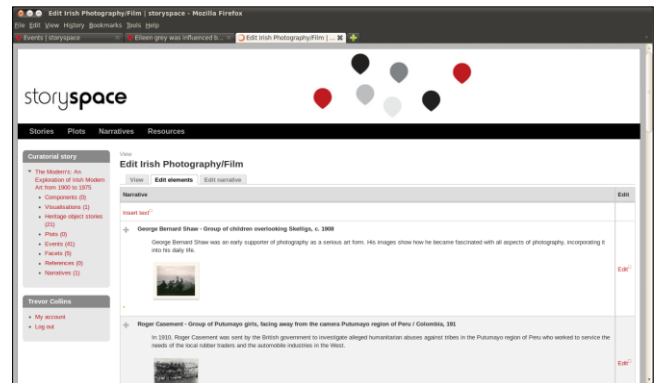

Figure 3. The web form used for editing a curatorial narrative.

6. DISCUSSION

This paper has presented a structuralist analysis of narrative and shown how that has been applied to inform the design and development of the curate ontology and storyspace system, in particular focusing on the process of emplotment involving the selection and interpretation of significant events to propose a subjective interpretation.

The storyspace system has been developed through engaging with a range of museum professionals in two national galleries to explore the narratives created around two of their exhibitions. The system now includes a set of plot relations for developing new narratives and is being tested by one of the galleries to describe a recently bequeathed collection. Feedback on the system has been very encouraging, both from the point of view of developing a shared understanding of the curatorial process and the description

and modeling of that process as the development of a curatorial narrative.

Developing the set of plot relations was an iterative process. This also considered the use of stronger causal plot relations and specialisms for positive or negative influences. However, both were considered to be problematic. Given the subjective nature of interpretation and art appreciation, the attribution of cause and effect were considered to be difficult to justify. Similarly, plot relations representing negative forms of influence were considered problematic to evidence.

Interestingly, a set of common event patterns within specific plot relations have started to emerge from our initial set of examples. These typically use specific event properties such as 'affected by', 'based on', and 'encouraged by' to imply potential sources of plot relations between artists that can be tested through the emplotment process. For example, connections between artists (both pairwise and through larger chains or networks) can be used to suggest potential explanations or interpretations of their work. We are therefore exploring the use of condition-action rules for automatically suggesting potential event groupings and plot relations.

Although developed here within the context of art exhibitions, these generic narrative processes are intrinsic to many accounts of teaching and learning, and therefore critical to our understanding of how the web can convey and support knowledge, education and scholarship. The plot relations proposed here are based primarily on gallery practices and therefore may have potential limitations with regard to generalisations beyond the domain of art. However, further iterative development cycles will be completed involving trials with other groups of users undertaking a range of curatorial authoring and interpretation tasks, thereby enabling the further development and validation of our structuralist approach to modelling narrative and the resulting web-based toolset.

7. ACKNOWLEDGEMENTS

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