

Prototype

EVENT COLLABORATION

Emergent Time is a prototype collaboration tool for humanists and social scientists working with timelines—narrative arrangements of events. In Emergent Time, timelines are owned by particular users, and represent the user’s interpretive reading of a series of events. While an individual timeline “belongs” to a user, many of the events it interprets may be shared by other users and interpreted differently in their timelines.

Users construct timelines individually, using a single form to build on events others created before them, or to create new events from scratch. The application thus balances personal expression and argument (in the form of individual timelines) with collaboration and shared work (in the form of raw events.) Throughout the prototype, clicking on an event in a timeline will show how other users have interpreted that particular incident. Thus, one can read horizontally to follow the argument of a given timeline, or depth-wise to jump between different timelines that interpret the same event from different perspectives.

OVERVIEW TIMELINES

The prototype’s salient feature is a set of overview timelines, built by analyzing the network of links between timelines and events within the community. These links indicate the most important events for a given topic. For example, a search for “John F Kennedy” might show the most highly-cited events in his life: birth, election, and assassination. To accomplish this, the prototype uses a proprietary implementation of Page & Brin’s PageRank algorithm. Events that are linked to in many timelines are likely to be important to the community, and receive a high rank; conversely, timelines that interpret many important events receive a boost in rank. Emergent Time uses these ranks to indicate which event entries are regarded as most authoritative by the general populace of users, and

CORE EVENT FIELDS

- keywords/title
- description of event (globally)
- start & end date
- author
- list of source critique comments

EVENT INTERPRETATION FIELDS

- timeline
- event
- interpretation of event (in this timeline)

TIMELINE FIELDS

- title
- introductory text
- list of event interpretations

displays them when given a matching topic.

COLLABORATION STRATEGY

In Emergent Time only the author of a given event can revise it, but the community at large can add source critique comments and propose alternate versions of the event. The design intention was to spark general discussion about whether a given event’s description is well-supported by the primary sources cited. Because many versions of a given event may exist, this encourages users to link to the version that is factually best-supported in their own timelines, while passing over those with poor evidentiary support or badly-formulated descriptions. Hence, using an event in one’s own timeline constitutes both a signal of interest in the historical incident and a vote of confidence in the event author’s scholarship.

The collaboration workflow thus serves as a macrocosm of the scholarly publication process, allowing authors and readers to evaluate the evidence in support of a given interpretation, and to “vote with their feet” by citing it rather than another in their own work. As a result the overview timelines will come to reflect not only which events are most important for the interpretive community, but also which versions of a particular event are most authoritative.

This allows overview timelines to present the most influential event entries for a given topic, and to accommodate shifts in communal knowledge as new evidence is

found and new interpretations of a given incident become normative.

IN CONTRAST TO OTHER TOOLS

This collaborative strategy is intended to capture established conventions for historical analysis and source critique, and use the resulting citation networks to construct overview timelines that accurately reflect the community's current normative views. By distributing small bits of knowledge among many event entries, promoting general discussion of the veracity of each, and then allowing users to "vote" for a given version of the facts by including the event in their timeline, it addresses shortcomings in other collaborative digital humanities approaches:

Open-revision wiki. An open wiki implements what might be called "last man standing" collaboration. The last person to edit an article has license to revise and amend all the others' work, potentially reshaping it to his own ends. Of course, wiki history allows others to revise it back, but this encourages "squatting," or continually monitoring an article in order to control its contents.

Moderated wiki. Some wikis establish an editorial bureaucracy to address these issues. However, this in effect defers interpretation to an appointed "expert," much after the fashion of a traditional encyclopedia (with the proviso that the general public can submit material for editorial consideration.)

Voting systems. Finally, simple voting systems that ask users to "rate this article" suffer from known problems with blind polling. Anonymity encourages arbitrary voting; users might vote multiple times or use incomparable rankings; and the population of elective voters is self-selecting.

By contrast, Emergent Time's collaboration model is designed to circumvent such problems, since users "vote with their feet" by citing one formulation of an event rather than another in their timelines, and no one user can dominate interpretation by being

the last to revise. While this model is relatively new to digital collaboration tools, it is quite similar to traditional humanities footnote and endnote citations. It clearly marks authorship and source material for a given interpretation, encourages communal discussion of the adequacy of an author's evidence, and holds authors accountable for their votes by embedding the citations within their work.

Evaluation

SUCCESSSES

Even with a sparse demo data set, it is clear that the prototype achieves a successful balance between individual work (seen when viewing a particular timeline) and community connections (via the interpretation comparison popup, and the related timelines and related users links.) It encourages users to focus on developing their own ideas, while still suggesting points of contact with the wider community—for example, in the event editor, which shows possible base events as the user enters information. The opening page's list of recent community activity is well-suited to draw users into other work and give a sense of liveliness. Most importantly, even for small data sets, it's clear that the overview timelines do actually reflect the community's current notion of the "most important" events. So the core concepts of Emergent Time can we declared a success.

WEAKNESSES

Nevertheless, constructing and working with the prototype exposed some mismatches between the data model and requirements of humanists and social scientists.

False accuracy in dates. While database date types are specific to the millisecond (or better), humanities applications require a degree of indeterminacy. Often a date is known only to the year or day (and very rarely to a specific second). Sometimes it is only important to identify a decade or century and further specificity is misleading. In Emergent Time, this confusion is particularly evident in two

cases: dates specific to the year appear on Jan 1; and dates specific to the day appear at midnight. Finally, the timeline visualization has no way of displaying such indeterminacy.

Event/Interpretation boundary unclear. While creating demonstration data, it became obvious that the distinction between core event description and later interpretation is unclear for humanities projects. Historical incidents are so complex and have so many potential associated facts that the process of creating a timeline is almost entirely interpretive, and virtually all of the facts mentioned in an entry are included for rhetorical purposes.

For example, an event on 22 Nov 1963 might read “President Kennedy is shot during an open-top motorcade in downtown Dallas.” A timeline arguing that Lee Harvey Oswald was the killer might add as interpretation, “since Oswald was sighted 15mins before in the TSBDB lunch room, he would have just had time to get to the 6th floor and set his gun sights.”

In this case, the event description and interpretation both marshal facts for interpretive ends. That Kennedy was in an open-top motorcade is only relevant in the context of his killing by an unknown sharpshooter stationed in a nearby building; for a timeline about Lyndon Baines Johnson’s presidency, only the fact that Kennedy was assassinated is of central importance. So factual information is marshaled for interpretive ends in the event description. The converse is also true: for example, the interpretation entry above embeds information that the Texas School Book Depository Building’s cafeteria is within 15 minutes of the 6th floor. A source citation, perhaps to architectural drawings, would substantiate this “interpretive fact.” In sum, so many facts are associated with a given event that timelines generally mention only those relevant to a particular line of argument. To fit usual humanities and social science conventions, events’ description, interpretation, and source citation should appear bundled together as

a single unit. Consequently, Emergent Time’s clean division between shared events (with source comments) and personal interpretations (without source comments) feels unnatural. Events and interpretations should be combined, and all should include an open-post source commentary.

Divisibility of Time. Likewise, in humanities usage the conceptual boundary between a timeline and an event is unclear. In the context of a timeline on cold war relations between the U.S.S.R. and the U.S.A., Kennedy’s assassination might be a single event. In the context of a timeline on J.F.K.’s life, it would doubtless be a series of events. This suggests that collaborative timeline tools should be able to treat entire timelines as events, or expand events into more detailed timelines.

Community overviews. The top page of Emergent Time shows an overview timeline of the most important events for the entire set of users. It would be more useful to allow users to organize themselves into communities, and then show an overview timeline focused on the community’s interests.

Proposed changes

Humanities date type. A new database date type that allows the user to specify the degree of relevant accuracy (centuries, decades, years, etc.) should be implemented. A corresponding set of logical operators need to be devised as well (e.g. “completely before/after”, “potentially before/after”, “contained within”, etc.).

Convert entities to relations. To overcome weaknesses in the data model involving unclear boundaries between events, interpretations, and timelines, the three should be combined into a single data type. Distinctions between the three can then be indicated as relations between events. “Interpretation” events should specify other events as context upon which they build: in this case, the context event and interpretation event stand in for the current prototype’s separate event and

interpretation data types. Both should have open-post source comment lists. This would allow a revised timeline tool to retain the collaboration characteristics designed for the prototype while addressing the conceptual problems in dividing entries between core “facts” and later “interpretations.” To jump-start the process, the timeline creation page should be rewritten to allow the creation of two events simultaneously: a context event of general interest to the community, and one that interprets it for the current timeline.

Likewise, timelines should become events that contain other events, with the first and last entries defining the limits of the timeline. This way, users can easily choose the level of historical detail at which they wish to work by selecting either the parent event/timeline (e.g. “Kennedy’s assassination” on 22 Feb 1963) or the children (an ordered list of events on the day of assassination).

When the basic entity types—event, interpretation, timeline—are combined, relations between events should take their place. These are (a) *context* (one event provides background context for another that builds on it), (b) *response* (one event provides an alternative or dissenting interpretation of the same incident), and (c) *containment* (more granular detail on the progression of a summary event). Each of these relations may also require a commentary sentence to explain the user’s thinking. Hence, it becomes clear that event-relationships are also comments, and can share their data structure.

The proposed data model revisions are listed below. The network of links used to produce the overview timelines can still be computed from event relations (c) and (d). Because users are encouraged to create entire new events in pairs (context + interpretation), or to mint new events in response to existing ones, the collaboration process designed for the prototype will still hold. In the user-interface, contextual events will appear as prologue to interpretations (as in the prototype). Responses will be available

via a link, and comments listed below. This encourages users to choose context events by evaluating the source critique comments attached to them. In turn, this allows the construction of overview timelines based on the most important contextual events.

Finally, users should be allowed to organize themselves into communities. This way, the default overview timelines will be focused on the user’s declared interests rather than those of the entire user base.

EVENT/TIMELINE FIELDS

- keywords
- title
- description/interpretation
- start & end date
- author
- (a) list of source critique comments
- (b) list of contained events (if this is a timeline)*
- (c) list of events that provide context for this one
- (d) list of events that this one refutes/responds to

RELATION/COMMENT FIELDS

- event
- comment text
- author
- type (comment, context, response, or contains)

ADDITIONAL USER FIELDS

- list of community membership