Exploring asymmetric collaboration in social news curation

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Abstract—We report on the second design cycle of Acropolis, a social computing platform that allows citizens to build and share their own narratives about long-running news stories. A key goal of this research project is to explore the following design opportunity: how can we re-design news stories in order to engage citizens in their reading and curation? In this paper, we describe an asymmetric collaboration approach to engage the crowd of citizens in social news curation. We conclude with the description of a quantitative evaluation conducted during the second design cycle that yielded very encouraging results.

Keywords—social computing; social curation; social news; action design research; crowd work; asymmetric collaboration.

I. INTRODUCTION

In a digital globalized world, collections of socially curated digital artifacts are becoming increasingly common. Social curation is essentially about people distributing and marketing media content in their networks by making personal referrals and guiding their peers to consume content that they consider interesting and relevant [1]. Acting as information filters, content curators provide an editorial perspective (highlighting interesting content), and usually involve a social component as users can follow other curators that they find relevant, allowing them to expose to new and interesting people and content [2].

Jones [3] sustains the existence of a socially curated content ecosystem that brings together people, content and technologies, on which are maintained strategic relationships throughout the whole life cycle of the digital content. Social media platforms actively participate in this content curation movement by providing tools to users. One of the most prominent examples of these platforms is Pinterest, a site that allows users to store and categorize images, which are called “pins” and organized into panels called pinboards.

A notable fact is that the existing academic research on social content curation platforms has been almost exclusively directed to Pinterest website so far. A critical look at this narrow focus is to note that, of all possible forms of social curation online practiced, our understanding of this phenomenon is widely informed by studying how people curate content on Pinterest! The goal of many studies on Pinterest seems to be a better understanding of the site itself, rather than the study of social curation as a broader phenomenon. Few studies compare the curation websites to each other and there is a missed opportunity to transfer these findings to other areas of social curation poorly documented and understood.

In this research work, the main goal is to address two research gaps. The first one refers to the narrow focus of most studies on social curation platforms over a few sites like Pinterest. To address this first gap, we conducted an exploratory research in a field still little explored in the context of social curation: news content curation. Firstly, an exploratory analysis of the platforms (especially websites) of social news was carried out under the perspective of “crowd computing” [4,5,13,16], in search of challenges and research questions [4], which also produced a typology of these applications [5]. This initial research offered us an opportunity of research and design: the social news curation environments.

The second research gap relates to the lack of constructive research directed to news curation platforms. The way we addressed this second gap was through the design of a social computing platform - called Acropolis - which allows citizens to build and share their own narratives about complex or long-term news stories (such as "Global Warming"). The design of Acropolis was guided by a set of key issues that were identified through the literature review, which include reducing the gap between curation as a personal activity and as a social activity, citizen engagement with news content, and the support for building cohesive and coherent narratives of news stories and plots [6].

In this sense, a key goal of this research project was to explore the following design opportunity: how can we re-design news stories in order to engage citizens in their reading and curation? We claimed that this goal could be addressed if a social media environment would allow each user to contribute with different angles or perspectives of a story in his or her personalized narratives. Using an action design research methodology, we concluded two design cycles in this research work.

The rest of the paper is organized as follows. Sections II and III describe the research methodology used in this research; in section IV we discuss the problem formulation; section V describes the building, intervention and evaluation phase of the second cycle of the research conducted in this work; section VI describes the reflection and learning phase; and section VII presents the conclusions of this research work.
II. RESEARCH METHODOLOGY

This research project was carried out as an Action Design Research (ADR) effort, a method for combining "design research" and "action research" [7], which is composed of the following steps: 1) Problem formulation; 2) Building, intervention and evaluation; 3) Reflection and learning; and 4) Formalization of learning. Proponents of the ADR method claim that the approach enables the creation of an IT artifact that can improve its efficiency through repetition of various design and evaluation cycles.

III. ADR IN ACTION: ACROPOLIS DESIGN

Like other cases of ADR, the Acropolis project had two parallel goals: to make an intervention in the design space of social curation platforms of news content (aimed at engaging citizens in complex or long-term stories) and to create theoretical knowledge by putting into practice and evaluating the design principles embodied in the platform.

With respect to the problem formulation (first phase of ADR), Acropolis design was informed by a comprehensive literature (described in Section IV). With regard to the second phase of building, intervention and evaluation (BIE), the project adopted the "user-centered design" paradigm, which puts the needs of end users in the forefront of the design, treating them as informants in various activities without requiring, however, that they are involved in design decisions. In addition, we relied on the collaboration of students, teachers and researchers of PESC/COPPE/UFRJ, and a group of researchers from the School of Communication at UFRJ (ECO) - who supported this work both in the initial exploratory phase and in the confirmatory phase at the end of second design cycle.

In each design cycle, we performed an experiment and collected and analyzed the data to inform the design in the next cycle. This paper addresses the second design cycle. We conducted two focus groups during the first two design cycles: an exploratory focus group in the first cycle, and a confirmatory focus group at the end of the second cycle. Figure 1 depicts Acropolis design process as guided by ADR.

IV. PROBLEM FORMULATION (CYCLE 2)

The central problem that motivated this research through design can be formulated as: “How can a social web application engage citizens, especially the younger generations, with complex news stories, through the social curation approach?” In the first design cycle, we chose the application niche of political stories while testing the Acropolis prototype, believing that this choice would be timely. We argue that this choice was right, motivating participants who were involved in the experiment. The first design cycle is described in detail in [6].

In the second design cycle, we extended the focus of the stories portrayed by users also including other types of stories beyond those of political nature, which was emphasized by the slogan displayed on the platform home page: “Talk about politics, economy and environment without being a politician, economist or environmentalist”.

A. Theory-Ingained Artifact

The goal of this subsection is to describe the theoretic models that informed the research conducted with the aim of addressing a set of key issues described in the introduction and also in [6]. Considering each of the models listed below, we derived a set of design requirements used in the platform conception. The first requirements (listed below) were derived from a survey conducted on social curation platforms as well as from the literature on online collaboration.

R1) Stories of news content should be created by the users themselves.

R2) Users should have the option to subscribe as readers or curators of each story of interest.

R3) The public image of a story should be shared and socially constructed by the curators interested in the story.

R4) Users should be able to view the latest updates of stories of interest.

R5) Users should be able to view the recent activity of other users.
R6) Users should be warned against the informational obesity problem (they should be “updated” by the system on the unfolding of the stories they follow).

- **Self-agency**

The agency model of customization [8] associates “agency” to the idea that the “self” acts as the source of communication. Higher interactivity can lead to a greater sense of self as source, which leads to greater cognitive involvement and greater engagement with content. To the extent the user is able to see his own “self” in the interface and/or the content generated via that interface, it leads to a satisfying interaction [8]. In other words, it is not just interactivity, navigability or the modality of media environment, but the realization of a “self-agency” in the generation and dissemination of mediated content. From the agency model of customization we derived the following design requirements:

R7) Curators should build their own customized versions of the narratives of the stories of interest.

R8) The stories should allow variation in angle or perspective, allowing curators to emphasize their particular positions.

R9) Narratives of stories should be remixable and contemplate curated content of all kinds, modalities and sources, and be navigated in a customized manner.

- **Elaboration and engagement with content**

The cognitive mediation model [9] states that people do not learn directly with media exposure, but that learning is mediated through elaboration or processing strategies, such as connecting new information to other information stored in the memory, including prior knowledge, personal experiences, or the connection of two new bits of information together in new ways [9]. Strategies of elaboration following exposure to news could also include more active strategies like discussing the news, or even passing the news story to one’s network. From the cognitive mediation model we derived the following design requirements for Acropolis:

R10) Readers and curators should be encouraged to discuss the contents curated in every story of interest.

R11) Readers and curators should be able to raise questions in the context of a story.

R12) Readers and curators should be alerted when other users provide feedback to their contributions in the context of a story.

R13) Curators may receive contributions from other users in building their custom narratives, but subject to their approval.

- **Curatorial inquiry learning cycle**

The curatorial approach embodied in Acropolis has also been informed by the curatorial inquiry learning cycle, which is described in [10]. From this model we derived the following design requirements:

R14) Curators should be able to search and select the contents to be curated to the stories, both inside and outside the platform.

R15) Curators should be able to annotate individual contents of each story of interest.

R16) Readers and curators should be able to easily view the annotations of the same content curated in the personalized narratives of the various curators.

R17) Curators should be able to annotate the links between individual contents curated on each story of interest.

R18) Users should be able to ”watch” the presentation of a public or personal narrative of stories of interest.

- **Curated flows**

The curated flows model [11] highlights the nature of the information space network where individuals are at the center of a variety of “flows” of content of different types. According to the model proponents, the metaphor of the flows emphasizes that in different contexts, different individuals (and not only social elites) can become opinion leaders and interpreters of political information [11, 12]. The proponents have also stressed the existence of five different types of curation: personal curation, social curation, journalistic curation, strategic curation and algorithmic curation. From the curated flow model we derived the following design requirements:

R19) Users should be able to register (virtual representations of) public figures who exert the role of strategic curators.

R20) Users should be able to ”monitor” public figures registered on the platform and that are on their radar.

R21) Users should be able to curate the messages distributed by public figures in their personal narratives of the stories of interest.

V. BUILDING, INTERVENTION AND EVALUATION (CYCLE 2)

In this section we firstly describe the curatorial approach embodied in Acropolis platform, secondly we explore the asymmetric collaboration mechanism, and finally discuss the experiment carried out in the second design cycle.

The current prototype of Acropolis is available at http://acropolis.cos.ufrj.br. For each user, the platform features a “start” page (Figure 2A) that allows the user to keep track of the stories of which he is a reader or curator; keep a list of the public figures being monitored; maintain the user's social network. In another system page, the user can both navigate and curate stories of interest (Figure 2B). There is also a page dedicated to public figures, where the user can register or edit the profile of strategic communicators (politicians, journalists etc) whom the user is interested in following.

Table 1 relates the main features designed in the platform to the requirements that supported the features and to the design solution presented to each of them.
Table 1 - Main features of Acropolis platform

<table>
<thead>
<tr>
<th>Feature</th>
<th>Design</th>
<th>Req.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a story</td>
<td>In the &quot;search story&quot; screen, by clicking the &quot;+&quot; button the system enables the story creation interface, allowing the user to enter a title of the URL of a background image that represents the story, and a list of timelines.</td>
<td>R1</td>
</tr>
<tr>
<td>Subscribe as a reader or curator of a story</td>
<td>In the display screen of a story, by clicking the &quot;Follow&quot; button of a story, the user is added to the list of readers of the story. By clicking the &quot;Follow&quot; button, the user is added to the list of curators of a story.</td>
<td>R2</td>
</tr>
<tr>
<td>Browse the public narrative of a story</td>
<td>On the display screen of a story, by clicking the &quot;Public Narrative&quot; button, it displays the narrative involving the contents curated by different curators of the story.</td>
<td>R3</td>
</tr>
<tr>
<td>Build a curated personal narrative of an existing story on the platform</td>
<td>On the display screen of a story, by clicking the &quot;Create that story&quot; button, the user is able to build his personal narrative of the story, showing a &quot;suggested contents&quot; box which allows the user to search, select and collect contents.</td>
<td>R4</td>
</tr>
<tr>
<td>View a story’s activity feed</td>
<td>Clicking the &quot;Activity&quot; button on the display screen of a story will display a list of recent activities related to that story.</td>
<td>R5</td>
</tr>
<tr>
<td>View a user’s activity feed</td>
<td>On the &quot;Activity&quot; tab on a user profile screen will display a list of recent activities related to that user.</td>
<td>R6</td>
</tr>
<tr>
<td>Curate content suggested by the platform, including it in a narrative</td>
<td>To the public or personal narrative of a story, by dragging a content (from the suggested contents box) and dropping it over the background image of the story, it will add that content to the personal and public narratives.</td>
<td>R7</td>
</tr>
<tr>
<td>Curate content searched outside the platform, including it in a narrative</td>
<td>To the public or personal narrative of a story, by dragging a URL (searched outside) and dropping it over the background image of the story, it will add that content to the personal and public narratives.</td>
<td>R8</td>
</tr>
<tr>
<td>Curate content in response to other content curated by the user</td>
<td>To the public narrative of a story, by dragging a content (from the suggested contents box) and dropping it over a content already curated by the user will add that content to his personal narrative.</td>
<td>R9</td>
</tr>
<tr>
<td>Curate content in response to a content curated by another user</td>
<td>To the public narrative of a story, by dragging a content (from the suggested contents box) and dropping it over a content curated by another user will add that content to the narrative of the latter, awaiting approval.</td>
<td>R10</td>
</tr>
<tr>
<td>Reframe a content</td>
<td>When curating or revising a news story or video to his personal narrative, the curator can change the content title, the background image and text, reframing that content.</td>
<td>R11</td>
</tr>
<tr>
<td>Remux content from other users on a personal narrative</td>
<td>In the public narrative of a story, by clicking the &quot;Remix&quot; button displayed next to the contents curated by other users, it displays a box containing the contents curated by the user.</td>
<td>R12</td>
</tr>
<tr>
<td>View a particular version of a content curated by multiple users in a story</td>
<td>The public or personal narrative of a story, when viewing a content curated by more than one user, clicking the icon of one of the curators will display the personal version of that content as remixed by that curator.</td>
<td>R13</td>
</tr>
<tr>
<td>Create a plot in the context of a story</td>
<td>In the display screen of a story, by clicking the &quot;Create plot&quot; button, the system enables the interface of plot creation.</td>
<td>R14</td>
</tr>
<tr>
<td>&quot;Play&quot; the narrative of a story or plot</td>
<td>In the display screen of a story or plot, by clicking the &quot;Play&quot; button will trigger the narrative of that story or plot.</td>
<td>R15</td>
</tr>
<tr>
<td>Raise a question in the context of a story</td>
<td>In the public or personal narrative of a story, by clicking the &quot;Raise a question&quot; button will enable the user to raise a question that will be included in the personal and public narratives of that story.</td>
<td>R16</td>
</tr>
<tr>
<td>Receive notification that a user commented a curated content on your narrative</td>
<td>When a user comments on a curated content in the personal narrative of another user, the latter receives an email notification detailing the contribution of the other, entitled &quot;Person X commented on your post&quot;.</td>
<td>R17</td>
</tr>
<tr>
<td>Receive notification that a user curated content in response to a content curated in your narrative</td>
<td>When a user curates a content in response to a content curated by another user, the latter is notified by email detailing the contribution of the other, entitled &quot;Person X curated a content in response to yours&quot;.</td>
<td>R18</td>
</tr>
<tr>
<td>Receive notification that a user has raised a question in a story</td>
<td>When a user raises a question in the context of a story, it is notified by email stating that &quot;Person X raised a question in the story&quot;.</td>
<td>R19</td>
</tr>
<tr>
<td>Receive notification that a user commented a content that you follow</td>
<td>When a user comments a content followed by other users, they receive an email notification stating that &quot;Person X commented a content that you follow&quot;.</td>
<td>R20</td>
</tr>
<tr>
<td>Receive notification that a user has created a plot in the context of a story</td>
<td>When a user creates a plot within a story, if he chooses the box, &quot;Notify readers and curators of that story&quot;, readers and curators will be notified by email stating that &quot;Person X created a new plot&quot;.</td>
<td>R21</td>
</tr>
<tr>
<td>Follow a content</td>
<td>When browsing a content in the display screen of a story, by clicking the &quot;Follow&quot; button, the user begins to be notified of comments or content posted in response to that content.</td>
<td>R22</td>
</tr>
<tr>
<td>Mark a content as &quot;read&quot;</td>
<td>When browsing a content in the display screen, by clicking the &quot;Mark as read&quot; button, the user begins to view content partially hidden in that narrative.</td>
<td>R23</td>
</tr>
</tbody>
</table>

A. Acropolis curatorial approach

In the proposed approach, the user can be either a reader or a curator of a given story. If he is only a reader, then he may visualize the "public narrative" of the story - which contains the contributions of various curators of the story - and the personal narratives of each curator. If the user wants to be a curator of a story, then he may create his own personal narrative. In building a narrative of a given story, contents that have been curated by other curators of the story are suggested to the user, giving credit to previous curators.

Acropolis narratives are therefore remixable. The mechanism of curating and recurating content (from other narratives) facilitates and speeds up the construction of personal narratives of the various curators of a story, allowing the social curation to emerge from the experience of sharing of content. Since reading and curating are affected by the respective actions of other users, the platform provides an encouraging social experience.

The first step for the curator to construct a narrative is to search for content inside or outside of the platform. The selection and collection of content is done using simple drag and drop operations. When adding content to a personal narrative, the curator emphasizes his particular perspective (adding a title and description). The platform offers three alternatives to curate content: curate content to the story, curate in response to other previously curated content, and curate as an alternative to an already curated content [6].

Still in the preliminary design of the prototypes, we conceived several options for the user to add content to his or her narratives: enter the URL of a news story or video to be curated; curate news, videos or posts of public figures suggested by the platform; recurate content previously curated by other users; or even search for content within the platform (in order to curate them).

It is important to stress that Acropolis assists users in navigating and in building their narratives, displayed through horizontal and vertical timelines. In addition, the platform provides a facility for narration, which allows the "reproduction" of a narrative [6], for a better understanding of the story for readers and curators.

Thus, the Acropolis curatorial model essentially follows the stages of the curatorial inquiry learning cycle [10], starting with research, followed by selection and collection of content, and then the interpretation of individual content and a group of contents, then the organization of content and annotations, and finally by the narration.
Figure 2 – Two screenshots of Acropolis. A) Left: “my journal” interface. B) Right: reading and curating a narrative.

An example of a simple scenario of use of Acropolis is described in [6].

B. Asymmetric Collaboration

In the context of a story emploted in Acropolis, the curator is himself the narrator and “leader” of his narrative: it is he who ultimately decides what happens in the story plots, according to his decisions as the “guardian” of information. Allowing other users to participate in the narrative construction of a curator - sharing gatekeeping decisions with him - goes against the principles that were sustained in this work (such as self-agency and citizens as the guardian of their own content). But why not allow the curator to receive contributions from the rest of the crowd in his narratives, keeping the narrative flow under the curator's control?

Some successful social computing initiatives already separate the roles of the leaders from more general participation of the “crowd”. The strategy of structuring collaboration, separating the role of the leaders of the other members of a group or crowd, is known in the literature as asymmetric collaboration [14]. In the case of Acropolis, despite the presence of a power imbalance, where the narrator ultimately decides what happens, users can contribute ideas to the progression of a narrative. The goal of keeping the story coherent is reached, as long as the curator manage the narrative flow.

In Acropolis model, the curator of a narrative and other users have complementary motivations for collaboration around the construction of a narrative: while curators seek feedback on the collected content, other users will see the asymmetric contributions as an opportunity to use their knowledge and expertise to discuss issues that meet their interests.

Contributing to the personal narrative of a curator in Acropolis is simple: the user simply drags a content to curate (from the “suggested contents” box) and drops it over a content belonging to the narrative of that curator. The content is curated as an “answer” to the original content, included in the “public narrative” of the story, and if approved by the curator who received the contribution, is included in his personal narrative (giving credit to the contributor). Finally, the curator may raise questions in the context of his narrative, and other users can also answer questions with asymmetric contributions.

C. Data collection

We used the knowledge obtained at the end of the first cycle to drive the design of the second prototype. Activity feeds, for example, were very poorly explored, and participants of the first experiment pleaded a more attractive and visual design of feeds. In this sense, an important design goal covered in the second cycle was to turn the feeds more visual, improving the user experience in the perception of the activity of others. Another concern that was emphasized in the interviews of the first cycle refers to the switching between the display of the personal narratives of the curators, and the “public narrative”, considered confusing to almost all of the participants. We almost completely redesigned this facility in the system, simplifying this action to the user.

In this second cycle we also sought to significantly improve usability as well as the platform user friendliness. For example, curatorial operations such as “curating in response” had not even been explored in the first cycle, and it is precisely this action that would allow a user to collaborate in the personal narrative of another user (asymmetric collaboration). On the other hand, the implementation of Acropolis notification scheme was completed and released in the second prototype, and we also sought to evaluate the impact it had on the involvement of users with the platform as well as the engagement with content. Finally, we sought to evaluate the impact of introducing game elements (gamification) throughout the experiment carried out in the second cycle.

To test our second prototype, we invited the twelve students of the “Computer Supported Cooperative Work” graduate course at PESC/COPPE to use the Acropolis prototype. Participants used the prototype for 14 days, and at the end of the experiment, answered a questionnaire and participated in a personal interview. Each interview took about half an hour, and the set of interviews allowed us to gain a
better understanding of the use of the features designed in the
platform.

Participants were invited to contribute daily in content
curation for stories of interest. Similarly to what we did in the
experiment of the first cycle, we sent a daily email reminder
during the study, reminding participants to add more content.
In addition, in the daily email we often reported the new
features (such as gamification incentives, which were released
gradually) or we included tips or suggestions to encourage the
contributions.

VI. REFLECTION AND LEARNING (CYCLE 2)

While the first design cycle focused on the collection of
qualitative exploratory data, in cycle 2 the evaluation carried
out mixed both qualitative and quantitative data. Such an
approach is in line with the proposal of Zimmerman et al.
[15], which argues that the emphasis on the application of
quantitative methods is the path to the maturing of theories
originated from research through design.

A. Demography and participation

Among the participants of the experiment, nine were male
students and three were female students, as shown in Table 2.
Eleven students were masters and one participant was doctoral
student; ten students had graduated in Computer Science or
Engineering or Information Systems, and two students had
basic grounding in Electronic Engineering. The table shows
that the participants varied in the number of days they used the
platform, in the number of read and curated stories as well as
in the total of contributions (depicted in the last three columns
by the number of curated contents, the number of posted
comments, and the number of raised questions).

<table>
<thead>
<tr>
<th>ID</th>
<th>Sex</th>
<th>Days</th>
<th>Read stories</th>
<th>Curated stories</th>
<th>Curated</th>
<th>Comments</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>M</td>
<td>12</td>
<td>10</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P2</td>
<td>M</td>
<td>10</td>
<td>12</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P3</td>
<td>M</td>
<td>6</td>
<td>14</td>
<td>5</td>
<td>3</td>
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<td>1</td>
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<tr>
<td>P4</td>
<td>M</td>
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<td>6</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P5</td>
<td>F</td>
<td>14</td>
<td>24</td>
<td>16</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P6</td>
<td>M</td>
<td>9</td>
<td>7</td>
<td>2</td>
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<td>P12</td>
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<td>28</td>
<td>20</td>
<td>592</td>
<td>105</td>
<td>15</td>
</tr>
</tbody>
</table>

Table 2 – Demography and participation in the experiment

B. Quantitative evaluation

To evaluate the performance of the IT artifact, we
proposed in this study a framework consisting of the ten
elements listed in Table 3.

The first part of the questionnaire completed by the
participants sought to evaluate, in addition to the
“performance” of the artifact used during the experiment in
relation to each element, the “importance” of that element in a
general environment of content curation, as perceived by each
participant. Thus, the questionnaire presented two propositions
for each of the framework elements. The first proposition was
to evaluate the performance of the element in the user
experience of Acropolis, while the second proposition
evaluated the perceived importance of the element in question
in creating a valuable experience of content curation
(regardless of Acropolis).

For example, for the “self-agency” element, the first
proposition was formulated thus: “In Acropolis, when
curating my own narratives of the stories that interested me, I
felt like I was in control of the interactions (with the content I
posted and with others who interacted with me)”. The second
proposition was defined as follows: “In a social content
curation environment, it is important that the system make you
feel like you are in control of interactions with content and
other users”. Each proposal was evaluated by participants
using a Likert 5-point scale (1- strongly disagree; 2- partially
disagree; 3- indifferent; 4- partially agree; and 5 totally agree).

Table 3 – Evaluation framework

The rationale of this type of evaluation is that if you know
how the artifact performs for a certain element and you know
how important the element is perceived, then elements on
which the artifact performed poorly but were highly valued
would have to be improved in the following design cycles. In
other words, this assessment approach helps us to define
where to focus in future design and build iterations of the
artifact.

C. Evaluation results and discussion

Table 4 shows the central tendency values of the result of
the evaluation of the ten elements of the proposed framework,
which considered the response of all the twelve participants of
the experiment. Methods employing ordinal data should work
with the modal value (median) as a measure of central
tendency, because the necessary arithmetic manipulations to
calculate the average (and standard deviation) are inadequate
for ordinal values.
Table 4 - Evaluation results

<table>
<thead>
<tr>
<th>Element</th>
<th>Performance</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-agency</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Social curatorial experience</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Engagement with content</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Social interaction</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Support for complex and long-term stories</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Curation through asymmetric collaboration</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Variation in plot</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Strategic curation</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Aggregation of content</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Gamification</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

We argue that the central tendency for the “importance” of the elements that we prioritized in the second prototype was evaluated with a high score: only three items received a modal answer of 4, and the remaining received score of 5. This means that the participants considered that the ten elements of our framework are in general relevant in any content curation environment. Similarly, we were pleased to note that the central tendency for the “performance” of these elements evaluated also obtained a high score in most of them. It is worth here considering the following elements: self-agency, variation in plot, strategic curation, and gamification.

Analyzing the “self-agency” element, we observed that it was evaluated with score slightly below the others in terms of importance, and also in terms of performance. This may indicate a caution by the participants in leaving in the hands of every citizen the control over the gathering and dissemination of the curated content (when evaluating the importance of this element in the overall context of social curation), but can also indicate that the support for self-agency could still be improved in Acropolis. Already the element “variation in plot” got the worst result (modal note of 3) among all the elements in the “performance” evaluation, and obtained maximum score in “importance”. The result of the item “performance” was expected and is in line with the results collected from the interviews where participants admitted to having little explored the functionality of “plots” and the exploitation of the different perspectives of a story. This suggests that a third design cycle could have a special focus on the improvement of this issue, leading to a complete review of the aforementioned functionality.

The “strategic curation” element had a curious result in the quantitative evaluation. It was evaluated with maximum modal answer in the item performance - meaning that the platform approach was effective in suggesting content distributed by public figures worthy of being included in the curated narratives - but received a slightly lower score in “importance”. This may indicate some caution on the part of participants since it is a new approach not yet explored in other curation environments. Finally, the “gamification” element achieved a maximum score of “importance” and a slightly lower evaluation (note of 4) in the item “performance”, suggesting that the design of the platform's incentives through the game elements could be enhanced, which is in line with the suggestions of improvements collected during the interviews of the second cycle.

Finally, it is worth here a brief evaluation of the results obtained by the other elements that received grade of 5 in the item performance. They demonstrate a central tendency of approval by the participants of the Acropolis approach to provide a social curatorial experience, encouraging engagement in complex or long lasting stories, social interaction, collaboration in the construction of personal narratives, as well as the designed facilities to aggregate curated content.

VII. CONCLUSION

In this work we described the second design cycle of Acropolis, a social computing platform allowing citizens to build and network their own narratives about news stories by engaging them in a process of social curation. Following an action design research methodology, we concluded the second cycle of this study with a description of a quantitative evaluation with promising results.

REFERENCES