The Effects of Aesthetics of Crowdsourcing Application Interfaces in the Cultural Heritage Domain on People’s Motivation

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1. CONTEXT
Scholars and social commentators argue that we are witnessing a cognitive surplus [21, 47], because of the internet. Time that used to be spent on passive activities (e.g., watching television) is now being used to benefit society in a variety of ways. People are volunteering their time and interest in resourceful ways to participate in news, politics and business. The online encyclopedia Wikipedia is a compelling example, which articles are created by thousands of users investing their free time in knowledge production [20].

Galleries, Libraries, Archives and Museums (abbreviated hereafter to ‘GLAMs’) build collections of objects and art that embody our cultural and natural heritage. Information about objects is often as important as the objects themselves. In museums, and in all likelihood also the other GLAM constituents, the objects “receive their significance only through the thoughts that cluster around them” [7].

GLAMs are beginning to explore the potential of the internet, as they traditionally communicated only through exhibitions, events, publications, catalogues, lectures, school programs and tours [54]. Technology-mediated access (e.g., the internet) has been explored for decades as new access routes to collections [36, 18, 12, 45, 46, 60]. Digitization is also a means to ensure long-term preservations of information about the objects in GLAMs [39]. Online museum programs are being developed to increase openness and show an increasing awareness of museum’s diverse roles [1, 54, 25]. Novel ways for user participation and collection explorations are supporting information discovery by non-professionals [50] and invite users to assist in selecting, cataloguing, contextualizing and curation [32].

Documentation written by GLAMs is traditionally written by professionals and is focused on the business aspect [35, 13]. Social tagging/labeling of cultural heritage collections by crowdsourcing initiatives provides access based on the resulting folksonomy (i.e., a “socially constructed classification system” [56]) and opens collections to new interpretations that reflect the perspectives from visitors instead of institutional ones [54]. Tags supplied and shared via the internet by the general public appears to fill gaps in current documentation practices by GLAMs [54]; the constructed folksonomies are direct evidence of what the public sees as significant [52]. Social tagging is a means for people to connect directly with works of art [54] and is fundamentally about sensemaking [22]; a process in which information is categorized and labeled, and thereby creating meaning [50].

1.1 Crowdsourcing
Individual contributions on the internet – made possible by the internet’s connective nature – are having social and economic impact [2, 51] and induce the crowdsourcing age. Crowdsourcing is a model for problem solving and is a web-based production model that has emerged the last decade [9], invoked by the cognitive surplus [4]. Crowdsourcing tasks were first aimed at achieving simple tasks in large quantities, rather than quality [17]. Nowadays, crowdsourcing is also aimed at solving complex knowledge-insensitive tasks [38, 39], with a focus on the quality of the final results [27].

1.1.1 Motivation
Motivation can be defined as “the internal states of the organism that lead to the instigation, persistence, energy, and direction of behavior towards a goal.” [16], which I will use as the working definition of motivation. It is a fusion of the definitions offered by Ferguson [19] and Chaplin [14].

The motivation of people to participate in crowdsourcing initiatives can be explained using two type of motivations: extrinsic and intrinsic motivation [43]. In extrinsic motivation, one’s activity is an instrument to achieve a certain desired outcome (e.g., acting for money). Intrinsic motivation exists if someone is activated by seeking fulfillment generated by the activity (e.g., acting for fun) [31]. Intrinsic motivation factors seem to dominate extrinsic factors [31]. People are drawn to crowdsourcing applications because they are gratified in a number of ways through participation, and several other reasons based on use and gratification theories (e.g., [30, 29, 6, 5]) [11]. Unfortunately, the validity of these theories can be questioned because they emerged before the internet era.

People are primarily intrinsically motivated to participate in crowdsourcing by the same pleasure found in doing hobbies; because ‘it is fun to do’ [11]. Examples of other intrinsic mo-

1 http://www.wikipedia.org
tivators are: ‘sharing/developing knowledge’, ‘sharing/developing skills’, ‘being part of a community’ and ‘networking with friends and creative people’ [11]. These intrinsic – of which some are altruistic – motivators trump opportunities to earn money [10]. Nevertheless, according to current findings [11], there is no definitive set of motivators that work for all crowdsourcing projects.

Several approaches could be used for the measurement of motivation [34]. Cnaan [15] researched the motivation of people to volunteer in human services and created a survey to measure motivation based on a large body of literature. The survey consisted of 28 statements – which expressed motives – and respondents were asked to rate on a Likert scale to what extent each motive contributed to their decision to volunteer or would influence their decision to volunteer in the future. Examples of such statements were: “If I did not volunteer there would be no one to carry out this volunteer work.”, “I wanted to broaden my horizons.” and “Volunteering for others makes me feel better about myself.” [15]. Such an approach – measuring motivation by using a self-judgment scale in which the respondent is directly asked about his or her motivation for a task – is a viable approach to measure motivation in crowdsourcing applications [8].

The Work Preference Inventory (WPI) [3] is a tool designed to measure the degree of people’s extrinsic and intrinsic motivation and consists of 30 motivation items. These items can be used to create a survey to measure motivation (e.g., [8]).

1.1.2 Cultural Heritage Crowdsourcing

GLAMs are using crowdsourcing as an alternative to professional labor. Crowdsourcing allows people to help in production, development and enhancement of digitized objects, by using their intrinsic motivation [42]. Owens described the motivation regarding cultural heritage crowdsourcing:

“[Crowdsourcing] offers an opportunity for someone to do something more than consume information. When done well, crowdsourcing offers us an opportunity to provide meaningful ways for individuals to engage with and contribute to public memory. Far from being an instrument which enables us to ultimately better deliver content to end users, crowdsourcing is the best way to actually engage our users in the fundamental reason that these digital collections exist in the first place.” [41]

Examples of crowdsourcing projects by GLAMs are:

Steve.museum This project was launched in 2005 by UK and US based museums “to explore the role user-contributed descriptions play in improving on-line access to works of art” [53]. It provides an environment in which experimental approaches can be explored regarding the concept of ‘tagging’ by the crowd. Users can – at time of writing – provide tags for 97,040 different objects (i.e., works of art) using an online interface, which has resulted in 552,100 tags by 8,346 users [49]. The majority of the tags (88.2%) were evaluated as useful for search by museum staff [53]. The Steve.museum website is shown in Figure 1.

The Library of Congress Flickr Pilot Project The Library of Congress (LoC) reached out to unknown audiences to attract people to comment, share and interact with their libraries. They developed a pilot project using the photo sharing website Flickr2 with three primary objectives: (1) to increase awareness of the Library’s collections, (2) to gain a better understanding of how tagging could benefit the LoC and its users and (3) to gain experience in participating in emergent online communities [48]. Starting from January 2008, Flickr users were invited to tag or comment on photographs from two historical collections. The response was overwhelming: in the first ten months of the project, 7,166 comments and 76,176 tags were left on 2,873 photos by 2,562 Flickr users. Comments were left regarding the aesthetic properties of the photographs, but a lot of new factual information was added also [39]. Because of the project’s success, the LoC and Flickr created a new section on the Flickr website designated for cultural heritage institutions with photograph collections: The Commons3 [48]. It has the subtitle “Help us catalog the world’s public photo archives” [61]. An example of a Flickr Commons page is shown in Figure 2.

Figure 1: The Steve.museum website showing a work of art and its metadata, of which the crowdsourced tags at the bottom of the image is a part of.

Waisda? The Waisda? video labeling game is a crowdsourcing initiative that was started in 2009 by the Netherlands Institute for Sound and Vision and the VU University Amsterdam. It follows the the games-with-a-purpose paradigm from the ESP image labeling game by Von Ahn [57]. Gaming is used as a method to annotate television heritage [39]. Players score points by entering the same tags as other players during a video fragment, thus annotating video’s and validating

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2http://www.flickr.com
3http://www.flickr.com/ commons
Figure 2: A Flickr Commons page showing a work of art. The user-contributed tags are visible in the bottom right.

Figure 3: An implementation of the Waisda? tagging interface as used by the television program Man bijt hond (i.e., Dutch humorous television program).

Figure 4: The Tag4Knowledge interface.

1.2 Web Aesthetics

The aesthetic appeal of a website determines the emotions of the consumer [44, 58]; it is a strong determinant of user’s satisfaction and pleasure [33]. Aesthetic factors of a website contribute to the success of it, beyond traditional usability [23, 37, 24]; a visually attractive website can be a more important influence on users’ preference than traditional usability [37].

Lavie and Tractinsky [33] researched website aesthetics and showed that it is important for a website to include the following elements: beauty, pleasantness, clearness, cleanliness, symmetry, creativity, ability to fascinate, special effects, originality, sophistication and interestingness. This corresponds in part with findings from Schenkman and Jönsson [44], who claimed that beauty, mostly illustrations versus text, overview and structure are important dimensions in web aesthetics. This is in line with findings from Karvonen [28], who mentions beauty and simplicity as determinants in usability and aesthetics.

2. PROBLEM STATEMENT

It is clear that crowdsourcing initiatives (can) offer great benefit to the cultural heritage domain. There has been some research regarding the motivation of people in crowdsourcing initiatives, but not much in the cultural heritage domain. There are several reasons why I want to research the subject:

Motivation There has been some research about people’s motivation to participate in crowdsourcing initiatives, as described in Section 1.1, but not much. For instance, Brabham [11] concludes his article by saying that additional research is needed to expand the knowledge about what motivates people’s participation in crowdsourcing.

Increase benefit As described in Section 1.1.2, crowdsourcing can offer great benefit to GLAMs. A better insight into the motivation of crowdsourcing participants in the cultural heritage domain allows us to maximize the utility of crowdsourcing applications.

Increase visual attractiveness People contribute to most crowdsourcing projects via an online interface (i.e., a website). I have noticed that most of these websites are not aesthetically pleasing. As described in Section 1.2, the aesthetics of a website contribute to the success of it. I assume a visually attractive website could increase the motivation of its users.
Because of the reasons described above and the lack of available research, I want to study the subject and try to answer the research question described in Section 3.

3. RESEARCH QUESTION

The research question described in this section comprise the focus of my research project. The ultimate goal is to gain insight into people’s motivation why they contribute to crowdsourcing projects by GLAMs and how to increase people’s motivation to maximize crowdsourcing project’s utility. The exact hypothesis/hypotheses will be formulated at a later stage in the Master Project.

RQ What are the effects of interface aesthetics of crowdsourcing applications in the cultural heritage domain on people’s motivation?

I will use the following sub-questions to get an answer on the research question: (1) what is motivation and how does one measure motivation?, (2) what is seen as aesthetically pleasing interface design? and (3) what are the effects of interface aesthetics on people’s motivation?

4. METHODOLOGY

I will use the following phases to answer the research question as described in Section 3:

Phase 1: literature review A literature review on crowdsourcing in the cultural heritage domain, people’s motivation in crowdsourcing projects and the effects of aesthetics on motivation and usability will give me a better understanding of the subject.

Phase 2: operationalization The literature review allows me to operationalize the subject. How to measure motivation and aesthetics?

Phase 3: stimulus materials I will create a visually attractive version of the Tag4Knowledge crowdsourcing website. I expect a pre-test will be necessary to validate the stimulus materials with theories. For instance, are the interfaces indeed found to be visually (un)attractive? What factors influence the perceived aesthetics?

Phase 4: measurements This is where the real field work will be carried out; data gathering and analysis are part of this phase. I will use surveys to measure the effects of interface aesthetics on people’s motivation. The surveys will be placed on the Tag4Knowledge website and its users are invited to participate. The experiment will run on a real life online A/B-test on the Tag4Knowledge website. Besides a survey, log analysis could also indicate a difference in motivation between the different versions of the Tag4Knowledge website.

5. PLANNING

I will maintain the general schedule described in Table 1 during my research for the Master Project course. It is based on the year schedule\(^8\) from the faculty. Please note that the final submission deadline for this year’s results is 31 August 2014.

I have also constructed a provisional planning by week, as shown in Table 2. It is based on the assumption that I do most of the work in period 5-6. This planning is for guidance, as some activities will probably overlap and/or change.

6. ACKNOWLEDGEMENT

I am supervised by Chris Dijkshoorn\(^9\) from the Web and Media group of the VU University Amsterdam. He focuses on personalized semantic search in a linked cultural heritage environment.

7. REFERENCES


\(^8\)http://www.few.vu.nl/nl/Images/jaarindeling_1314_Lcml38-340260.pdf

\(^9\)http://www.few.vu.nl/~cdn370
<table>
<thead>
<tr>
<th>Period</th>
<th>Weeks</th>
<th>Dates</th>
<th>Availability</th>
<th>Other activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>6-13</td>
<td>3 February 2014 – 30 March 2014</td>
<td>2 hrs/week</td>
<td>40 hrs/week course, 12 hrs/week work</td>
</tr>
<tr>
<td>5</td>
<td>14-22</td>
<td>31 March 2014 – 1 June 2014</td>
<td>40 hrs/week</td>
<td>12 hrs/week work</td>
</tr>
<tr>
<td>6</td>
<td>23-26</td>
<td>2 June 2013 – 29 June 2014</td>
<td>40 hrs/week</td>
<td>12 hrs/week work</td>
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Table 1: A general schedule which shows my availability for the rest of this year of study. The bulk of the research will be carried out in period 5–6. In period 4, I follow the courses 'The Social Web' and 'Web Search'.

<table>
<thead>
<tr>
<th>Week</th>
<th>Activity</th>
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</thead>
<tbody>
<tr>
<td>6–15</td>
<td>Literature review and general preparation.</td>
</tr>
<tr>
<td>16</td>
<td>Investigation into how to measure motivation and aesthetics.</td>
</tr>
<tr>
<td>17</td>
<td>Investigation into how to use a survey for the research.</td>
</tr>
<tr>
<td>18–19</td>
<td>Construct stimulus materials.</td>
</tr>
<tr>
<td>20</td>
<td>Creating survey(s), pre-testing stimulus materials.</td>
</tr>
<tr>
<td>21–22</td>
<td>Data gathering.</td>
</tr>
<tr>
<td>23–24</td>
<td>Data analysis.</td>
</tr>
<tr>
<td>25</td>
<td>Finalizing research and writing report.</td>
</tr>
<tr>
<td>26</td>
<td>Extra week for unanticipated delays.</td>
</tr>
</tbody>
</table>

Table 2: Planning by week; weeks are used according to the year calendar.


Schweibenz, W. The "Virtual Museum": New Perspectives For Museums to Present Objects and Information Using the Internet as a Knowledge Base and Communication System. In ISI (1998), pp. 185–200.

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