Operation waffles: expressive tagging on Scratch

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ABSTRACT

Studies on collaborative tagging systems have focused on the benefits of tagging for Personal Information Management and for retrieval. While these effects are well documented, we pose a different hypothesis: that tagging can be used as a communicative technology, and that has the capability to coordinate and create experiences across groups of users. In this paper, we describe the way youth engage in the practice of tagging on the Scratch website, an online community for sharing videogames and animation. We examine tag distribution data and find evidence to support the prevalence of "altruistic" and "expressive" tagging practice. We then propose a framework for examining tagging as a communicative and creative practice of classification.

Author Keywords

Social tagging, youth, online communities, Scratch, expressive affect

ACM Classification Keywords

H5.m. Information interfaces and presentation: Group and Organization Interfaces – web-based interaction, collaborative computing.

INTRODUCTION

Scratch poses a unique case study for the examination of tagging in online communities. The focus of the site allows us to observe patterns within a youth community. Previous analysis of the Scratch online community [10,17,19] have explored the way in which community members engage in the creation of media-rich projects as well as remixing and collaborative project-making. These studies have shown users to be highly collaborative, expressive, and deliberate in their actions.

Youth use of social media has been researched in the CSCW community [2] but has not addressed tagging directly. Conversely, previous work on social tagging has emphasized the use of tags for Personal Information Management [22] purposes across work and everyday life. Tag use in youth communities is thus an overlooked area; research in social tagging has focused largely on nonspecific adult populations.

Generally, Classification and HCI researchers have stressed the usefulness of tags for retrieval [11]. Very little attention has been paid to the communicative nature of social tags, such as the ways in which tags can create expressive affect and their function as descriptive tools. The analysis of data from Scratch suggests that tags have a much greater wealth of expressive possibility than previously considered.

Default tags on Scratch include "animation", "game", and "music", used to describe the content of the projects. These remain the most

SCRATCH

The Scratch website is a free and publicly available website where users create and share animated stories, interactive art, and video games. As of August 2010, nearly 600,000 Scratch user accounts have been created and 1.2 million projects shared. About 28% of users have created at least one project. The self-reported ages of users range primarily from 8 to 17 years old with 12 being the mode. Thirty-six percent of users are self-reported as female. A large minority of users are from the United States (41%) while other countries prominently represented include the United Kingdom, Thailand, Australia, Canada, Brazil, South Korea, Taiwan, Colombia and Mexico. Participants use the Scratch programming environment [19], a desktop application, to create projects by putting together images, music and sounds with programming command blocks. The application is also free and can be downloaded from the same website. Both the website and the application are available in multiple languages. Scratch is used in both formal schooling environments and informal environments.

Tagging on Scrach

The Scratch website allows people to use one more words as tags. The front page of the Scratch website displays the 30 most popular tags in a "tag cloud". Scratchers, as they often call themselves, can tag projects in two places:

Sharing dialog window: The desktop application has a "share" menu option that lets people upload their project to the website. The dialog window of the share menu (Figure 1. Share dialog window) lets users chose from one of the six predefined tags: animation, art, game, music and simulation — or type their own tags in the four text fields. The six predefined tags are set in the language in which the Scratch application is used[1]
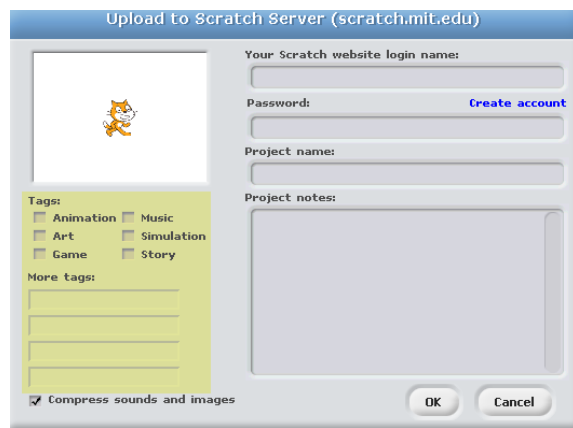

Figure 1. Share dialog window

Website: People can tag their own or other people's projects on the web page where a project is displayed (Figure 2. Tagging space on project web page) in two different ways: (a) by entering a new tag by typing it on the text field and (b) by voting for an existing one by clicking on the plus sign. Anyone can flag tags as inappropriate but only project owners and administrators can remove tags.
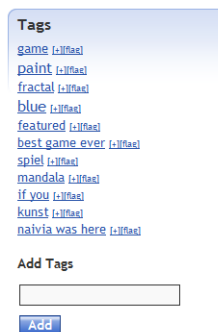

Figure 2. Tagging space on project web page

RELATED WORK

Since 2004, a substantial body of literature has been devoted to user tagging. We focus our literature review in Library and Information Sciences, and Human Computer Interaction. In LIS, studies focus on tagging applications for system design and its use in comparison to, or in conjunction with, traditional indexing and classification systems. Trant [24] identifies three main areas in LIS literature: the concept of "Folksonomy" and the role of user tags in indexing and retrieval; tagging as a user behavior; and social tagging systems as socio-technical frameworks. In HCI, research examines the design and use of social tagging systems in online communities.

Much of the discussion on "Folksonomy" [25] focuses on the ways in which tagging is either like or unlike formal classification or knowledge organization systems, and the potential for such capability. Many [1,16] argue that folksonomies resemble what Star terms "ethnoclassification". The potential for collaboration in

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[1] This means that if someone is using Scratch in Spanish, for example, the tag for animation would be "animación" and that would be how it is accounted for on the website. The system does not know that "animación" is the same concept as "animation".

tagging practices is stressed in much of the early literature as is its application in conjunction with, or in the place of, traditional classification systems. Likewise, Weinberger [26] touts a "multiplicity of world views" as a benefit of collaborative tagging, offering an alternative to the more monolithic nature of, for example, the library catalog.

But in terms of empirical or forensic analysis of tagging systems, functionality and retrieval, not perspective, are the focus. In their widely cited paper, Golder and Huberman [6], using the bookmarking utility, del.icio.us as a case study, identify patterns in use and their relations to larger structures in terms of "regularities in user activity, tag frequencies, kinds of tags used, and burst of popularity in bookmarking". They also identify proportions of tags assigned to a particular bookmark, and offer some preliminary typology in tagging. Of their 8 categories of tags, they do offer "Identifying Qualities or Characteristics" as a type of tag, offering "cool", "funny", and "inspirational" as examples. However, they do not discuss how this type of tag may work in conjunction with other tags, or offer a sort of functionality.

Research on tags for user experience supports theories on how tags are chosen or how tagging is implemented. Sen and colleagues [20,21] propose three classes of tags: factual, subjective, and personal. They suggest that tag vocabulary, types of tags and choice of tag are influenced by the community.

Other del.icio.us studies stress the usefulness of tags for potential retrieval, but dismiss the interactive capabilities of the systems. Rader and Walsh [18] find that users follow "an individual, idiosyncratic pattern" and conclude that "personal information management goals, rather than social processes" determine tagging patterns. Kipp and Campell [11] also investigate structures in del.icio.us, positing that tags' cumulative effect is in clustering information by topicality and type. Like Golder and Huberman, they dismiss "functional" tags such as "toread" as outliers, useful only on a personal level. Such tags are "inconsistencies" within larger tag structure that undermine the usefulness of tags as an indexing technology.

While Grudin [7] proposes tags as a "low-maintenance" means of information organization, several other studies examine the maintenance and coordination needed to facilitate functional indexing capability from tag "clouds". Macgregor and McCulloch [13] recommend better "lexical control" and structure in order to attain "meaningful subject interoperability". Guy and Tonkin [8] suggest training for users, although Markey [14,15] argues against it.

While many studies sum up the usefulness of tags for personal retrieval, few explore the potential for interaction, collaboration, or expression within tagging systems. Lee [12] suggests that "perceived social presence" serves as a determining factor in the types of tags users contribute. Feinberg offers the counterpoint of tags' value in their "expressive" quality [4], arguing for the consideration of

tagged collections as a vehicle to "express the unique perspective of their authors toward the material that they collect and arrange."

As we will show below, our findings reflect a richer and more complex ecology of tags on Scratch than many of the studies suggest. We will demonstrate the prevalence of expressive tagging in the Scratch community, and the role which it plays in complimenting, instead of contradicting, tagging function. In concluding this analysis, we examine ways in which tagging may be reconceived as a structured, interactive form of communication.

Analysis

In this paper we examine the types of tags that have emerged from the Scratch's community, using data generated over the course of three years' activity on the site. In the first study, we focus on the function and distribution of tags in Scratch, developing the concepts of "altruistic" and "expressive" tagging. In study two, we look at altruistic and expressive tagging from a discursive standpoint. We examine prominent instances of expressive tagging, the conditions under which such tagging happens, the conversational data that it generates, and the discussions of tagging activity.

In synthesizing these analyses, we present a working definition of expressive tagging. We describe patterns indicating its relationship to social interaction. We find evidence to suggest that not only does tagging serve as a way to mark documents for retrieval, but it also serves to promote systematic interaction and communication in production groups. Our findings suggest that tagging holds great potential for communicative and interactive purposes. In conclusion, we use these findings as the basis for design recommendations and next steps.

STUDY ONE: YOUTH TAGGING PRACTICES

In the first study of this paper, we will describe how the members of the Scratch community engage in the practice of tagging by presenting some descriptive statistics of what kind of users, how often and what they tag.

Methodology

The research data[2] was accumulated over the course of three years (from April 2007 to August 2010). To get a better understanding tagging practices in Scratch, we will start by defining some concepts for the purpose of this analysis..

A Scratch user is a "tagger" when he or she adds a tag to a project that either he or she or someone else created. "Tagging" is then the act posting a tag to a project such that uploading a Scratch project with three tags would count as tagging three times; voting for two tags would be tagging twice; entering one tag on the web form would be tagging once (see Figure 3. Tagger relationships to projects) .

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[2] All the usernames and quotes are obfuscated to the extent possible.

Figure 3. Tagger relationships to projects
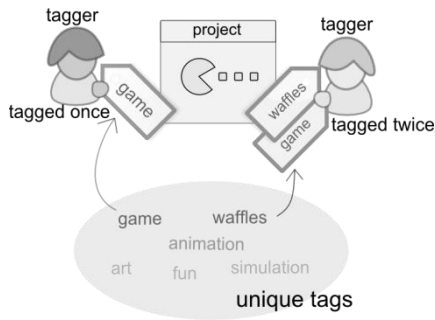
of taggers (4,644) have not created any projects themselves. The distribution of tag usage of these "altruistic taggers" shows a slightly different use of tags. Default tags are still prevalent among altruistic tags , but within them, expressive tags from a much larger minority.. For example, "waffles" moves from the 11th to the 3rd spot.

There is no limit on the number of tags a project can have, so we can see projects with anywhere from zero to a couple hundreds of tags. In fact, the project with the most tags has 255 tags posted by its creator and 122 by other people. That project, titled "Tag this project!" invites tagging:
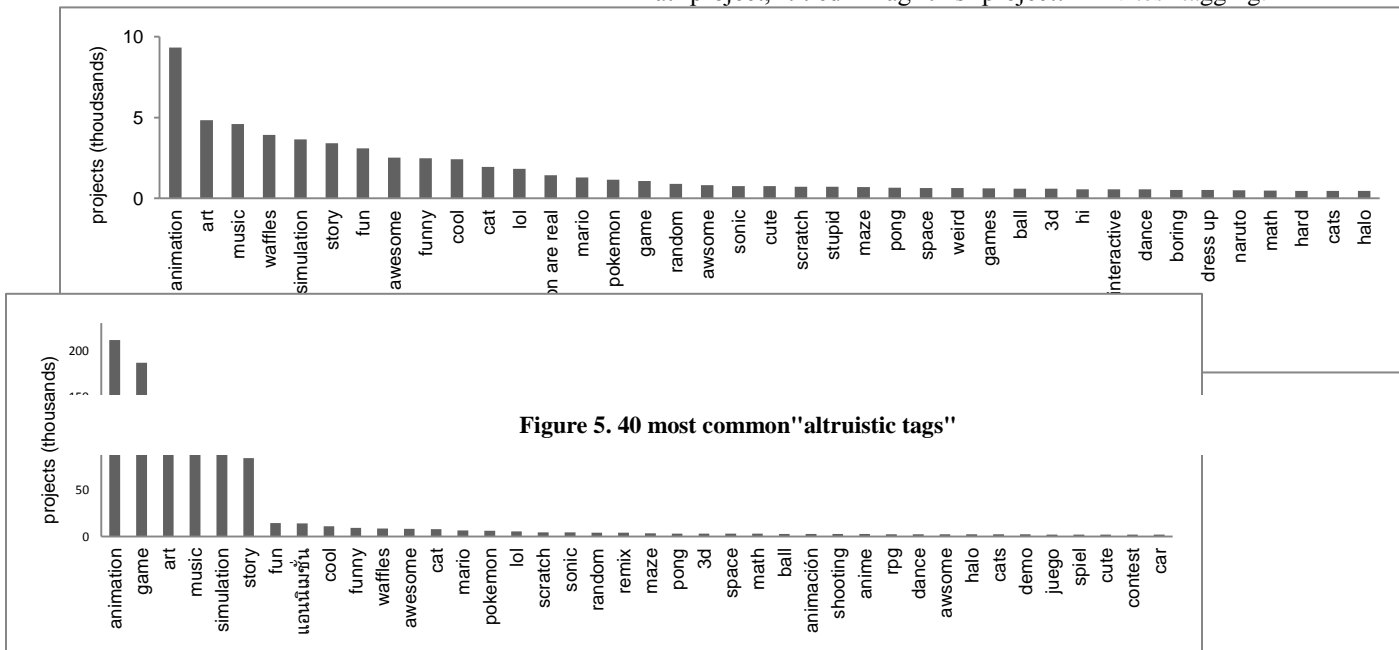

Figure 5. 40 most common "altruistic tags"

Figure 4. Tags with more than 2,000 projects associated with them

Results

We found that 17% (103,982) of all Scratch users have tagged at least once; this is only 10% less than people who have created a project. 47% of all projects shared on the website have been tagged at least once and, on average, tagged projects have been tagged 3.4 times There have been 1,952,914 tagging events which has generated a vocabulary of 229,518 unique tags.

As seen in Figure #, the predefined tags are present in a sizable portion of tagged projects. For example, the tag "game" alone appears in 33% (187,187) of all tagged projects. The prevalence of the predefined tags is even higher if they were to be merged across languages (e.g. merging "แอนิเมชั่น" with "animation"). About 42% (816,752) of all tagging is done using some of these predefined tags, which is not surprising given that they appear in the upload window (Figure 4. Tags with more than 2,000 projects associated with them).

Most who tag, tag their own projects 94% (95982) but 18% (18,256) have tagged other people's projects. Four percent

"Hello everyone! I know people have tried this before. I'm doing this for fun. Please add as many tags to this project as you can!!!"

In general, one of the goals of tagging is often to have more than object tagged with the same word so that categories can emerge. However, on the Scratch website, only 25% of tags (58,196) have been used more than once. A cursory observation of that 75% of tags (171,322) used only once suggests that they are a combination of:

1. Very specific tags, e.g. "prof. rowan's lab"

2. Tags that could belong to other broader category, e.g. "pac-man stuff" which presumably could belong to the more popular "pacman" tag.

3. Misspellings, e.g. "japaneese"

4. Tags as comments, e.g. "i beat your game it awesome"

5. "Graffiti" tags, e.g. "humdedumdedum....."

Discussion

Popular tags represent the diversity of interests in the Scratch community: "Mario", "pokemon", "sonic", "remix", "maze", "pong", "3d", "anime", "space" and "math".. Other tags like "fun", "cool", "funny", "awesome" and "lol" seem to represent statements of approval for projects rather than an attempt to categorize. More work is needed to understand the motivations for these tags.

Tags have been identified by some members of the Scratch community as useful ways to get visibility for their work. For example, JonasBro99, started a thread in the Scratch forums titled "How to make your projects/galleries popular" where among the suggestions he lists:

"Add lots of tags. There are lots of amazing projects that have little or no tags. Add plenty, but avoid using tags like "awesome"; that's saying that your project is good, which is sort of like bragging. And post sensible tags."

Similarly, OrangeJuice421 lists his four tips to "get your projects popular":

"step 4, put your project under a popular tags, and then more people are going to find it as they go to the most popular tags"

This has led to a trend of strategic use of "unrelated" tags for visibility. User flyingcarpet suggests this in a forum discussion about the tag "waffles":

"I put waffles on my project tags because it's one of the most searched tags."

Or SUNNYGUY in the description of his project writes:

"Please don't call it stupid, or short because I know that already! By the way, the tags are to get more views."

The results suggest that the predefined tags reach enough visibility and consensus to dominate the tag space but they also suggest that other tags have gained consensus in a more organic way. Some of these organic tags represent the range of projects in the Scratch community and serve classification and visibility purposes (e.g. pokemon) while others are more expressive (e.g. "cool" or "waffles") and show the playful nature of the community. The expressive tags have been controversial in the Scratch community and its role has not been fully explored in the literature. Our second study seeks to expand on the nature of these expressive tags.

STUDY TWO: TAGGING AS EXPRESSION?

In order to qualitatively address the types of "speech acts" and other communicative aspects of expressive tagging, we conducted critical discourse analysis [3]. Using Fairclough's preliminary framework, we developed critical discourse analysis protocol to examined specific issues of user modality, intention, and interaction. This process allowed us to engage in depth with how tagging is used as expression and in what ways expressive tagging impacts interaction. Our corpus of qualitative data, generated from 2007 to 2010, consists of tags and their related metadata, forum posts, and email communication to administrators from Scratch users.

Methodology

Critical Discourse Analysis is described as studying "real, and often extended, instances of social interaction which take (partially) linguistic form. The critical approach is distinctive in its view of (a) the relationship between language and society, and (b) the analysis and the practices analyzed." Divergent from Conversational Analysis methods in its consideration of social and environment factors, CDA allows researchers a structured and formalized set of criteria for considering texts and their social environments. CDA also differs from mainstream Discourse Analysis and Content Analysis [9] in that it provides models to situate and generate social theory. CDA has been applied to youth discourse and interactive environments [23]and has been used in evaluating classification systems [5]

Fairclough's model outlines the following areas for analysis: Social events, Genre, Difference, Intertextuality, Assumptions, Styles, Semantic relations, Exchanges, Modality, and Evaluation. For the purposes of this study, we adapted and streamlined this criteria to Social Events, Difference, Interaction/Coordination, Modality and Evaluation, modifying Fariclough's "checklist".

Social Event: What social practice or "network of social practices" the text can be framed in. A "network" of events

Difference: The orientation of difference in the text or act: openness to, acceptance of, attempt to overcome, "bracketing", or normalization of differences

Interaction: Exchanges, communications, semantic and grammatical relations. Representation and referral to people and things. Ongoing discussion.

Modality and Evaluation: Epistemic and Categorical modalities. Commitment to and markers of modalities.

We then used these criteria and applied it to 5 of the top expressive tags, and comparing these findings to determine commonalities and discrepancies across tag applications. We then looked at particular instances of activity (and in some cases) conflict in tag applications. In an extended case study, we looked at the tag "waffles", as it is applied to projects, and the communication generated from "Operation Waffle".

Results and Interpretation

In the preliminary phase of this study, we analyzed the distribution of tags on Scratch projects. We began by tracking the occurrence of the tags, their consistency of reuse, and the context in which the tags were applied. In this second phase, we extracted the five highest occurring expressive tags: "cool", "funny", "waffles", "awesome", and "LOL", applying the criteria of Critical Discourse Analysis.

Tags serve as a particular type of social event when a user applies a tag, they can refer to it again for their own purposes. The tag is then visible on the project it is applied to, and the project is then listed in a directory of projects with that tag designation. Tagging is both anonymous and public: while users' tags are not displayed publicly in connection with their profiles (as is the case with del.icio.us), project creators are able to see who assigned which tags to their works. The act of tagging is then communicative and systematic at the same time.

In terms of Modality and Evaluation, examination of this tag set raises some key issues in the application and situation of expressive tags. As distinct categories, these tags each connote specific types of evaluation, of expression and modes of being. Although the distinction is subtle, "cool", varies from "awesome" in connotation, (as does "awesome" from "awesome!", another prominent tag). Hence, "awesome" can indicate a level of technical proficiency, or "effects", rather than "cool" as a statement of novelty or affective resonance. Comments on the forums indicate that users are aware of these distinctions, and purposeful in their choices. This suggests that the proliferation of subtly different expressive tags indicates a complex affective taxonomy, rather than a generalized disorganization.

Likewise, tags are highly self-referential. The distinction between "funny" and "LOL" is notable. While both refer to humorous qualities, "LOL" is particular to internet culture and humor, and can often evoke online-specific motifs. Conversely, "Funny" is often used dually to note odd or quirky qualities in a project. Difference, another criterion, is prevalent in the choice and application of tags. Users demonstrate the difference (as well as similarity) between qualities, but can also use expressive tags to note a specific meaning. This, in turn, can generate division on its own. In the case of "waffles" (see below), the tag is used to indicate a presence, and to convey a message not entirely coherent to the outside observer. Even users who dislike the existence of nonsensical tags are willing to acknowledge their capabilities. User "Karra" notes: "The worst tag ever: "fried chicken". I cracked up for hours with that one! XD"

In terms of interaction design, the capability of tags serve as indexing tools allows users to communicate their preferences and sensibilities: projects tagged with "cool" will then appear in a gallery indicating such. Tagging then serves as a sort of expressive democratization users can both voice their opinions and then "vote" with them for stratus and inclusion. The rhetoric of tagging then intersects with that of visibility and popularity. As one administrator points out in a forum discussion: "Tags normally don't work like votes, as they would here."

Case Study: Waffles

The expressive capabilities of tags are distinctly articulated in nonsensical tags, those that achieve an in-joke status among groups of taggers. These tags could also be characterized as memes. Beginning in 2007, a loosely coordinated group of people attempted to tag as many projects a possible with the word "waffles". Their efforts have resulted in "waffles" ranking as 11th most popular tag (with 8,372 projects). Similar coordinated and nonsensical tags, such as "peanut butter jelly time" and "nonence land", (the latter then evolving into a specific type of project) serve as markers for a particular type of social exchange. Heated discussions about the value of tags like "waffles" are common on Scratch boards:

Lucio125: It is very rude to tag lots of projects "waffles" when its not even related to that. if someone was looking for an actual project related to waffles (like one a friend of mine created) than it'd be a bit harder to find it.

MarioRules: BUT so many people make projects with art, animation, music,ect. that you can't find anything that way.

Lucio125: Well if a person likes to look at simulation projects a lot, by clicking simulation, she will see old and new simulation project that he might have. Waffles is a topic thats related to breakfast and most scratchers don't talk about that. So I think that looking at Animation projects is more likely to help a person than Waffle projects. Just as an example.

MarioRules: What I mean is that some tags are used so much that they're useless and waffles are almost never used on scratch and if you don't change your mind I'll make you wanted.

Lucio125: Their never overused. Even if each one has over one million projects, its still handy to see new ones you haven't seen.

MarioRules: Are you flagging waffles tags?

Lucio125: Not yet XD but good idea! I'll start doing that...

MarioRules: Your evil!

Lucio125: I'm making you a wanted poster!

MarioRules: Please don't flag waffle tags. The 13 of us worked really hard to put up the nearly 3333 waffle tags.

Lucio125: Even though I can see why you make think this is fun, its like playing deBlob (making the entire city dirty and stuff) on the scratch community, just in a bad way. I can tell that it took quite a while to get this community running with all of the members and clubs after school and all of its uses around the world, but its like your make the community, a building, dirty and spamful.

"Waffles" serves as an exemplar of tagging's capability for social interaction (and provocation). The nonsensical application of the tag highlights manifest divisions in user behavior. Users involved in tagging "waffles" identify themselves as "Operation Waffles", and posting projects dedicated to promoting the tag. Users who dislike its presence identify themselves as "anti-waffles" (or "Operation Anti-Waffles"), complaining about the lack of

usefulness in forums, even going as far to create projects advocating this view.

Summary and Implications

In this paper, we have developed and modeled a theory of "expressive" tagging as modeled in the youth programming site, Scratch. We conducted a multi-method analysis in order to explore the expressive capabilities of social tagging, employing descriptive statistical analysis and critical discourse analysis. Working from the hypotheses raised by previous studies on social tagging that tags were most useful for individual retrieval, we sought to complicate, if not disprove this line of thinking.

Our statistical survey showed that expressive tags, although not the most prevalent tags (those being the default descriptive tags), are prominently used in Scratch. Moreover, we found a high rate of tagging and fluency with the capabilities of tags among users. In critical discourse analysis, we developed and demonstrated expressive tagging in terms of Social Event, Difference, Interaction, and Modality and Evaluation.

We believe that ours is the first study to fully consider the possibilities for expressive tagging in supporting collaboration and sociality in online communities, and that its findings expand the thinking on the usefulness of social tagsMoreover, we consider the communicative capabilities of classification tools such as tags, and their ability to impact the way that users shape and experience an environment, both individually, and across groups.

While tagging practices vary widely across systems and platforms, we believe that these findings have the possibility to influence the study and design of social tagging systems outside of the immediate application in Scratch. By encouraging, rather than dismissing or attempting to control "unorthodox" use of tags, systems can be enhanced by a rich and complex organization of ideas.

CONCLUSION

The evidence we present towards trends altruistic tagging, and occurrences of expressive tags in Scratch, holds wide implications for the design of interactive systems. The previous work on the topic, relegating its usefulness to practicality and retrieval, presents a limited perspective. Instead, we hope to characterize tagging activity on Scratch on similar terms as remixing: a practice used for both personal interpretation and group engagement.

To use Feinberg's terms, we may see expressive tagging as "collecting": a user's tags indicate a creative assemblage. Not only may they serve as future sources for inspiration, but also as touchpoints for social organization. Moreover, tagging itself may be recognized as a creative act, part of a larger cycle of production and participation. By recognizing this potential, we may see interactive and organizational systems with far more possibilities than before.

We therefore make the following recommendations for improving the collaborative tagging function in Scratch:

Make tags visible in user profiles. By allowing users to display their personal tag clouds, Scratch can enable tagging to form a fuller part of the user identity. By emphasizing altruistic tagging we create a system of recognition that would encourage people to engage in this practice.

Offer suggested tags. As some studies indicate, tagging systems "work" better with guidelines or suggestions. By offering suggestions for tagging creatively and strategically, more Scratch users could be aware of and inclined to tag.

Showcase creative trending tagging. Adding recently popular tags to the front page of the site will allow users to realize their organizational and dynamic potential.

In future research, we hope to extend this analysis of expressive tagging to other social platforms, such as Twitter and YouTube, as well as to other noncommercial applications, such as library and museum catalogs and educational software. In such, we hope to track and design for greater capabilities in system design, helping to facilitate a new wave of truly social tagging.

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