Cooperation and Attribution in an Online Community of Young Creators

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ABSTRACT

This poster analyzes the Scratch Online Community,[1] a website where thousands of children share animations and video games, to evaluate the effectiveness of attribution-focused interventions designed to foster increased cooperation. We analyzed two interventions designed to foster the creation of derivative works (i.e., remixing) and we found evidence that supports two propositions: (1) people value credit given by a person much more highly than automatic attribution generated from a system; and (2) community members' attitudes toward remixing can be influenced by positive framing in terms of community norms. We propose two experiments to further test these propositions. The first measures the effect of explicit credit by giving users the ability to explicitly acknowledgment other contributors. The second experiment involves sending positive or neutral notifications to people whose projects are remixed.

Categories and Subject Descriptors

H.5.3 [**Group and Organization Interfaces Information Interfaces and Presentation**]: Computer-supported cooperative work

Keywords

online communities, computers and children, creativity support tools, social computing and social navigation, computer mediated communication

1. INTRODUCTION

The Scratch online community is a website where young people share their animated stories, interactive art, and video games. Children and novices use the Scratch programming environment [3] to create their projects by controlling images and sounds using visual programming blocks.

[1]http://scratch.mit.edu

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In the past two years, the website has been able to engage more than 81,000 kids in creating more than 700,000 projects that range from political cartoons to replicas of popular video games to fractal generators. The age of the participants ranges primarily from 8 to 16 with the majority around 12 years old. As of recently, the community shares more than 1,200 projects per day, some of them original work and many others derivatives of previous work.

In the spirit of the Free and Open Source Software movement, anyone can download any Scratch project on the website, open it up to see how it was created, make changes to it, and upload a new version back to the website, a process called *remixing*. The practice of remixing has become more popular since the site's public launch, when it made up 10-15% of all projects shared, to nearly twice that rate today. In total, 28% of all projects ever shared on the Scratch website are remixes, 68% of those are based on someone elses work.

2. REMIXING AND INTERVENTIONS

Building on the work of CSCW projects based around constructionist learning[1], the Scratch online community's administrators have made a conscious effort to promote remixing as a valid form of participation. For example, they have taken a public stance in favor of remixing through comments and projects. Additionally, they try to respond to comments when people equate remixing to "stealing." Also, in every project page, they have added the statement "some rights reserved" and linked it to a Scratch-friendly version of the Creative Commons Attribution Share Alike license that was selected as the default for all projects shared on the website.[2] In addition, Scratch administrators intervened twice with technological changes intended to foster increased remixing.

2.1 Automatic attribution

Due to several complaints from people whose projects were remixed and who were not given proper attribution, administrators implemented a mechanism that automatically gave attribution by displaying a link to antecedent projects on every remix along with the user name of any antecedent project's creator. The site also added links from each remixed project to every derivative work. However, due to the increased visibility of remixes, this intervention had the opposite effect and resulted in a large increase in the total number of complaints. That said, negative reactions

[2]Scratch's "License to Play" can be found at http://scratch.mit.edu/pages/license

remained stable even as a proportion of total feedback from original authors.

After analyzing hundreds of comments posted by remixees on the remixes of their projects, we observed an important difference, as understood by Scratch users, between attribution and credit that is not served well by the popular conceptualizations of attribution. Automatic attribution was not successful in changing users' reactions because credit, in Scratch, is not about having other people simply know that one contributed to a project. Rather, credit is best understood as an explicitly public statement *from a remixer*. It is not enough for an audience to know that a Scratch user contributed to a project and to be able to see the original to compare it with the new one. Similar to findings in previous work[2], we found that users are happy when the remixer has explicitly acknowledged a contribution.

2.2 Highlighting the most remixed projects

Almost a year after the first intervention, Scratch administrators intervened a second time with the goal, once again, of increasing the acceptance and visibility of remixing. Administrators intended to turn something often perceived as negative, "copying," into something seen in a more positive light. The intervention consisted in the creation of a new section of the front page of the website that lists the three projects remixed most often recently. It is important to note that for the members of the community, having ones project included on the front page is very highly regarded. For example, a 14-year old whose project was displayed on the front page posted, "OH MY GOD! THIS IS ON THE TOP VEIWED LIST!!!!! [...] THIS IS THE HAPPYEST DAY OF MY LIFE!!!!!."

We found evidence that suggests that this intervention increased the likelihood of people engaging in remixing. Using a list of all users who had created at least one project in the 90 days before the intervention ($n = 2,584$), we measured the proportion of remixes these users created before and after the intervention (excluding self-remixes) and we found a statistically significant increase from 12% to to 15% ($t = 5.2$, $p < 0.001$) between the two periods.

This second intervention increased the popularity of remixing which reached all-time highs in the months following the feature's addition. Although the intervention succeeded, at least temporarily, in increasing the rate of collaboration between users on the site, it did so by creating incentives that encouraged a qualitative change in the types of projects produced, and not growth in all types of cooperative projects. Specifically, this intervention seems to have caused the rapid growth in popularity of "chain remix" projects which are projects created explicitly to be remixed.

3. HYPOTHESES AND EXPERIMENTS

The design interventions above led us to develop two propositions about attribution and cooperation: (1) that people value credit given by a person much more highly than automatic attribution generated from a system; and (2) community members' attitudes toward remixing can be influenced by positive framing in terms of community norms.

We have reframed these propositions as hypotheses which we will test in two experiments based around the deployment of features in the Scratch community to randomized subsets of users. In both experiments, we will measure outcomes on attitudes toward remixing and on users' subsequent remixing and general activity.

3.1 Personal communication

Hypothesis: Users draw a distinction between attribution (which the system can do automatically) and credit (which only a creator can do). Automatic attribution systems are largely ineffective at improving attitudes toward remixing or increasing remixing activity because credit is most accurately understood as statement by a remixer to a remixee and the larger community.

Experiment: We are planning to give users a space where they can explicitly give credit to others when sharing a remixed project. In this experiment we will measure the role of personal communication on the effect of the attitudes of creators towards remixes and on their subsequent activity in the community.

3.2 Community norms

Hypothesis: Remixing in Scratch is influenced by attitudes and by community norms. Interventions (like the top remix list) impact attitudes toward remixing by altering attitudes toward remixing in the community.

Experiment: This will take the form of informing people when someone remixes their projects by either simply letting them know of the event (i.e. "Your project P has been remixed by R. You can check out the remix here") or by introducing a positive framing to the event (i.e. "Congratulations! Your project P has been remixed by X. You can check out the remix here"). We are planning to use the existing notification system that informs people when their projects receive comments or someone befriends them.

4. CONCLUSIONS

Using the two interventions as natural experiments, we have developed two hypothesis that will we test in controlled experiments and that we believe will gives us deeper insights into the role that attribution plays as a mechanism driving cooperative interaction in creative online environments.

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