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SOCIAL MEDIA AND CREATIVITY

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Introduction

Today's youth, aged 8–18, are avid media consumers, as evidenced by usage trends on sites like YouTube and Facebook, and from ever-increasing participation in online videogame communities (Rideout et al., 2010). New social tools for creating and viewing user-generated content present a substantial shift in the ways that participants in youth culture leverage electronic media to interact and learn from each other. ~~Furthermore, the~~ Kaiser Family Foundation suggests that social media participation is relatively universal among high-school-aged youth across the United States, irrespective of race or class (Rideout et al., 2010). Furthermore, the lines between consumers and producers are being blurred in such spaces, what Jenkins and others refer to as the new "participatory culture" (Jenkins et al., 2009). The extent to which youth move fluidly between consuming and producing media is a by-product of widely available creative tools and Web 2.0 platforms that enable youth to experiment with technology that was previously the exclusive domain of professionals. Notable pockets of youth are creating and sharing media, with some studies even suggesting that 77 percent of social network teens are creating some type of content (Lenhart and Madden, 2007). Though some studies argue that teens use social media platforms primarily for consumption (Chau, 2010; Pempek et al., 2009), longitudinal trends indicate that production practices are steadily on the rise; for example, 39 percent of online teens electronically share original artistic creations (such as artwork, photos, stories or videos) up from 33 percent in 2004, and one in four teens also report remixing content they found online into their own creations, up from 19 percent in 2004 (Lenhart and Madden, 2007).

This type of media production denotes a "creative turn" (Sefton-Green et al., 2011) in our uses of new technologies and brings often overlooked aspects of creativity to the fore. The purpose of this chapter is to take a look at the ways in which social media spaces can be leveraged for creativity, paying particular attention to the ways in which social media support youths' creative production. Creative production within online learning communities highlights the ways in which youth are appropriating, critiquing, and making novel contributions today. We examine these ideas by first highlighting relevant research in both the fields of creativity and social media. We then present examples from notable online communities, including Do-It-Yourself (DIY), Multi-User Virtual Environments (MUVEs), and other online communities where youth are actively involved in creative activity and discuss the implications for research on creativity.

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Finally, we discuss the implications for today's youth, the potential social media holds, and why such vernacular forms of creativity are important for learning and development.

Social media and Web 2.0

The term "social media" denotes a wealth of types of online spaces and participation. Barnes, for example, defines social media as the "organizational and software procedures that control the exchange of interpersonal information" in social networking sites like Facebook or MySpace, online Role-Playing Games (RPGs), instant messaging programs, and bulletin boards, among others (2006, para. 2). The term social media is quite broad and is used as an umbrella to describe a range of social software and social networking applications that allow individuals to communicate with one another and track discussions across the Web.

Social media were made possible by, and are considered by some to be synonymous with, the general shift from Web 1.0 to Web 2.0 technology (Greenhow et al., 2009). "Web 2.0," a term coined in 2004 by O'Reilly Media (O'Reilly, 2005), characterizes a transition from the predominantly read-only Web 1.0 into a more social and collaborative Web 2.0 space, where individuals can now read content that others have posted as well as post their own text and multimedia content (Greenhow et al., 2009). As increasing numbers of youth come to see the potential of social media to showcase and garner feedback about their band's new recording, their photography project, or their latest poem, these online communities are becoming important sites of creativity that need to be better understood in the research.

Social media and creativity

Common to definitions of creativity is an emphasis on original or novel contributions that involve divergent processing (Valkenberg and van der Voort, 1994). Traditionally, research on creativity has been dominated by cognitive perspectives, which are tied to the study of exceptional cases and have situated the source of creativity in the individual (Guilford, 1950). More recently, scholarship on creativity has moved to recognize the genesis and development of creative ideas as being part of a broader, socially determined process (Sawyer, 2006). Consistent with Csikszentmihalyi's (1996) systems model, creativity is becoming increasingly understood as a system, composed of (a) individuals, (b) knowledge domains, and (c) a field of informed experts. In Csikszentmihalyi's model of creativity, individuals build on culturally valued practices and designs to produce new variations of the domain, which, if deemed valuable by the community (i.e., the field), become part of what constitutes the evolving domain. Each of the three components of the system continue to impact one another over time. The presence of a field of experts implies that colleagues and domain norms are essential to the realization of individual creativity. Such a view removes the aura of mystery around creativity and, instead, emphasizes the importance of sustained discussion with peers and an appreciation of the constraints that one works within while producing creative work.

Up until now, most research that has utilized a systems model of creativity refers to a *panel of experts* to act as proxy for the "field," providing evaluations of creative contributions within the community. In social media, however, several problems emerge, the first of which is that the "field" becomes more difficult to define. Expertise, for example, is *distributed amongst members* and crowd-sourcing is becoming an increasingly common way to determine what constitute the most creative contributions (e.g., ratings on Amazon.com, Rotten Tomatoes and others). Furthermore, what crowds gravitate toward may not be what we consider to be the most creative contributions. This raises key questions about whether a YouTube video that receives the most

views is indeed the most "creative" contribution to the community. If not, then how does widespread viewing and sharing of artifacts online relate to the creativity of the contribution?

Secondly, social media call notions of originality, intellectual property, and ethics into question when remixing (the combination of semiotic resources into new digital or multimodal texts [Erstad et al., 2007] proliferates online). Reflective of a Web 2.0 culture where people are expected to add, change, and interact with the contributions of others, much of the work posted by youth in social media spaces leverages content created by someone else – to what extent is their creation original when it is not entirely their own? What happens when several hundred people collaborate, as is often the case in Web 2.0 communities, and collectively produce a novel contribution? This brings some tensions that have always been true of creative work to the fore; namely, that history has shown us that creative ideas build on ideas that came before them. Every invention represents a novel synthesis of ideas floating around at the time. Remix, when you think about it as a novel synthesis of ideas and not pure imitation, is a reflection of most, if not all, creative contributions, in that no innovation exists outside of the cultural and historical context in which it was created.

Attempting to resolve some of these tensions, Gauntlett and others argue for contextualized views of creativity, where creativity is defined in direct relationship to one's personal history and perspective, a process "which brings together at least one active human mind, and the material or digital world, in the activity of making something which is novel in that context, and is a process which evokes a feeling of joy" (2011, p. 76). This notion defines creativity as a novel act as judged by the individual in respect to their *own personal history*, not the field's. Such a perspective is salient especially with regard to youth communities, where the personal act of creativity is a driving force in production. Whether a youth's work is on par with the contributions of famous artists or Nobel Prize winners is somehow beside the point. What matters more to youth, and arguably to anyone who dabbles in the act of creative production, is the feeling of creating something that is novel *to them*, a personal view of creativity that is perhaps more conducive to healthy development and learning than seeking the appraisal of a field of (likely inaccessible) experts.

The focus of this chapter is on creative acts that align with this emerging view of creativity (Gauntlett, 2011), works that sit at the intersection of collaborative practice, digital media production, and online peer-to-peer evaluations. In the following, we present three examples of creativity in social media that span a range of social media environments, including youth work in a Multi-User Virtual Environment (MUVE) called "Quest Atlantis," a digital art/computer programming community called "Scratch," and a DIY online community called "LilyPond."

Multi-User Virtual Environment (MUVE): Quest Atlantis

Quest Atlantis (www.questatlantis.org) (QA) is a Multi-User Virtual Environment (MUVE) where young people aged 9–16 immerse themselves in educational and socially negotiated activities. Units within QA are sets of missions that target a larger narrative. One unit, Architecture, was developed to explore youths' relationships with the themes of social alignment and creative expression, and provides players with the tools to create their own 3D virtual buildings (Peppler and Solomou, 2011). The Architecture unit was situated within an area of QA that hosted a number of media production and consumption trajectories, and is unique among other QA environments in that it was designed to be player-run, emphasizing creative production (in the form of building 3D architecture within the game environment) as a means of evolving one's identity in the play space.

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A recent study of creativity within this environment took a closer look at how ideas emerge and spread throughout this community, calling our attention to the ways that creativity is a cultural endeavor, shaped and persisted through the actions and values of many people (Peppler and Solomou, 2011). Analysis of the building trends within the unit points to the ways that youth took up creative ideas in the form of remixing – the more creative (i.e., "spreadable") the original contribution, the more widely the idea was emulated by others. For example, the rate that youth adopted trends that emerged elsewhere in the community provided a measure of an original designs' creative value in the absence of public rating systems (like those found on YouTube). The analysis of building activity within the Architecture unit also revealed that spreadable ideas have a limited lifespan, as determined by the evolving tastes and values of a community – a phenomenon amplified by the rapid dissemination of new ideas afforded in online environments. This study additionally provided insight into how a domain can evolve over time with the addition of new members of a community, who build on the ideas of prior work and try things in new combinations. Generational development of creativity within a domain is further explored in recent research that suggests that, under certain conditions, online creative content generation actually improves with each successive generation of work (Nickerson et al., 2011) and that generally, creative output increases with increased exposure to the domain (Amabile, 1996). Findings from Architecture point to the successful development of a dynamic social media platform designed to promote engagement on behalf of distinct creative cultures and sustain engagement among individuals new to the domain of virtual architecture.

An online digital art community: Scratch

Since its introduction in 2008, the online Scratch community (scratch.mit.edu) has quickly grown to over a million registered users and over two million uploaded projects. Scratch, the multimedia-rich programming environment, was designed for youth in urban areas to create their own interactive stories, animations, games, and art by combining and manipulating stacks of building-block-like commands (Resnick et al., 2009). Programmed objects can be any imported two-dimensional graphic image, hand-drawn or downloaded from the Web, making Scratch particularly appealing to novice programmers wanting to create culturally meaningful and personally expressive work (Peppler, 2010). Furthermore, what makes the Scratch virtual community particularly vibrant is the open-source nature of project creation, which affords easy remixing of older projects into newer ones. In fact, over 40 percent of all projects posted on the website are remixes of existing Scratch projects (Senivirate and Monroy-Hernández, 2010). All projects on Scratch are given a Creative Commons Attribution Share-Alike License by default, which stipulates that anyone can reuse assets and/or code from a project as long as they credit the originator of the design being remixed. Furthermore, Scratch remembers this: modifying another user's project and resaving it automatically generates a note that credits and links back to the original project. This provides an entree into the benefits of open-source licensing, particularly in a global context where heated discussions around intellectual property and copyright pervade multiple industries. While educators often bemoan remix practices as cheating, others have argued that this type of production is a form of everyday creative activity, requiring interpretive flexibility or re-purposing the functionality of everyday objects (Kafai et al., 2011).

The online social media space has become much more than just a space to display creativity through unique projects in Scratch. For example, there are large numbers of youth that work together in the online environment to create a series of projects called Role-Playing Games or RPGs. These groups consist of several hundred to several thousand members and typically participate through text-based role play in the gallery comments. In 2011, over 1,600 galleries

had the word "RPG" in their titles, the largest RPG of which, called Anthros Unite, had over 500,000 comments and nearly 2,000 associated Scratch projects (Roque, 2011). The group comprised over 400 project creators and over 1,200 comment writers, who collaboratively made over 1,900 projects and over a half million comment posts. Such expansive online colla-boration practices were not intended by Scratch's creators, which speaks to the power of online communities of determining how designs are enacted, as well as inspiring large numbers of people to participate across multiple modes; in this case, not just youths' work in Scratch, but the exploration of the medium (i.e., the Scratch social platform) can elicit creative modes of thinking and interaction. Certainly, the collective contribution of Anthros Unite is novel within the Scratch community, and yet we can't attribute the creative act to any particular individual, or quantify it using any traditional measures of creativity; in such cases, the notion of the "indivi-dual" in the system's view of creativity is lost. However, as the 10-minute credits sequence at the end of a film indicates, a creative act does not *have to* be fueled by the individual acting in isolation, but rather in the coordinated efforts of a collective.

Youth online DIY community: LilyPond

Do-It-Yourself (DIY) tools and communities are playing a crucial role in the social media landscape, bridging the traditional divide between digital and physical media. Particularly relevant to this discussion are tools and communities that extend beyond the screen and into the physical world (c.f., Gershenfeld, 2005). Vibrant online communities are organized around the design and creation of a wide range of real-world artifacts, including robots, technology-enhanced clothing, scrapbooks, and scientific instruments. Participants build projects and then document, discuss, and display them on DIY sites like Instructables and Ravelry, along with more traditional media sites like Flickr, Vimeo, and YouTube. These communities attract and support adult hobbyists as well as budding youth scientists, designers, and engineers.

One such website is called LilyPond (http://lilypond.media.mit.edu), which enables young people to document and share their unique electronic textile (e-textile) constructions. This parti-cular community primarily uses the LilyPad Arduino toolkit in their creations – a sewable, programmable microcomputer and its corresponding sensors and actuators – that novice engineers/ designers can embed into textiles for aesthetic and/or functional effect (Buechley and Eisenberg, 2008). Users sew LilyPad modules together with conductive thread instead of using traditional tools like insulated wire and soldering materials. To define the behaviors of the project, users employ the popular Arduino (www.arduino.cc) or Modkit (www.modk.it) development envir-onment, enabling them to program the LilyPad microcontroller to manage sensor and output modules (like LEDs) employed in their designs. Reflective of the growing popularity of the e-textile movement in fashion, engineering and design industries, the LilyPond provides a platform for sharing basic e-textile project documentation, including a project title, a descriptive text, images, and LilyPad Arduino programming code. While the site is still in its infancy, youth across the country have started posting their projects as part of their school, after-school, or free time.

Recent studies have empirically explored creativity within this new domain, specifically observing the work posted by the LilyPond virtual community. Experts in the domain and youth with limited experience evaluated the creativity of a random selection of electronic tex-tile artifacts from the LilyPond online gallery (Peppler, Kafai, Fields, Shively, and Searle, under review). We were not only interested in how consistent (or divergent) youth and experts were in their ratings of creativity but also in what rationales they employed in judging the designs. Results of the study indicated that there high levels of inter-judge reliability among youth and experts in the domain, suggesting that youth can be a valuable resource for assessing the creative

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dimensions of innovative products in new domains like e-textiles. The reliability amongst the two groups was much higher than one might expect, which suggests that the crowd-sourcing found in these domains might prove to produce reliable critiques of creative work.

Conclusions and implications

Today's youth use whatever is at hand in their production practices, including the tools and networked social media spaces to share work with a distributed online network. In doing so, ~~today's~~ youth are becoming avid consumers and producers of media, garnering increasing levels of expertise with new media and broad exposure to cultural forms of production (Peppler, 2010, 2011). Though this type of media engagement falls out of scope of traditional schooling curricula, this represents a missed opportunity for educators to connect to youths' out-of-school learning. ~~Furthermore,~~ there is good reason to believe that youth are learning about various art forms through online participation and social media (Peppler, 2011).

There is a need for further research to investigate how exposure and production is distributed among youth across a variety of demographics. Current research suggests that while all youth have heavy media exposure (including social media), youth from high-income, well-educated families are more likely to be producers of this media (Lenhart and Madden, 2007). This gap is a potential place where schools and after-school communities could contribute by allowing youth more time for open, meaningful exploration of tools and communities.

As Bers argues (2012), this type of everyday creativity is important for youths' learning and development as it's closely related to the building of self-confidence. Moreover, creativity can be cultivated through engaging in conscious, purposeful activity aimed at fostering creativity. Despite early concerns that computers might stifle creativity (Cordes and Miller, 2000), computers have been shown to help foster creativity, particularly when used in a creative way. As Resnick and others argue, when computers are used "more like paintbrushes and less like televisions," they open "new opportunities for children to playfully explore, experiment, design, and invent" (2006, p. 192). As Bers argues, computers like all learning environments, need to be constructed in such a way as to promote positive youth development (2012).

While much of our discussion has focused on the positive implications of social media for creativity, there are some caveats as well that call for further research. For example, prior research has demonstrated that there are clear dangers of assessing acts of creativity: once ideators are recognized they are also less likely to produce additional creative ideas, at least in the immediate future (Audia and Goncalo, 2007). As youth, for example, create work that is deemed creative in the online community, they may be less likely to produce additional creative ideas. Closer examination is needed of the impact that external reward systems (like stars or "liking") in social media have on creative output. Current research suggests that these rating systems might create a drop in creative production for the individual. However, these types of rating systems are closely related to the quality of the community as a whole and can deter off-topic or offensive commentary of works shared online (Shirky, 2011).

SEE ALSO in this volume chapter by Livingstone and chapter by Alper.

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