**SOCIAL PEFORMANCES: A SOCIOTECHNICAL FRAMEWORK FOR
UNDERSTANDING ONLINE PROSOCIAL BEHAVIOR**

by

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DEDICATION

To Serene & Sophie

Thank you for being such lovely fellow travellers on this adventure!

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ABSTRACT

Prosocial behavior describes actions, such as sharing and cooperation, intended to benefit others. In particular, the popular online activity of remixing, is especially dependent upon individuals to willingly share content that they have created for others to reuse and even profit from. However, what motivates these individuals to share their creations with relative strangers when there is no clear benefit to themselves?

This dissertation presents an explanatory framework that helps to explain online prosociality through two main observations:

1) That these online content sharing environments afford *social transparency* by providing a view of all users and activity on the system through visualizations and displays.

2) That this socially transparent space enables the development of *social currencies* (or group scripts/norms) which encourage prosocial behavior in the system.

The overall goal for the *social performance* framework is to provide an understanding of the prosocial sharing and, at the same time, be used to inform the design of systems that encourage this behavior.

I apply this framework to a two-part study of prosocial sharing motivations in an online music remixing community, ccMixter. The first part of the study utilizes social network analysis to characterize and describe the dynamics of music sharing in the community. One of the findings is that a core group of members are responsible for much

of the sharing and remixing activity in the community.

In the second part of this study, I interview twenty-four members from this core group to investigate their motivations for prosocial behavior in ccMixter. A key finding was that these members were motivated to contribute and share because of the influence of group norms made socially transparent by the website.

This study of ccMixter represents a first test of the analytical capability of the social performance framework. In general, the framework performed well, surfacing the joint influence of community norms and the affordance of the website on prosocial sharing. To further strengthen the explanatory power of the framework, future studies will seek to apply the framework to other online content sharing communities.

CHAPTER 1

Introduction

1.1   Background and Motivation

In 2006, Time magazine emphatically claimed that the person of the year was "YOU", or the end-users of online collaborative and community spaces (Grossman, 2006). This grand proclamation highlighted the growing role of the end-user on the Internet and the importance of user-generated content. From the online encyclopedia Wikipedia to video-sharing websites like YouTube, many of the popular spaces on the Internet today depend upon and harness contributions from the end-user. A commonality across these websites is their reliance on the prosocial behavior of the end-users. Prosocial behavior describes actions, such as sharing, helping and cooperation, intended to help or benefit another individual or group of individuals (Batson, 1998).

Similarly, in many online spaces that depend on user contributions, individuals contribute and share work towards larger collaborative efforts with little expectation for direct reward. An even more striking illustration of this online prosociality can be seen in remixing, an activity that is growing in popularity on the Internet. As defined by (Lessig, 2008), remixing is the act of appropriating content from others and integrating that content with one's own creative "manipulation" in order to create derivative works that have value in their own right. As such, the activity of remixing is fundamentally dependent on individuals who are willing to not only share content that they have painstakingly created, these individuals also have to be open to others modifying, manipulating, and incorporating their content into other works. Remixing is a prosocial activity because by sharing their own work, the end-users directly benefit the other users who reuse and repurpose their work.

Remixing also involves the end-user relinquishing of control of creative content that he/she has created. Once shared, other users are free to mash-up,

splice, reconfigure, and even make a profit off the original content that has been shared. What is not clear is why end-users still willingly share their content for others to reuse? What motivates people to sacrifice personal time and effort to create digital content, and then willingly relinquish creative control of that content? Why do these individuals share their creations with relative strangers when there is no clear individual return or benefit? These are the questions that drive this dissertation. Broadly speaking, my dissertation is concerned with the phenomenon of prosocial sharing of user-generated content that is taking place on the Internet today. By investigating this phenomenon, I will fill the gaps in current and prior work by proposing a theoretical framework with which to understand and design for prosocial sharing behavior.

1.2 Prosociality on the Internet

The question of why individuals behave prosocially has been the subject of much thought and research in a variety of disciplines, from political science to evolutionary biology. Common to all these domains is the concern with "voluntary actions that are intended to help or benefit another individual or group of individuals" (Eisenberg & Mussen, 1989). The literature investigating prosociality covers a broad range of behaviors such as helping, gift giving and sharing (Tomasello, 2009), and the concept is often confused with altruism. Altruism describes the motivation to help others out of pure regard for their needs without any consideration for one's own benefit. Prosocial behavior, by contrast, describes a pattern of activity and can be motivated in a variety of ways, including altruistic reasons (Knickerbocker, 2003). For instance, when someone makes a monetary donation to a charity, the donation itself a prosocial act, while altruism describes the motivations behind this action. This definition of prosociality is of great utility to my study. By teasing apart the prosocial act from its intent, I am able to consider a variety of factors and explanations for why individuals are motivated to prosocially share their creations for others to reuse. I argue that prosocial sharing behavior is likely to be motivated by some combination of altruism as well as self-interested behavior. Even highly altruistic individuals derive some personal benefit from their prosocial actions, such as a sense of self-worth or personal gratification (Knickerbocker, 2003).

Traditionally, the study of prosocial behavior can be largely grouped into three main levels of analysis: micro, meso, and macro (Penner, Dovidio, Piliavin & Schroeder, 2005). The micro level of analysis is largely concerned with the neural and biological origins of prosocial tendencies in humans or amongst animals. The meso level examines the behaviors of helper-recipient dyads in particular contexts and situations. The macro level is concerned with prosocial actions, such as volunteering and cooperation, that take place in groups and large organizations. While all three levels of analysis of prosociality have bearing on the subject of this dissertation, my study of prosocial content sharing and reuse takes place mainly on the macro level, in the context of the Internet. Specifically, in this dissertation I investigate the group structure, community interactions, and social norms that emerge when digital content is openly shared and made freely available for others to reuse. More specifically, I am interested in the factors and influences that sustain this prosocial sharing within an online collective. Prior investigations of prosocial behavior have tended to examine prosocial behavior as end points, when in reality they are often part of ongoing processes. Prosocial actions are rarely carried out in isolation and sustaining prosociality often requires carrying out other related social behaviors, some of them prosocial in nature. Thus, this study also examines how other prosocial actions, such as providing help and giving advice, is important to the maintenance of the open sharing and reuse of content.

While much of the research on prosociality is focused on face-to-face interactions, there is an increasing body of work that examines prosocial behavior online. Early studies of online behavior have typically taken a pessimistic view of the role that the Internet plays. For instance, early work about Internet use (Kraut et al., 1998; Shah, Kwak & Holbert, 2001) characterized going online, especially to chat rooms which were largely anonymous at that time, as having negative effects on well being, trust, and various social capital indicators. However, more recent work has found that prosociality does exist, but typically between virtual strangers. According to Sproull, Conley and Moon (2005),

> "prosocial behavior on the net resembles bystanders helping in
> the offline world. Typically, helpers, and those they help, have no pre-existing
> face-to-face relationship. Usually there is no expectation of direct reciprocity
> or even of any ongoing relationship. Requests for help come at random

times." (p. 141).

According to Sproull, this changing dynamic in online prosociality can largely can be attributed to the evolution of technology and the online environment. Through search engines and online social networks, there are now more visible opportunities that make it easier to volunteer, contribute and share with others in a variety of online groups or communities. New software tools make it possible to easily donate time and attention to electronic groups organized for socially worthwhile causes, contribute code to open-source software communities, and participate in large-scale scientific endeavors. This influence of technology on the changing dynamics and characteristics of prosocial behavior has, until recently, not been well accounted for. Traditionally, research efforts on prosocial behavior have mainly focused on the proximal causes of prosocial actions. Work on implicit biological and cognitive processes that immediately precede social behaviors (e.g., Greenwald et al., 2002) helps us to better understand the intrinsic factors for why people do or do not act prosocially. This dissertation seeks to broaden the understanding of prosocial behavior by contributing an ecological perspective towards the causes for prosocial behavior. This perspective is grounded on the notion that prosocial behavior can also be motivated by distal/environmental factors such as the technological context, social influence and the tools employed.

1.3   A Lack of Adequate Explanations

The phenomenon of end-user sharing and contributions has been the subject of recent attention in the media and in academia. Much has been written about the birth of a new "participative web" (Vickery & Wunsch-Vincent, 2007) on the Internet and how Web 2.0 technology and user-generated content will allow amateurs and even professionals to collaborate with each other across organizational or geographic boundaries (Bauwens, 2006; Grossman, 2006; Lessig, 2008). While there has been much interesting work investigating the motivations for user content sharing in online environments, much of this work has been mainly focused on investigating participation in specific applications and domains. Recent studies of user motivations for online content sharing have focused on participation in wikipedia (Bryant, Forte and Bruckman, 2005) and on the contributors to Open Source Software (OSS) projects (Roberts, Hann

and Slaughter, 2006). However, the sharing of one's creations has become a very popular activity on the Internet and takes place across multiple domains and applications besides just wikis and OSS projects. What is missing in the literature, and what this dissertation attempts to address, is an explanation for why users behave in such a prosocial manner on other websites and applications beyond Wikipedia and OSS projects. We lack an integrating framework that allows us to understand the dynamics of prosocial sharing across different contexts and what this means for the design and development of information and communication technologies.

Another issue with current research is that they have tended to present motivation primarily as a rational calculation that an individual makes. Economic theories such as "social loafing" (Karau & Williams, 1993) have been popularly employed to show how the size of the group and the uniqueness of the effort required affect an individual's motivation to contribute. Another approach used by studies of online content sharing and contribution was to consider the incentives and returns that individuals get for their sharing. For example, Wasko and Faraj (2000) found that the basic reason to contribute content online is the incentive to gain returns for sharing. Specifically, they proposed that members of online communities are motivated to contribute when they are able to receive gains – such as access to useful expertise or new insights that might help to refine one's thoughts. What these early studies fail to address is the fact that users are often motivated by, and respond to, a variety of incentives and motivations. Humans can be motivated by other powerful reasons such as emotional, cultural, and aesthetic impulses, as well as rational choice and decision-making. As more of our social interactions moves onto the Internet, and as more websites and communities emerge to provide opportunities for users to contribute and share their content, these rational and self-interested explanations no longer suffice. There will be users whose motivations transcend narrow self-interest and participate for more "social" reasons - that *I care what you think of me*, or that *I care about your enjoyment*, or that *I am contributing because I think others expect me to*.

To better explain the motivations that drive online sharing, I argue that it is important to more broadly recognize and consider the influences on prosocial sharing beyond just the individual. Many early investigations of prosocial motivations have been based on lab studies that examined motivation as a primarily individual phenomenon.

However, human behavior is often situated in specific milieus and it would be inaccurate to explain prosociality without taking the social and environmental context into account. This is particularly the case for online prosocial sharing, where all actions performed are mediated through the use tools and interfaces in a networked environment. Thus it is important to not only consider the role that networked technology plays in influencing prosocial sharing, it is also essential that we be mindful of the complex social dynamics that result when we interact with others on the Internet. What is needed is an explanation that considers the interrelated social and technical aspects of online prosocial content sharing. In other words, what is needed is a sociotechnical (Ackerman, 2000) perspective that considers the joint influence of social and technological factors on individual behavior. The sociotechnical perspective takes a broader view of motivations and does not consider motivations as only located in the individual actor. Instead, a sociotechnical account of motivation recognizes the joint influence of technology and social practices in shaping a user's desire or willingness to do something. In adopting this sociotechnical perspective towards explaining the motivations for online prosocial sharing, this dissertation is fundamentally concerned with identifying the technical and social factors that creates the conditions for users to willingly and prosocially share content with each other.

The sociotechnical perspective adopted by this project is in part based on Gibson's (1977) notion of affordances. According to Gibson, affordances are qualities of tools or the environment that make it possible for individuals to perform particular actions. For instance, a pair of scissors enables its user to perform actions that an individual without the scissors cannot. An individual with a pair of scissors is able to cut complex and intricate shapes, whereas a person with just a knife is able to only cut certain shapes and lines. Because of their physical designs, the scissors and the knife make specific actions possible while constraining others. The affordance of the tools we use both extends and limits the ability of the individual by making specific actions possible through their use. Likewise, the theory of affordances can also be extended towards understanding how the sociotechnical characteristics of an online environment can enable or constrain particular behaviors. The argument here is that the social environment we function in and the tools we use play a part in motivating us to behave

prosocially. And understanding the sociotechnical characteristics and conditions that encourage prosocial sharing behavior to emerge can help inform the design of systems that are dependent on end-user contribution and sharing.

1.4 A Better Explanation for Prosocial Sharing

This study is concerned with investigating the sociotechnical factors that influence the online prosocial sharing of media content. Using the relevant literature found in sociology, social psychology, Human-Computer Interaction, as well as findings generated by this study, I develop a theoretical framework based on the metaphor of performances. Defining social behavior as forms of performances where individuals "express themselves in interaction with similarly expressive others" (Brissett, 2005), I propose that a performative metaphor can be used to better understand user prosocial sharing on the Internet. The social performance framework I propose helps to explain prosocial sharing by viewing them as public expressions of self-identity and group affiliation. My framework makes two main proposals:

1) That the networked interfaces and tools that mediate user interactions afford "social transparency" (Erickson & Kellogg, 2000; Suh et al., 2008) by providing a view of all users and activity on the system through visualizations and displays.

2) That this socially transparent space enables the development of "social currencies" (or group scripts/norms) for prosocial behavior to arise and be sustained in the system.

My framework explains online prosocial sharing by attributing it to the joint influence of technical and social factors. The combination of social transparency afforded by the online environment with the presence of easily observable social norms, results in a behavior that is akin to public behavior. The metaphor of performance puts forward the idea that in socially transparent online environments, where one's online activities can be publicly viewed, prosocial actions are enacted because of the "mutual monitoring" effect (Goffman, 1959). When open to public scrutiny, individuals in an online collective will tend to act in a certain way for several reasons; to fulfill the action's inherent goals, to behave according to the norms and expectations of the online community, and also to convey and maintain a presentation of the self to others (Goffman, 1959). By

characterizing the act of sharing content as a form of social performance, the motivations for prosocial sharing are not only intrinsic to the individual's goals and desires. Motivations in my framework can also result from the affordances of the online environment and the social dynamics of interactions between the users. Adopting this sociotechnical perspective will generate a better understanding and explain the various influences and motivations that compel end-users to prosocially share their work. And with this better understanding, my framework can also aid with the designing future online systems that encourage participation, sharing and contribution from a sociotechnical perspective.

1.5   A Research Narrative

In the following sections of this dissertation, I will present the details of the social performance framework and its application to a case study of prosocial sharing in an online music remixing community, ccMixter. I have structured the narrative of this dissertation as if the development of the framework and its use in a study occurred in sequential and logical fashion. In reality, the development of the framework, and its use in the study, took place concurrently and mutually influenced each other. I adopted a "top down, bottom up" (Chi, 1997) approach towards coding and analyzing the data generated by the ccMixter study. What this means is that the social performance framework was applied in a "top down" fashion to make sense of the large amount of data generated by this study. At the same time, findings from the study were also used to refine and influence the theoretical framework in a "bottom up" fashion. An illustration of this can be found in the theoretical concept of "social currencies" that is a key element of the social performance framework. Several interview subjects mentioned the term "social currency". This led me to investigate whether there was a theoretical use of the term and found literature to support its use. Therefore, the concept was eventually incorporated into the theoretical framework because it conveyed important ideas that I would otherwise not have articulated. The evolution of the social performance framework thus did not take place linearly. Rather, I treated the framework as a work-in-progress throughout the course of this study. While work on the framework still continues, the results presented in this dissertation reflect the sense of coherence, or the state of

"reflective equilibrium" (Rawls, 1971) that I achieved after employing Chi's (1997) "top down, bottom up" approach.

This dissertation is organized into seven chapters, including the introduction. In the following paragraphs, I outline the research narrative of this dissertation by briefly summarizing the contents of each chapter.

Chapter 2: This chapter presents a literature review of some of the current theories used to explain prosocial behavior. I begin by describing the fundamental paradox found in prosocial behavior – that as rational individuals, humans should not be motivated to share and contribute, but should rather free ride on the efforts of others. This paradox has been described variously as social loafing, the tragedy of the commons and as social dilemmas. I next describe some of the literature that responds to this paradox in human behavior by explaining prosociality as the result of altruism, the accumulation of social capital, and of wanting to identify as a member of a group. I further explain why these explanations are inadequate to account for why individuals are prosocially sharing user-generated content on the Internet.

Chapter 3: Building on the various perspectives of prosocial behavior discussed in chapter 2, I will introduce and elaborate on the social performance framework. I begin by describing and discussing the characteristic of social transparency found in many successful online environments that rely on end-user contributions. From here, I start to build a case for the social performance framework by arguing for the application of the performance metaphor to online prosocial sharing behavior. I end this chapter by presenting a model of the social performance framework and detailing its various components.

Chapter 4: The remaining chapters of this dissertation are devoted to the application of the social performance framework to a mixed method study of an online music remixing community, ccMixter. In chapter 4, I describe the rationale, design and methods used for this study of ccMixter. I argue that ccMixter is an "paradigmatic case" of prosocial sharing because all content contributed to the community is openly licensed and free for anyone else to reuse in whatever way they see fit. Because of this trait, I use the ccMixter community as an avenue to validate and apply the social performance

framework. At the same time, this investigation of ccMixter will also provide new insight about prosocial sharing that my theoretical framework may not have captured.

Chapter 5: This chapter highlights my use of Social Network Analysis (SNA) to provide a statistical description of the ccMixter community. In particular, I pay attention to the sharing and reuse interactions between the members to describe the dynamics and structure of the community. Doing this also allows me to identify roles that a member plays based on their position in the community. SNA also functions as a sampling method for my interview study of ccMixter users. By using the results my SNA of ccMixter I am identify a core group of members in the community whose online activity best exemplifies the characteristics of prosocial sharing. These are the members of ccMixter I contacted for interviews in the next phase of this study.

Chapter 6: This chapter presents my analysis of the data gathered from 25 semi-structured interviews that I carried out with the core members of ccMixter. The interviews revealed the interrelated nature of the member's characteristics, the goals and values of the community, and how this translates to community norms of behavior. The interviews also probed the subjects to reveal the various social and technical factors that might encourage them to share their music for others to remix. I conclude this chapter by reiterating the characteristics of the social performance framework in the light of my findings from the entire study.

Chapter 7: In this chapter, I reiterate the findings from my study of ccMixter in order to assess the strengths and limitations of the social performance framework. I also put forward two avenues for future work that I will be pursuing.

Finally, I also include several Appendices at the end of the thesis, including the interview protocol, complete list of interview subjects, various forms associated with the interview study, and two illustrations that highlight samples of my coding and analysis of the interview data.

CHAPTER 2
Literature Review

2.1   Introduction

In this literature review, I will present a survey of the intellectual work from various fields on the topic of prosocial motivations. There are several reasons why such a survey is important to the development of the social performance framework. Firstly, there is a long intellectual history of explaining prosocial participation and contributions to collective efforts in a variety of disciplines - from evolutionary biology to political science. This chapter will mainly focus on theories of participation from the social sciences - namely sociology, social psychology and political science. Secondly, this survey of literature will lay the foundations of the social performance framework. This theoretical framework brings together and organizes a number of disparate theories in order to explain online prosocial content sharing. In fact, as we will see by the end of this chapter, one unifying thread amongst the various explanations of prosocial behavior is the importance of group norms in getting individuals to cooperate, share and participate prosocially with relative strangers on the Internet. The social performance framework capitalizes on this overlap in the literature by using sociotechnical affordances to highlight group norms, which in turn can motivate prosociality. In the following sections of this chapter, I will begin first by examining how prosocial behavior is fundamentally paradoxical when explained using rational self-interest. I will then go on to highlight the various theories from the social sciences that help explain this paradox in prosocial behavior.

2.2   The Fundamental Paradox of Prosociality

According to Hardin (1982), "under the logic of collective action, we should expect to see very little large-scale collective action motivated by self-interest." (p. 101). Rational individuals - ones who try to maximize benefit for themselves

(Monroe & Maher, 1995) - are not likely to contribute in collective actions because the benefit enjoyed through such activities cannot be excluded from any one individual[1]. As such, a rational individual is better off enjoying the benefits of the collective effort without making a contribution or participating. However, if everyone acted in such a manner, no one would be inclined to contribute and share in the collective activity. Thus, everyone would be worse off because no one would be able to enjoy the benefits of the collective activity if everyone behaved in this manner. According to Kollock (1998), this paradox is the basis for what he calls "social dilemmas", or situations in which individually reasonable behavior leads to an outcome where everyone is worse off than they might have been otherwise. Social dilemmas have a long history of intellectual investigation in the literature on public goods, common pool resources and political participation. In the following section, I will survey the literature of social dilemmas and relate this idea to the problem of prosocial sharing on the Internet.

2.2.1   Social and Public Goods Dilemmas

Social dilemmas first captured the public imagination in Hardin's (1982) depiction of the *Tragedy of the Commons*. Hardin illustrated this tragedy by explaining how a pasture is degraded over time because of the choices made by a rational herder. This herder makes decisions about the use of a pasture that would maximize its benefit only to himself. However, such decisions, if made by the other herders that use the same plot of land, lead to the inevitable degradation of the pasture. Consequently, all the herders are worse off because of their rational decision-making. It is important to note that Hardin's illustration depicts the dilemma posed by the non-excludability of a joint resource - in this case the difficulty of excluding any one herder from using the shared pasture. This tragedy is a fundamental feature of commonly shared resources - or commons for short. Much work has been done investigating the application of the tragedy of the commons to

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[1]An expanded definition of the rational individual can be seen in Anthony Down's seminal work "An economic theory of democracy" (1957) where he defines the rational actors as:
"A rational man is one who behaves as follows: (1) he can always make a decision when confronted with a range of alternatives; (2) he ranks all the alternatives facing him in order of his preferences in such a way that each is either preferred to, indifferent to, or inferior to each other; (3) his preference ranking is transitive; (4) he always chooses from among the possible alternatives that which ranks highest in his preference ordering; and (5) he always makes the same decision each time he is confronted with the same alternatives."(6)

real world problems. For instance, Ostrom (1990) uses this tragedy to develop a theory that allows groups to more effectively govern commonly held natural resources, such as forests and fish stocks in the ocean.

The tragedy of the commons is often inaccurately used as an all-encompassing model for all social dilemmas. However, Kollock (1998) highlights the fact that not all social dilemmas are identical, and he makes a distinction between *Commons Dilemmas* and *Public Goods Dilemmas*. Commons dilemmas, like the illustration of the herder and the pasture, reflect not only the characteristic of *non-excludability* but also the characteristic of being *rival*. Commons that are rival are those where one person's use of the common resource would eventually diminish its availability to another person. In the illustration of the herder, the more a herder allows his cows to graze on the pasture, over time, the higher the likelihood that other herders will not be able to benefit from the pasturing their cows there. Public goods dilemmas on the other hand reflect common resources that are non-rival, as well as non-excludable. A public good is a resource, such as public libraries or public policy, from which all may benefit, regardless of how much one person uses the common public resource and regardless of whether or not they have contributed to the creation or maintenance of the good. This distinction between commons and public goods dilemmas is highly relevant to this dissertation's characterization of online sharing of user-generated content. In many instances of online sharing, the content is being shared freely and openly, often with little restrictions for how these content can or should be reused. Also the contents being shared are digital and informational in nature, its use by one person does not diminish its utility for another person. Because of these non-rival and non-excludable characteristics, online prosocial content sharing has many of the characteristics of the provision of public goods rather than of commons.

A much-explored issue with public goods is the *free-rider* problem. Whenever one person cannot be excluded from the benefits that others provide, all other participants would not be motivated to contribute to the joint effort, but to free-ride on the efforts of others. In the provision of public goods, the temptation to free-ride is great, and may lead to the collective benefit not being produced if all the users of the public good were to make the 'rational' decision to free-ride rather than to pay or contribute. Karau and

Williams (1993) describe the 'free-rider' problem a little differently. They identify the problem as *social loafing*, where there is a reduction in personal effort when individuals work collectively versus individually. Unlike commons dilemmas, which highlight social dilemmas produced by self-interest and the lack of replenishment of the resource, public goods dilemmas are more closely associated with the paradox of prosociality. The fundamental issue with public goods is the fear of being a *sucker*, where the rational thing to do is to withhold participation and free-ride on the efforts of others. Here, "perfectly rational individuals can produce, under some circumstances, outcomes that are not "rational" when viewed from the perspective of all those involved" (Ostrom, 1994, p. 6). Ostrom's quote highlights the fundamental problem with rational participation where the fear of being "suckered" often results in a "public good" not being provided at all.

The tragedy of public goods is very closely related to the prosocial sharing of content by large numbers of individuals in websites such as Wikipedia. Like public goods, the outcomes and benefits produced by online sharing websites and communities are non-excludable and non-rival. One does not have to contribute to the entries on Wikipedia in order to enjoy the benefits of the collective knowledge produced by the online encyclopedia. Thus, from a purely rational perspective it is not clear why so many individuals on the Internet are willing to spend time and effort contributing work that others will benefit from. The discussion of the paradox in the provision of public goods lays the intellectual foundations for the research problem addressed in this thesis – why do people contribute and share in online websites and communities when it is clearly beneficial for them to free ride on the efforts of others?

2.3   Theories Explaining Prosocial Behavior

The theories that have been discussed so far highlight the intellectual paradox of why people still share in a prosocial manner, despite the fact that it is more beneficial to free-ride on the efforts of others. To explain sharing in online collective efforts, I turn now to theories from political science, social psychology and sociology. This chapter will undertake a overview of the literature by classifying the theories into three categories; (i) Altruism, (ii) Social Capital and (iii) Group/Social Identification. The theories in these three categories represent some of the most common explanations used in the existing

literature addressing the phenomenon of prosocial content sharing on the Internet. Additionally, this chapter will suggest that although these theories are important for laying out a foundational understanding of prosocial behavior, they need more work to bridge theory with the observed phenomenon of user participation taking place on the Internet today.

2.3.1 Altruism

The concept of altruism provides one theoretical explanation of why individuals do not 'free-ride' on the efforts of others. At its core, altruism describes behavior that is focused on increasing the welfare or happiness of others. Altruism suggests that an individual is willing to sacrifice time and effort for the well being of others without necessarily receiving the corresponding benefits (Mueller, as cited in Whiteley & Seyd, 2002). Many studies, especially in the arena of political science, indicate that individuals consider others, beyond the self, when they make the decision to participate (Fowler & Kam, 2007). An altruistic individual contributing in a collective effort seeks to maximize the collective outcome without regard for his/her own outcome. This perspective towards sharing makes a very different assumption about the users of social software from what has been discussed in the prior section. The explanations for prosocial sharing based on assumptions of narrow self-interest posit that individuals receive a benefit from taking part in collective activity. However, as seen in the "paradox of prosociality", self-interest doesn't completely explain why individuals are willing to contribute when there are no obvious benefits for themselves.

With altruism, the assumption is that individual actors are not completely egoistic and that they do give some weight to the benefits of others in the group. Such behavior can be seen in Benkler et al.'s (2006) description of participation and contribution on the Internet as a form of "Gift Culture". For them, the participants in "commons-based peer production" benefit others by contributing time and effort that could, in principle, be spent in more directly self-serving pursuits. By helping others, in small ways through the voting of news articles, or in larger ways like creating carefully researched encyclopedia entries without receiving conventional rewards in return. The fundamental assumption of

gift culture, like altruism, is that individuals are exercising kindness, benevolence, charity and generosity when they share and contribute.

There are a number of ways to explain the rationale behind altruistic behavior, such as those exhibited by the members of online sharing communities. One explanation, proposed in the literature of political science, states that individuals consider their contributions to be *instrumental* not only for themselves but for others as well. This explanation suggests that in arenas like politics where the stakes of contribution have long-term effects beyond the individual, prosocial sharing behavior is likely to be for instrumental reasons, no matter how "irrational" those reasons are (Fowler & Kam, 2007). Individuals act instrumentally, not just for themselves, but for the benefit of others as well. For instance, when voting on policies such as pollution, whose impact and outcome apply broadly to society, an individual may decide to participate by voting on these policy decisions despite the fact that there are no clear benefits to the individual, and sometimes at personal expense.

Another explanation for altruistic behavior looks towards the role of social norms and values in guiding the behavior of individuals on these systems. Patterns of behavior are a reflection of a person's socialization into values that are appropriate and legitimized for a group. Thus, if altruistic norms are promoted and encouraged within a group, it is likely that this will have a positive influence on whether or not members carry out the action appropriate to the group. Examples of altruism on the Internet are the individuals who expend great amounts of energy answering questions and sharing their knowledge on large online question-answer forums, such as Yahoo! Answers (http://answers.yahoo.com/). These question-answer forums are social software websites that seek to harness the knowledge and expertise of individuals by providing them with a public space to share that knowledge with others who need information, advice or just an opinion. It could be argued that these question-answer forums promote the social norm of goodwill and an obligation to help others out through answering their questions. Evidence of this can be seen on the Yahoo! Answers website that advertises the benefits for participating in the question-answer forum:

"Yahoo! Answers is a whole new kind of volunteerism.

* You make someone's day each time you reply

* You give something of value to folks all over the globe

* You share your intelligence for a good cause"[2]

The promotion of such social norms in particular online collectives could have the effect of generating expectations for group-appropriate actions and behaviors from their users.

One common criticism of altruism in much of the literature is that it is a very idealistic perspective of human motivations to share. Just as the issue of self-interest cannot fully explain the motivation to prosocially share online, notions of altruism suffer from not being able to give an adequate justification for participatory behavior. Explanations of altruism in prosocial sharing behavior cannot fully rule out self-interest. According to Hardin (1982), "… it does not follow that one's extrarational response to a group good will be unrelated to one's valuation of the good … though individuals may contribute to collective actions for moral reasons, their contributions are still subject to rational constraints" (p. 117). For instance, participating for instrumental reasons can be cynically argued as a form of self-interest where one is ultimately exhibiting prosocial behavior only when there is personal benefit.

2.3.2   Social Capital

The literature on social capital and the development of reputation provides another explanation for online participatory behavior. According to Nan Lin (cited in Benkler, 2006), "there are two ultimate rewards for human beings in a social structure; economic standing and social standing." Lin's argument suggests that individuals are not only motivated by monetary rewards but also by less tangible returns, such as friendship or one's reputation in the eyes of the community - things that cannot easily be commoditized for market exchange. This line of thinking can be extended to argue that there are occasions when one would be willing to trade-off financial rewards for non-tangible ones such as reputation. Benkler (2006) believes that,

> for any given culture, there will be some acts that a person would prefer to perform not for money, but for social standing, recognition, and probably, ultimately, instrumental value obtainable only if that person has performed the action through a social, rather than a market, transaction (p. 96).

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[2] From Yahoo! Answers welcome page (http://answers.yahoo.com/info/welcome).

Such social transactions can be seen in Kollock's (1998) study of participation on UseNet, an early version of online discussion communities. In this study, the investigators highlighted that building one's reputation, through responding to comments or posting commentary, provides a great deal of motivation to contribute. They have discovered that in most newsgroups, one's reputation is enhanced by posting either intelligent or interesting comments or by contributing rude flames and cutting observations. Depending on the currency of behavior valued by the newsgroup, reputation is enhanced by posting remarks of the type admired by the group. What this study highlights is that an individual's contributions in a group can be motivated by a form of currency; which are values and behavior emphasized by a group that is not monetary or tangible in nature. This idea of a social currency or capital is important to the framework developed in this paper and will be discussed in greater detail in the next chapter.

The concept of social capital provides another way of thinking about the notion of a social currency motivating participation. Social capital is a popular concept that has a long history of thought with multiple definitions in use. For this paper, I will confine my use of social capital to Putnam's (2001) definition of the concept. Defined by Putnam as the norms of reciprocity and trustworthiness that arise as a result of one's involvement in a social network, the concept of social capital attempts to capture the value derived from being a member of a group or collective. In Putnam's description of the central role social capital plays in civic engagement and participation, he identifies the norm of "generalized reciprocity". According to this norm, an individual is likely to contribute to a collective endeavor without the expectation of immediate returns if there is "confident expectation that someone will do something for me down the road " (p. 21.) More colloquially put, I am likely to contribute to the collective good if I can expect the group to help me out sometime in the future.

This notion of generalized reciprocity extends to previously discussed theories of reciprocity that suggest that people tend to reciprocate the actions of others' because they like to help those who help them, or hurt those who hurt them (Fehr & Gachter, 2000). This notion of generalized reciprocity throws light on the paradox of participation articulated earlier. Individuals are likely to act in a prosocial manner because they can

expect some return in kind over time, despite the fact that there are no incentives for doing so presently. It is also important to note that, like the findings of the Axelrod (2006) study mentioned earlier, a reciprocation strategy works best when there is the expectation that interaction will be repeated in the future. It is this "shadow of the future" (Axelrod, 2006) that guides individuals to be prosocial and contribute to collective efforts.

What is not so clear in Putnam's (2001) articulation of social capital is an explanation of how and why these expectations of generalized reciprocity form in the first place. Putnam attempts to explain this through the concepts of "bonding" and "bridging" social capital. "Bonding" social capital is associated with strong network ties within a community, and is a fundamental prerequisite for specific reciprocity and mobilizing solidarity. "Bridging" social capital is associated with weak network ties or acquaintances that link to external assets and for information diffusion. Both concepts represent important aspects of social capital. The former helps us to reinforce the ties we already have, while the latter helps us extend our ties to people outside of our closest affiliations. In Putnam's conception of social capital, it is the strong ties, or the bonding capital, that enables individuals within a community contribute on the basis of generalized reciprocity. Huysman and Wulf (2004) further this idea by suggesting that social capital, and hence generalized reciprocity, is based on the "network ties of goodwill, mutual support, shared language, shared norms, social trust, and a sense of mutual obligation that people can derive value from." Thus, the bonding social capital is developed mainly through the strong network ties that arise as a result of the shared understanding, trust, vocabulary and identity of group membership. The topic of group and social identification is an important aspect of the social performance framework and an explanation for prosocial behavior in its own right. In the following section I will discuss the role that group identification plays in motivating individuals to contribute in greater detail.

2.3.3   Group/Social Identification

Underlying the ideas of generalized reciprocity and social capital is the idea that people often make contributions to a collective because of identification towards a group

or collective. Prior experimental studies have shown that subjects are more willing to exhibit personal restraint in commons dilemmas simply as a result of being identified as members of a common group (Kramer & Brewer, 1984). Bos et al (2004) have also shown that members contribute to groups that they belong to or identify with and not to other groups with whom they have no connection. Such in-group/out-group effects can often be the result of group affiliations based on seemingly inconsequential factors such as proximity to each other. The mere fact that I am sitting next to a group of other individuals will likely have impact on whether I identify with and, as a consequence, exhibit prosocial behavior with this collective. But why do such group affiliations motivate individuals to exhibit prosocial behaviors?

One explanation can be found in a topic that has already been discussed - reciprocity. In the previous sections, Axelrod's (2006) much cited study of cooperation in prisoner's dilemma games highlighted that when reciprocity and the threat of future retaliation are made salient to the individuals involved cooperative behavior emerges. However, this perspective towards prosociality in collective situations simply underscores the role of self-interest. Prosociality in these instances emerges because of the necessity for the individuals to continue interacting with the same group of actors and the fear of non-cooperation and reprisals if one doesn't behave prosocially.

Social identity theory (Hogg, 2001; Tajfel, cited in Kollock, 1998) provides a less self-interested explanation for why group affiliations motivate prosocial behavior. This theory argues that simply categorizing individuals into groups will increase cooperative behavior towards the group. These social categorizations or groups are believed to accentuate the perceived similarities of people in the same categories and differences between those from other categories. The argument proposed is that by highlighting the common identity or "category prototype" within a group, we maximize "the ratio of intergroup differences to intragroup differences" (Hogg, 2001). Highlighting these similarities simply makes obvious the "common fate" and interdependencies of the individuals within the group. When individuals identify that group outcomes are similar and overlap with their own beliefs, they begin to identify highly with their group and see themselves as group members. Hogg postulates that individuals associate themselves

with particular social categories through a process called "depersonalization" where individuals are perceived in terms of how they match the group prototype.

> Since prototypes capture any and all features that define category membership (i.e. attitudes, feelings, and behaviors) depersonalization makes people in groups appear attitudinally, affectively, and behaviorally relatively homogeneous (Hogg, 2001, p. 61).

This process makes group behavior possible as it transforms self-conception so that individuals think of themselves in terms of the group prototype. Individuals tend to associate themselves with group prototypes when they enhances self-esteem and reduce uncertainty about how to behave. As a result, one's behavior becomes modified and transformed accordingly to the relevant group to with which one identifies. Thus, self-categorization depersonalizes one's behavior in terms of the group prototype. The development of social identity may also result in the formation of norms specifying the values, beliefs and behavior subscribed to by the members of the group. This idea is very much in line with Hogg's (2001) notion of social or group identity being based on a "prototypical" attributes and characteristics as manifested by the values and behavior of the group members. An example of such prototypical group behavior can be seen in the idea of "generalized reciprocity" introduced earlier. Making salient the group identity highlights the norms of behavior subscribed to by the group, one of which may be expectations of reciprocity from the other members of the group. This expectation of group reciprocity moderates the individual's temptation to defect and encourages cooperation (Brewer, 1981).

Social identity theory is also congruent with Putnam's argument that "bonding" social capital, or strong network ties within a group is essential for group reciprocity to emerge. The "interpersonal bonds" or relationships between group members arises out of identification with a group can also motivate prosocial contributions. Like expectations of generalized reciprocity, these relationships generate a motivation to comply with the norms adhered to by the group. Here, group members are seen as actors embedded in networks of social norms and beliefs, which provide both internal and external motivations to cooperate (Whiteley & Seyd, 2002). As highlighted by Huysman and Wulf

(2004), these group norms are complicated and made up of a variety of things such as shared values, group trust and a common language.

Group identification can also motivate prosocial behaviors if the individual participants believe that their participation is effective. One of the key reasons people do not cooperate is the fact that a single person's actions may have no discernible effect on the situation (Kollock, 1998). Experimental studies have shown that even if the rewards are high, individuals are not motivated to contribute if they feel that their contributions do not make a difference to the group's outcome (Karau & Williams, 1993). This perception of personal efficacy has a significant effect on cooperation and contributions towards a public good. The perceived degree of personal responsibility can profoundly change the decision of whether or not to cooperate. As such, an effective way to structure collective activity is to highlight individual contributions and make their effect on the group outcome obvious. Shepard and Taylor (cited in Beenen et al., 2004) have found that participants increased their performance when their individual contributions and the effects on the group outcomes were made explicit. This idea is currently being employed on a number of social software websites like *digg* and *Slashdot,* where the number of times an article has been voted and discussed is prominently displayed on the main interface of the system. Through the display of this information, participants on these websites get direct feedback on their contributions and, according to the theory, would be more motivated to contribute more towards a collective activity.

2.3.4   The Problem with Existing Explanations

As can be seen by the variety of theories and arguments put forward in this chapter, an explanation of online prosocial sharing behavior needs to reconcile the inter-related and multiple perspectives that have been raised. Taken together, these theories can provide a holistic perspective on human choice and behavior. This idea is reinforced by Benkler's (2006) argument that there is no one particular way to explain human motivations:

> (h)uman beings are, and always have been, diversely motivated beings. We act instrumentally, but also non-instrumentally. We act for material gain, but also for psychological well-being and gratification, and for social connectedness (p. 6).

Benkler's quote highlights that theoretical assumptions of the rational and non-rational individual need to both be taken into consideration if we are to better explain why individuals cooperate and participate in collective acts. Humans are inherently self-interested and motivated to work towards personal gain and benefit. However, we also have a need for interpersonal bonds and are likely to contribute in order to feel a sense of bonding and belonging. As such, the theoretical paradigms of prior explanations need to be reconciled in order to have a more unified understanding of why individuals come to behave in a prosocial manner. This paper will take a step in that direction by using the social performance framework as an analytical construct to investigate the reasons why users of the Internet are often willing to behave in a way that defies the paradox of participation.

Another issue with prior work on prosociality is that the majority of the theories presented in this chapter were developed to describe interactions that did not take place on the Internet. Online interactions have very different affordances and dynamics from those in the real world. For instance, Putnam's (date) notion of social capital and reciprocal behavior is based on observations f face-to-face social mobilizing in Italy and activities like bowling and social clubs. These instances of social capital may not translate well to the Internet and social software where the interactions between individuals have very different structural properties and dynamics. What is needed are theories that can take into account the networked context in which social software participatory behavior takes place.

This dissertation puts forward the argument that one way to more fully address the diverse motivations of social software participants is to develop a framework that organizes and builds-on commonalities and strengths of the theories reviewed in this chapter and translate them to the online context. One such commonality can be found in the influence of group norms on an individual's prosocial behavior. This proposition can be seen across all three sets of theories introduced in the previous chapter - altruism, generalized reciprocity in social capital, and group identification. Each set of theories is unified by the notion that group norms motivate cooperative behavior amongst individuals not otherwise familiar with each other. While my proposed framework is not a global reconciliation of prior theories, it does suggest that the notion of group norms

speaks broadly to a wide range of theoretical perspectives and hence may account for the diverse motivations of participatory behavior. As such, this dissertation will rely on theories of group norms to explain why individuals participate and contribute on social software systems. This framework will utilize the lens of performance to organize prior theories that explain why individuals are motivated, both instrumentally and non-instrumentally, to contribute in an online collective effort. In the following sections I will describe the components of my theoretical framework and put them together with a model demonstrating of how they operate together.

CHAPTER 3
The Social Performance Framework

3.1   The Need for a Framework

As highlighted in the last chapter, the goal of this dissertation is to develop a theoretical framework that can help researchers and designers better understand online prosocial sharing behavior. Developing a framework allows me to accomplish a number of things. Firstly, the framework allows me to draw on a variety of theories and prior work that help explain the diverse factors that encourage individuals to share their work online. I believe that prosocial sharing is motivated by both altruistic, as well as instrumental reasons. The social performance framework will help me accommodate the diverse explanations for this sort of behavior. Secondly, as mentioned in the introduction, this dissertation seeks to account for the social and technical factors that influence prosocial behavior as well. This sociotechnical approach attributes motivation to the individual as well as to factors such as the affordances of technical tools we use. In her influential study on the development of online communities, Nancy Baym (1998) similarly provided a sociotechnical framework for understanding how virtual communities emerge and maintain themselves. Baym's framework takes into account social and technical factors such as member characteristics, the group purpose and the infrastructure of the computing system. Drawing inspiration from Baym's work, this dissertation also considers the influence of social and technical on online behavior, specifically the prosocial sharing of digital content for others to reuse. In the following sections I will introduce the technical and social considerations that inform the various elements of the social performance framework.

3.2   Open Contribution Systems

As mentioned in the introduction, one of the problems with current work investigating online prosocial sharing is the lack of generalized understanding of the

characteristics of the diverse web applications and online spaces that make up the "social web". One way to begin thinking about a sociotechnical explanation for online prosocial sharing, is to broadly characterize some of the common characteristics of these online spaces. In this section, I will begin by labeling these websites as *open contribution systems* (OCS). I then go on to discuss two of the main characteristics of these systems, namely, their ability to aggregate the contributions of the end-users, and their open and public nature. Outlining these characteristics provides the foundations for my development of the social performance framework.

OCS are online environments that encourage users to openly contribute and share content in a "public" networked environment. These are systems that aggregate contributions from the individual end-user into a collective resource that has value in its own right. Prominent and successful examples of OCS include Wikipedia and Linux. OCSs can also be seen in other contexts such as video sharing on YouTube and in the popular young people's programming and remixing community called Scratch. These diverse examples highlight how OCSs can afford a variety of contribution forms, ranging from simply voting to more involved content contributions like that of user-generated videos or music. In general, OCS are considered to be very successful in drawing together contributions from large numbers of people, often volunteers, and aggregating the content into valuable resources.

One defining characteristic of OCSs that I would like to highlight is the open and public manner in which they surface information about the activities of the users. Bauwens (2006) describes this characteristic as a form of holoptism. Unlike panoptism, where participants in hierarchical systems are subject to the control of a select few, holoptic systems allow their users free access to socially salient information and cues about the other participants. For instance, clicking on the history page of a Wikipedia entry will provide one with a plethora of information; who made what changes, when they made them, etc. Much of this openness and publicness is attributable to the networked affordances and system design that developers adopt. Architecting holoptic applications provides users with a view of the activity of other individuals and of the website as a whole. Such transparency arguably encourages individuals to share more openly and collaborate with each other towards a larger collective effort or product.

The idea of providing an awareness of social activity has been explored in early Human-Computer Interaction work on designing virtual/online communities (Erickson & Kellogg, 2000; Cosley et al., 2003). For example, Erickson et al.' (2002) developed Babble, a group awareness and messaging system. Their resulting study found that by providing "social translucence" - visualizations and cues of the activities of others on the system – the Babble system designers were able to allow mutual awareness and support accountability amongst the users. Building on this early work, Suh et al. (2008) developed the "wiki dashboard" (see Figure 3.1), a tool that visualizes the social dynamics and editing patterns of every article and editor on Wikipedia. This tool seeks to aggregate and make transparent user and editing activity on Wikipedia pages. One conclusion made by these studies of system design is that making system users' online activities public and transparent provides a "many eyes" effect resulting in improved trust and accountability amongst the loosely connected users. However, one issue with such transparency has to do with the issue of how to find the right balance between individual privacy and the visibility that is essential to supporting the social processes which encourage participatory behavior (Erickson & Kellogg, 2000).
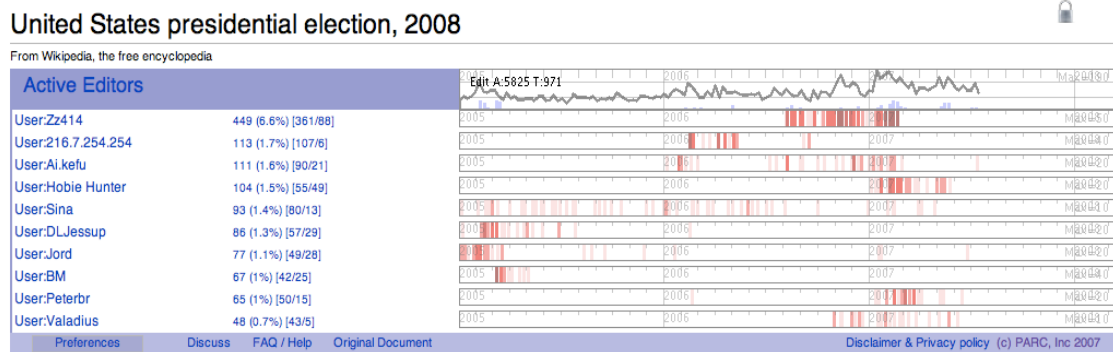
Figure 3.1: Wiki Dashboard visualization

3.3 Thinking of OCS as Publics

The conclusions made by Erickson and Kellogg's (2000) and Suh et al.'s (2008) studies about "social transparency" are highly relevant to this dissertation. *I believe that it is the social transparency afforded by OCS that engenders a form of mutual accountability, trust, and awareness essential to motivating participation - this is the "many eyes" effect on the individual's behavior and actions*. Essentially, participatory

behavior in socially transparent systems is akin to the performance of public behavior – a topic that has long been studied and developed fields such as sociology and anthropology. As such, can we begin to think of OCS as public spaces?

The term "public" has a long history of thought attached to it. According to Warner (2002), public is a complex notion that has three facets: first, as a kind of social totality thought to include everyone within the field in question (e.g., the people as organized by the nation); second, a concrete audience by an event or a shared physical space (e.g., the theater public); and third, as an entity that comes into being in relation to texts and their circulation (e.g., the readership of an essay). For Warner, there are no clear distinctions between the three aspects of the term when applying them to the real world. However, in relation to this dissertation, it is the third sense of the term public that seems to best describe the potential of public scrutiny and behavior on OCS. For Warner (2002), this sense of a public embodies the following characteristics:

> Publics tend to be self-organized, unlike groups, audiences or crowds. It (*they*) can be 'picked up at different times and different places by otherwise unrelated people' (p. 56).

Warner's sense of a public is not unlike Dewey's (1927), who defines a public as spontaneous groups of individuals who are indirectly brought together by a common interest or action. For both these scholars, publics are emergent groups of individuals who are otherwise unconnected, and are situated around a common issue or problem.

Publics are constituted by attention. What classifies membership in publics is its' contingency on "some kind of active uptake" (Warner, 2002) or attention common amongst their membership. For instance, the public debate of gun control in the United States is dependent upon the focused attention paid to the topic by a vast mass of disparately affiliated groups of people. The public relationship amongst strangers also helps to maintain order and safety through mutual surveillance and policing by "many eyes". For Warner, a public "unites strangers through *participation* [emphasis mine] … though the resulting relationship might be particularly indirect and unspecifiable" (p. 56).

Given the above characteristics of a public, OCSs function very much like publics – they are made up of individuals who tend to have no relation with each other, and who are brought together and identified by the collective purpose/goals found in each OCS.

Additionally, through the social transparency afforded by these holoptic systems, participants in OCS tend to be self-organizing and provide mutual surveillance and accountability for their actions. By characterizing the space and membership of OCS as publics, I am intentionally resisting the prevailing characterization of online participation as based on "communities" in current research (Wasko & Faraj, 2000; Beenen et al., 2004). As observed by Erickson and Kellogg (2000), there is very little in participatory online spaces that makes them look like communities - the distribution of interaction levels in these spaces tends to follow a power law and most of the interaction is generated by a small core group of users. This is an observation also made by Anderson (2006) in his book "The Long Tail" where he observes that most of the distribution curves of online interaction and participation tends to look like Pareto or power law distributions. Some of these same distributions are also observed in the study of ccMixter as will be discussed in greater detail later. What these long tail distributions tell us is that most of the users in these online spaces tend to be one-time participants or contributors, much like passer-bys in a public space. Erickson and Kellogg (2000) succinctly observes that "(t)hese sorts of interactions seem much more similar to those that occur on a city's sidewalks." (p. 87)

While the idea of a public space is a powerful way to characterize online communities, does this description fit the interactions that occur on OCSs? Is it too simplistic to think of OCSs merely as public spaces when these systems are less neatly and easily categorized? One problematic aspect of conceiving these systems as publics is the power users whose contributions make up the head of the long tail. The interaction patterns and behavior of power users are quite unlike that of a stranger passing through a public space. In fact, one might argue that the behavior of power users seem more like invested and committed community members. This idea certainly plays out in the data that I have collected and will be discussed in the later chapters of this paper. Perhaps a more useful characterization for this study is to think of OCS systems as public spaces where varied modes of interaction and participatory behavior from the users are accepted.

It is certainly the case that in real-world public spaces, we are likely to find not just unconnected passer-bys, but also pockets of tight-knit communities. And it would not be inconsistent for these varied members of a public space to have a shared goal – for

instance, everyone can pitch in to keep a public park clean. As such, it may be worthwhile to think of OCSs as public spaces that support multiple modes of interaction and participation – particularly because of the social transparency afforded in these spaces. By thinking along these lines, we can thus begin to make sense of online participatory behavior and how to design systems to support "(p)eople working together in shared information spaces, using shared technical and social protocols, to achieve shared goals" (Udell, 2007, para. 4). So far I have emphasized how the technical characteristics help motivate and make it easier for individuals to contribute, organize, and aggregate their efforts into a collective product. However, as highlighted by Udell, these OCS are also dependent on "social protocols" to motivate participation from the users. As will be discussed in the following section, we can see that the question of what motivates someone to willingly contribute their effort and participate in a collective endeavor is not one that is easily answered by simply examining the design and technical features of the software platform.

3.4   Prosocial Behavior on OCS as Public Performances

In this section of the paper, I begin to address the social and group dynamics that may perhaps explain why there are such high rates of contribution in OCS like Wikipedia. For this, I turn to sociology and the tradition of symbolic interactionism, where the metaphor of performance is used to study and understand public behavior. In his two seminal publications, "The Presentation of Self in Everyday Life" (1959) and "Behavior in Public Places" (1966), Erving Goffman describes the performative and situational nature of human behavior and interaction. For Goffman (1966), a performance is defined as:

> all the activity of an individual that occurs during a period marked by his continuous presence before a particular set of observers and which has some influence on the observer. (p. 26)

Although most of Goffman's work addresses public behavior in face-to-face situations, his definition of a performance can also be used to describe the participator behavior found on OCS. Given the public scrutiny afforded by the social transparency in OCS, participatory behavior in these systems functions on two levels; one, as members of

the audience scrutinizing the behavior of others; and two, as the performer of these actions in turn. Additionally, there is a certain reflexiveness in the behavior of individuals – being the performer of the action, he/she does so with the knowledge of an audience, this knowledge shapes the behavior that one "performs". At the same time, given the transparency of the OCS, the individual is also an audience member, privy to all activities of others in the system. Boal (cited in Goffman, 1966) articulates this reflexivity in the performance of public behavior by saying,

> there is no spectator or actor. Nobody is one or the other, but they are both at the same time. You are watching, but you are also acting because there is no actor without the spectator. (p. 15)

Similarly, in a socially transparent online space, public behavior has an audience and this can have an effect on both the actor and his/her audience. To illustrate, Goffman (date) uses the example of a waiter, whose behavior when interacting with fellow cooks and service staff in the kitchen is markedly different from his interactions with customers in the dining room. In this example, we can see that the different ways in which the waiter conducts himself is a social presentation of self, or performance, that is very much dependent on a shared interaction context between the various actors in the situation. In essence, the waiter's different behaviors are co-constructed and arise out of interactions with other social actors. He is likely to be polite and compliant in front of a customer because that is the behavior expected of waiters. In other words, the waiter's behavior is in part determined by the context that he is operating in and the other social actors in that situation.

This situationally appropriate behavior is also constitutive of identity formation, albeit an identity that is dependent on the context in which it is performed. According to Brissett (2005),

> (w)henever human beings interact, selves are created and shared ... their beings always emerges in the course of a performance with others ... To appear before others is to involve oneself in the process of selfhood. (p. 8)

The notion of identity here is seen as a contingent upon other social actors and the situation. Drawing on the philosophy of the American Pragmatists and George Herbert Mead, we can view the waiter's notion of "self" and "identity" as being co-constructed

and mutually constituted through interaction and facilitated through ongoing communication between himself and those around him. According to Mead (1934, cited in Jenkins, 2004), identity and human behavior is not meaningful when seen in isolation from the social world. Self-identity for Mead is an "internal-external dialectic" where we cannot see ourselves without also seeing how other people see us. Mead (1934, cited in Brissett & Edgely, 2005) nicely encapsulated this idea:

> The response of one organism to the gesture of another in any given social act is the meaning of that gesture. (p. 78)

This quote highlights the idea that how we behave and how we identify ourselves is to a large extent dependent on how others receive those actions. In Goffman's example, how the waiter behaves is (sometimes) dependent on how the diners behave towards him – he will likely be polite and helpful if the diners are happy to have him as their waiter. The waiter knows how to behave appropriately in different situational contexts because he is partially guided by the understanding and reception of his actions by others. In a sense, by equating social actions to a performance, there needs to be a recipient or an audience for those actions. Very often, this audience tends to be the other actors involved in the social situation. This is related to the discussion of how one's identity is often constructed on the feedback and signals that we get from the reactions of others to our actions. Using this performative metaphor to understand participatory behavior in an OCS - the level of contribution of an individual user is in large part determined by the reactions of others, the feedback that one receives for contributing, and the situational appropriateness of such prosocial sharing behavior.

In addition to the reflexive dependency between the individual actor and context of social behavior, dramaturgical sociology is also very concerned with the formation of individual and group identity when we socially interact with each other. Jenkins (2004) argues that an individual's and a group's identity is mutually dependent. According to him there is a mutual dialectic in identity formation;

> (*we*) identify ourselves ... we also identify others and are identified by others (*in the situation*) in turn, in the internal-external dialectic between self-image and public image. (p. 20)

Using the example of the waiter in the dining room once more, the customers' expectation of a fine dining experience shapes the waiter's mannerisms and actions. However, the waiter's behavior in turn dictates and shapes the ways in which the diners act in the restaurant. This is what Goffman (1966) was trying to highlight in his earlier quote when he says that all action "has some influence on the observers". The mutual construction of both internal and external conceptions of identity is fundamental to this dissertation as it highlights two main characteristics of online identity:

- Firstly, that online behavior is performative and helps to convey an individual's identity.
- And secondly, that this identity is mutually constituted through situational contexts and social interactions.

Our online actions are thus determined by the presence/awareness of others around us, and because a particular situation constrains or enables our behavior. This suggests that there is a repertoire of selves and identities defined by different audiences. "No human being is the same at all times, but changes from moment to moment, from place to place, according to the contact he makes with his fellowmen." (MacClinttock, cited in Brissett & Edgely, 2005). As such, we can begin to think about participatory behavior as a "performance" that is appropriate to particular "settings" and "audiences" that involve differing social "actors".

3.4.1 Trajectories of participation

Before further elaborating on the performative nature of social sharing in OCS, I will first describe Etienne Wenger (1999) description of participation in "Communities of Practice". The reason for my excursion into Wenger's ideas is that he clearly links participation in a collective activity to the social construction of identity. For him participation "suggests both action and connection" (p. X?). Participation is thus not merely the action of sharing and contributing; it also involves the mutual identification between oneself and the community in which one engages. Much like Mead's (1934, cited in Brissett & Edgely, 2005) notion that identity is mutually constituted in social interaction, the individual's identity, as well as the collective's, is defined through the participatory performances of the members of communities of practice. Wenger (1999)

terms this process of identity formation as an "identity of participation" where "identity (is) constituted through relations of participation". Essentially, both individuals and their communities mutually construct identity through the performance and reception of action. As an individual participates and performs behaviors that are accepted in a community, he/she becomes more familiar with the other members and begins to identify more with the community. Thus, as one moves from the periphery and becomes more identified with the community, one's level of participation and interaction with the other members increases.

This raises the idea that there are trajectories of identity formation and participation in Wenger's conception of communities of practice. For him, the performance of participatory action indicates one's position in the social landscape - newcomers to a community are likely to be peripheral members with little to account for in terms of participation. However, as one learns more about the ideals, values, and norms within a community, one begins to perform actions that are more associated with the central beliefs of the community. Thus, the trajectory of participation traces the path that one takes from being a newcomer to performing actions that are identified more with the core of the community.

Building on Wenger's view that participation is demonstrative of one's social position and identity within a community, I extend the metaphor of performance to participation in OCSs. It is important to note that while Wenger is specifically referring to communities in his conceptions of participation, his ideas are also highly applicable to other forms of collectives such as publics. This is because his theory of participation does not assume uniform levels of interaction and participation amongst the members of a community. It even takes into account the peripheral participation of newcomers who aren't necessarily community members yet. Wenger's theory is well suited to describe participation in OCSs because it can explain the differing levels of participation between the "head" and the "tail" of the skewed distribution often found in these online systems.

Wenger's theory of participation is also highly applicable and relevant to the social performance framework. For Wenger, identity formation is fundamentally rooted in participatory action. By viewing all participatory behavior and social actions as expressive and performative in nature, Wenger's theory of participation lends itself

particularly well towards the use of a dramaturgical lens to understand prosociality in OCSs. Being an active contributor in an OCS involves interacting with other members and also performing actions and behavior that are illustrative of one's membership. However, it is not enough to assert an identity through participatory performances; that identity must also be received and validated by an audience, in this case the other contributors in the system. Their reception, in turn, reinforces one's perception of identification with the collective. In other words, there must be a receptive audience for the performance of actions that contributes to one's identification with the group. This is similar to Wenger's notion of how an individual's membership in a community is subject to the mutual acceptance of participatory action between the individual and the other members. The trajectory of participation thus traces the movement of an individual from the fringes of a community to its core, based how his/her participatory performances are increasingly received by the other members of the community. This is both a dynamic and comprehensive way to take into account the varied and diverse ways in which individuals contribute and participate in online environments.

3.4.2   Group identity and reciprocity

The performative aspect of participatory behavior is also constitutive of the collective identity of the group or community. Participatory behavior is not only demonstrative of one's identification with a group; such behaviors are also constitutive of the collective identity. The group's acceptance of particular kinds of behavior not only reinforces the individual's identification with the collective, it also reaffirms the group's identity. This is an important idea to the proposed social performance framework as it highlights the view that individual and collective identity is a social construct that emerges through interaction between individuals. According to Brissett and Edgely (2005),

> whenever human beings interact, selves are created and shared … their beings always emerges in the course of a performance with others. (p. 18)

The dialectic of identification also has a moral dimension to it - one that is rooted in notions of reciprocity. Brissett and Edgely (2005) call our attention to this idea:

> … when an individual projects a definition of the situation and thereby makes an implicit or explicit claim to be a person of a particular kind, he automatically exerts a moral demand upon the others, obliging them to value and treat him in the manner that persons of his kind have a right to expect. (p. 136)

This quote emphasizes the fact that the dialectic of identification has implications of reciprocal behavior from other members of the group. When an individual performs actions that highlight his/her role, status or membership in a community/group, these actions have an expectation of reciprocal and appropriate behavior from the other individuals who are a part of the interaction. The expectation of such reciprocal behavior can function as a social norm within a particular situation or setting. Take for instance the military norm of saluting when encountering a superior officer. The behavior (and visible rank) of the officer inspires the reciprocal action of a salute from lower ranking soldiers. The social expectation of saluting a ranking officer thus becomes one behavior that helps shape the identity of both the soldiers and the military community. Thus, there is a relation between social norms/expectations and the identification of an individual with a particular group. The relationship between social norms and identity is an important aspect of this study and begins to explain why individuals are motivated to participate towards collective efforts. In the next section of the paper, I will discuss how individuals to act according to the group's expectations. This alignment of individual participation with the group's goals and purposes will be elaborated on with the idea of group scripts.

3.4.3 Group Scripts: Aligning Individual Performances

If participatory behavior can come to reinforce the identity of a collective, then getting individuals to align their actions and contributions to the group's norms would be a simple matter of observing the performances of the other members. For instance, I understand that long lunches are frowned upon in my new job if I observe my colleagues eating at their desks during the lunch hour most of the time. However, observation is a poor metric for understanding group identity and norms of behavior as it does not fully explain how an individuals might align their participatory behaviors with the group's identity and purpose. One way to better understand how group norms motivate and promote behavioral regularity is through the idea of "scripts". Much like dramatic scripts

that direct how actors are to play their characters in a performance, group scripts are collective processes that specify appropriate behavior from its members. Essentially, group scripts are systems of collective representations that are accrued from prior experiences and are used to lessen the group burden of understanding new events or orientating newcomers.

Dillenbourg (1999) defined scripts as a detailed set of guidelines, rules, and structured tools that specify how group members should interact and collaborate with each other. Examples of such detailed scripts can be found in the Standard Operating Procedure manuals of highly structured groups like the military. These highly specified and structured scripts function as prescriptions for normative behavior in the group and are often the products of collective aggregation of experience. Another example of such scripts can be seen in the emergency evacuation procedures in a building during a fire. There is a master narrative that dictates who performs what actions in order to coordinate individual performances during times of panic and emergency. As highlighted by these two examples, group scripts are often meta-narratives that guide the actions and behavior of a group of individuals facing new experiences. If the new experience encountered is anomalous to what's prescribed in these scripts, this contributes to "expectation failures" and may lead to new generalizations or "scripts" being formed (Schank & Berman, 2002). However, not all group scripts need to be so explicitly specified, especially in the case of the Internet where participants tend to be loosely affiliated with each other and interactions might be fleeting.

Another aspect to group scripts can be found in its symbolic nature and narrative form. According to Alexander, Gelsen and Mast's (2006) group scripts play an important role in connecting individual behavior to the collective context. In their view,

> "(b)ehind every actor's social and theatrical performance lies the already established skein of collective representations that compose culture - the universe of basic narratives and codes and the cookbook of rhetorical configurations from which every performance draws" (p. 58).

This quote emphasizes the important role that group scripts play as symbolic and narrative representations of the expectations for individual behavior and performance in a group. These group scripts can take the form of historical or mythical narratives that are

representative of the group's ideals and behavior. For instance, the volunteer book digitization project, called Distributed Proofreaders, makes use of the historical figure of capuchin monks as representations of the importance of the group's task. The raison d'etre of the group is to assist with the preservation and digitization of books by proofreading the digitized scans of pages. Both image of the Capuchin monks, and the motto of the group, which reads "preserving history one page at a time", symbolically embodies the significance and the practicalities of the work involved in the project.

The symbolic nature of scripts also highlights how they can be used as a tool to tap the power of social dynamics to create the foundations of a common heritage, culture and language. The narrative form which group scripts can adopt are a richer, more compelling, and more memorable means by which group knowledge and expectations can be conveyed to the members. As such, one way of understanding why individuals are motivated to participate in collective efforts is to understand the group scripts or narratives within a community. These scripts, without being highly specified, have the ability to rationalize and align individual behavior with the norms and expectations of the collective.

3.5 A Sociotechnical Approach: The Social Performance Framework

With the social performance framework, I postulate that individual participation on an OCS is a "public performance". In this framework, individual contributions can be seen as performative acts that allow one to be increasingly identified with the norms held by a group. This performance is mediated through the functionality or affordances of the social software system. Because of the "socially transparent" nature of these systems, both individuals and groups "perform" their respective identities through participatory behavior that is determined by a group script. A fundamental idea that my framework puts forward is that both the individual's and group's identity are mutually constructed through social interaction.

This framework, illustrated in Figure 3.2,.shows the processes involved in participating on a social software system. As highlighted in the diagram, the social performance framework proposed relies on Burke's (1969) method of analyzing human action and motives. This method, termed by Burke as *dramatism*, frames social

interaction according to a "pentad" of five categories: 1) *act*, 2) *scene*, 3) *agent*, 4) *agency*, and 5) *purpose*. Essentially, Burke's "pentad" outlines five basic questions about human action and their motivations: What was done (*act*), when or where it was done (*scene*), who did it (*agent*), how he did it (*agency*), and why (*purpose*). According to Burke, the pentad is an analytical device that helps with "framing or placing experience to make sense of it" (Burke 1989, p.16). By utilizing the pentad to frame "experience", Burke is highlighting the relationship between individual motivations and the actions performed by taking into consideration the socially situated and mediated behavior of human beings. For him, motives cannot be separated from the situations in which they occur.

Like Burke's framework, the social performance framework categorizes the process of participation into the 5 elements: 1) the contribution to a collective activity (*act*), 2) affordances of technology that enable individuals to share and contribute with others (*scene & agency*), 3) the individual contributor (*actor*), 4) the other contributors in the system (*co-actors*), ,and 5) aligning individual action to the group (*purpose*). My framework is crucial to this paper's argument in that one way to explain participatory behavior on social software systems is through the use of a performative lens. Using this lens, I will provide an explanation of participation on OCS that will take into account the diversity of human motivations and the technical affordances of these systems. This framework presents a way to organizing existing theory in order to better understand why individuals participate on OCSs. This section will reiterate the social performance model introduced at the start of the proposal by framing the various theoretical perspectives that have been introduced with the notion of social performance. Each of the following subsections is an explication of the various elements found in the social performance framework in Figure 3.2.
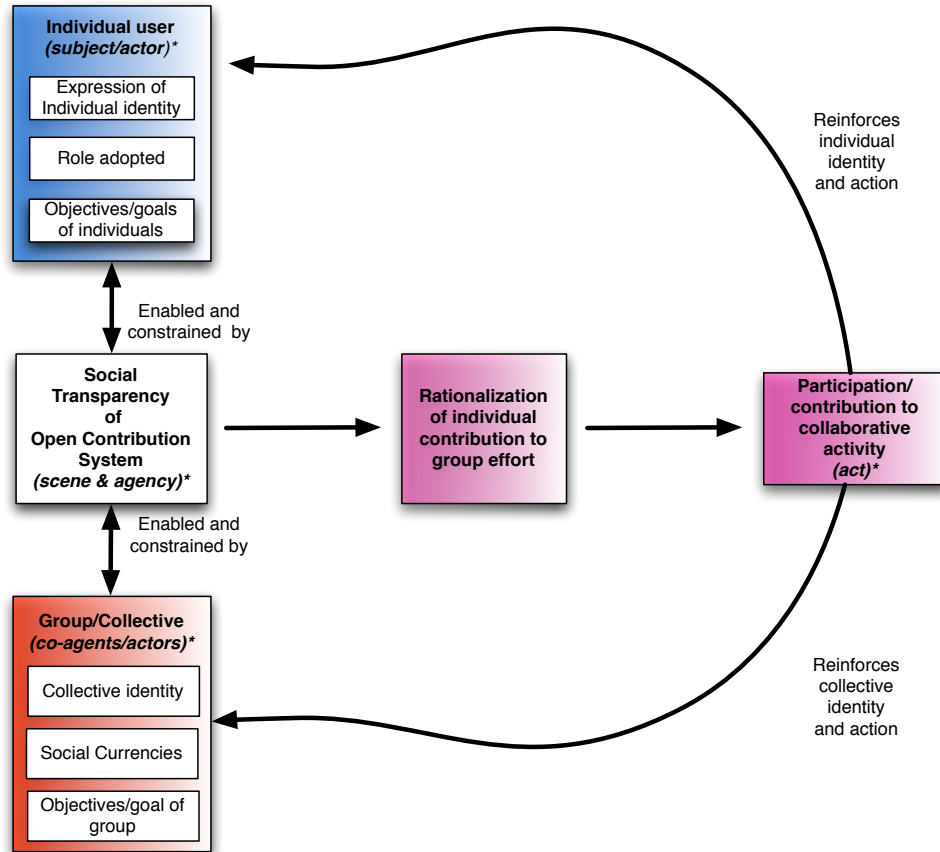
Figure 3.2: The Social Performance Analytical Framework

3.5.1 Actor

To begin, consider the individual end-user or actor and the performative nature of their prosocial sharing behavior in an OCS. As highlighted earlier, the framework of social performances considers individual's contribution activity as a performance of individual identity. This action is also demonstrative of the individual's social position and identity in a community and is highlighted in Figure 3.2 as "Roles Adopted" component of the individual actor. Essentially, this element of the theoretical framework highlights the dual nature of contributing to a collective; it is not only indicative of one's position and role in the collective, it is also partially constitutive of one's identity. The more one contributes and participates in a group, the more strongly reinforced one's role and identification in the group becomes. This idea is illustrated in Figure 3.2 by the arrows that indicate a process loop between the individual's actions and their individual identity and their identification with the group. Additionally, Goffman (1959) points out

that performative action has a reciprocal nature. When one performs or expresses identity through participation, that identity has to be affirmed and reciprocated through the behaviors of the other group members. This notion is highlighted in Figure 3.2 by the two-way arrow between individual and group identities (which are mediated by the affordances of the OCS). The main argument being made by this theoretical framework is that individual participation is motivated in large part by the fact that such participatory actions are expressive of one's identity and affirm one's identification with the group.

3.5.2 Co-Actors

The other members present in the OCS exert a great amount of influence on motivating contributions from the individual. Given the socially transparent nature of an OCS, the actions of the other members in the system will be made apparent to all. By allowing this transparent view of the behaviors of other members, it highlights the activities that are valued and performed by the rest of the community. For instance, observing the other members in an OCS can allow one to know what particular behaviors are accepted and which ones are sanctioned. Thus, the publicness of behavior in OCSs helps individual members to identify the goals and values held by the collective.

Additionally, the formation of a collective identity is very much determined by the performance of actions by the individual members. The more individuals perform actions that identify themselves with the group and the more these actions are received and affirmed by the other group members, the more strongly defined the group becomes. This notion is illustrated in Figure 3.2 by the loop of arrows starting from the individual actor component and recursively loops back to the individual and the collective components. As highlighted by the diagram, this recursive and self-affirming process of group identification forms a sort of social performance that motivates individuals to participate and contribute more.

Another aspect of the collective that motivates individual's to contribute is the role of group scripts for how individuals are to behave on OCS. Often implicit in collectives, the expectations for how and how much individuals should contribute and share tends to be conveyed through symbolic representations such as group scripts and norms (Alexander, Glesen & Mast, 2006). These group scripts function as unwritten

means by which to motivate and align individual participation with the collective effort. Group scripts in OCSs are made apparent when individuals are able to view the behaviors of the others and determine the expected social norms for the amount and types of contributions to make. By making these norms transparent, the individual member is able to rationalize and align his/her actions according to the goals and purposes of the group. This is illustrated in Figure 3.2 by the component labeled "rationalization of individual contribution to group effort" which appears just before the act of participation.

3.5.3 Scene and Agency

It is important to note that unlike Burke, the participatory behavior described thus far is mediated by the Internet and takes place in online spaces. Like all technical applications, these systems have functionality and affordances that both constrain and enable the social activity. As such, these online environments are not just the scenes where prosocial participation take place. Online systems like OCSs provide users with the agency to contribute and interact with each other in an online space. Given the role that online environments such as OCSs play in mediating the actions of the individual user, I have modified Burke's (1969) dramatic pentad by combining both the scene and agency components of his analytical tool. In the following paragraphs I will elaborate how the features of OCSs enable both individual actors and collectives to participate and interact with each other. These features are important aspects of the social performance framework as OCSs not only enable and mediate participatory performances, they are also the setting in which these performances occur.

Participation/contribution: OCSs rely on participation and contributions from users, either in terms of aggregating those contributions into collective efforts or as a means to generate social interactions. In order to motivate participation, the designers of social software systems need to ensure that the level of contribution or effort is commensurate with the goals and objectives of the group. Thus, the modularity of the task and the granularity of how these tasks can be distributed need to be considered carefully (Benkler, 2006). This is to ensure that we design systems that enable individuals to engage in the collective effort appropriate to their level of identification with the

group. By doing so, we, as researchers and system designers are able to motivate more and better quality participation.

Another important role that OCSs play is the aggregation of individual efforts and contributions and transforming them into a valued resource. For instance, open source software projects aggregate individual contributions code snippets towards large software projects that would literally take an individual programmer hundreds of hours to complete. By providing functionality such as version control and attribution tracking, OCSs are able to aggregate individual contributions into resources that have greater value than their individual parts. Additionally, these OCSs are also able to manage the granularity and modularity of the contributions, such that they are the right size and effort for the contributors.

Social Transparency: OCSs afford social transparency by allowing all its members a holoptic view of all activity in the system. For instance, clicking on the history page of a Wikipedia entry will provide one with a plethora of information; who made what changes, when they made them etc. Much of this openness and public-ness is attributable to the system design and architecture. Architecting holoptic applications allows users a view of the activity of other individuals. Such transparency can encourage individuals to more openly share and collaborate with each other towards a larger collective effort or product through a combination of i) easily observable social norms to moderate one's behavior towards the group's norms/scripts, and ii) through the "mutual monitoring" (Goffman, 1959) effect where one's actions are open to the scrutiny of the other members and results in behavior that conveys and maintains a presentation of the self to others (Goffman, 1959). Much like a public space, individuals OCSs contributions are thus both constrained and enabled by the joint influence of both the group's norms/scripts and the social transparency of the system.

CHAPTER 4
Methods and Research Design

4.1 Introduction:

As mentioned in the previous chapter, my dissertation seeks to provide a sociotechnical explanation for why individuals prosocially share work and content that they have created online. I propose and develop the social performance framework as a lens to better account individual motivations to share beyond primarily individualistic calculations. The social performance framework is based on theoretical lens that view online prosocial sharing as public expressions of self-identity and group affiliation. This metaphor is grounded on two assumptions:

1) That the networked interfaces and tools in OCSs affords social transparency by making digital social cues available through visualizations and displays of user activity.

2) That this visibility of user activity in OCSs enables the development of social currencies, based on these mediated social signals, amongst the participants in the system.

The notion of social performances only makes sense when we take into account both the social and the technical factors that shape one's actions and behavior. Here, motivations are seen as not only located in the individual, but can also be attributed to the behavioral dynamics that result from the technical and social constraints that shape the interactions between the users. Given these constraints, I believe that users are compelled and motivated to behave in certain ways based on the how the tools and interfaces are designed to make possible certain actions while constraining others. As such, using the Social performance framework I hypothesize that:

- Prosocial sharing behavior is partly determined by the social currencies that arise as a result of group norm formation in the OCS;

- Prosocial sharing behavior is partly determined by the social transparency afforded by the tools and interfaces found in the OCS environment;
- Given the above two conditions, the act of prosocially sharing content in an OCS is a social performance of self-identity and alignment with group scripts/narratives;

The social performance framework can be used to better understand the dynamics and processes that shape the motivations of individuals to share their content openly. This dissertation aims to provide insight into the motivations behind why individuals openly share user-generated content through the application of the social performance framework. Additionally, my dissertation also aims to validate the usefulness of the social performance framework as a tool to better understand the behavior of users in online environments like OCSs, and by extension, to better design systems that encourage sharing and reuse from the users. Specifically, this dissertation seeks to address the following research questions:

- What are the dynamics and patterns of open sharing behavior in a community that encourages this behavior to emerge?
- Why do individuals openly share, and allow others to reuse content that they have taken personal time and effort to create?
- What aspects of system functionality and design of OCS contribute to this content sharing behavior?
- Can we use the Social performance framework to improve the design and functionality of OCS to encourage participation, contribution, and sharing from users?

4.2 Study Site: ccMixter

In this thesis I apply the social performance framework to a case study of ccMixter - an online community that is focused on the open sharing and "remixing" of music content. ccMixter began its life in November 2004 as a means for the Creative Commons (CC) to showcase and drive the adoption of CC licenses (Stone, 2009). All content uploaded to the ccMixter community is shared under one of the four CC licenses

applicable for music sharing and reuse[3]. The CC licenses mean that all content contributions on ccMixter are openly and publicly shared - anyone is welcome to reuse this content as long as the specific license conditions are met. (More detail about the use of CC licenses will be provided in the coming paragraphs.) The main goal of the ccMixter website and community is to create a space that encourages the formation of a "remix culture", based on the principles of a "sharing economy" (Lessig, 2008) where user-generated music is freely shared and exchanged. Anyone is free to download any contribution on the site to improve upon, change, integrate and "remix" without the introduction of monetary incentives. According to Victor Stone, the former site administrator and founding member of the community, ccMixter is all "about embracing the creative process and immunizing it from limiting forces, both social and legal" (Stone, 2009). Thus ccMixter represents an online space where individuals are able to engage in the creative practice of producing derivative works by appropriating and reusing-- remixing -- the works of others shared in the community.

The ccMixter site and its users represents online content sharing community that is well suited for applying the social performance framework. Central to participation on ccMixter is the notion of "remixing". As defined by Lessig (2008), remixing is the act of appropriating content from others, integrating that content with one's creative "manipulation", in order to create derivative works that have value in their own right. Prominent examples of remixing music abound, especially controversial cases like Danger Mouse's "The Grey Album" which 'illegally' appropriated and remixed samples from The Beatles' "The White Album" and Jay Z's "The Black Album"[4]. While the issues of intellectual property and rights remain hot button issues, the widespread sharing and reuse of content for the purposes of individual expression, communication, and

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[3] There are several types of CC licenses that individual creators can use to grant copyright permissions to their creative work. However, not all CC licenses are applicable to music sharing and remixing. CC licenses that do not permit derivative works are obviously not very useful to the ccMixter community. A full list of the available CC licenses and their descriptions can be found at the following URL: http://creativecommons.org/licenses/

[4] *The Grey Album* is a mashup album that utilizes vocal samples from jay Z's *The Black Album* and instrumentals created from The Beatle's *The White Album*. When the album was released, EMI – the copyright holder of The Beatle's back catalogue, attempted to halt the distribution of Danger Mouse's work. The Wikipedia page on *The Grey Album* details the history and controversy generated by the release of the album: http://en.wikipedia.org/wiki/The_Grey_Album

entertainment has become commonly accepted in popular culture today. ccMixter sees itself as a tool to support the activity of remixing by providing users with a shared *pool* or *commons* of freely and openly shared material (Stone, 2009). Most of the contributions to this pool are user-generated content created specifically for others on the website to remix and reuse. It is important to note that there is some diversity in the types of user-generated contributions found on ccMixter. The three main forms of content contributions are; i) samples - snippets of music usually of a single instrument, ii) *a capellas* - vocal tracks usually unaccompanied by any backing music, and iii) remixes - which are typically derivative works that incorporate the samples and *a cappella* contributions shared by others in the community. ccMixter depends on and aggregates these contributions in one online space. The ccMixter website functions not only as a repository of freely shared and openly licensed material, it also supports a vibrant and active community of individuals interested in creating music through remixing. The stated goal of the community is to facilitate creativity and music creation by providing access to openly licensed content for both amateurs and professionals to reuse.

To a large extent, the act of remixing is dependent on content contributions that are freely and openly shared. All content uploaded onto ccMixter is licensed under one of three forms of CC licensing: "Attribution", "Non-Commercial" and "Share-Alike" (Stone, 2009). The specifics of each license notwithstanding, this means that content shared on ccMixter are mostly non-commercial in nature, do not infringe on the copyrights of others, are freely shared and open to be re-used by others. This characteristic of ccMixter is interesting for the purposes of this dissertation as it highlights a form of content sharing that is motivated for reasons other than personal and financial gain. Contributing one's content under a CC license essentially gives relative strangers the permission to reuse and create new derivative works from that content without expectation of financial reimbursement or gain. What makes content sharing in ccMixter so interesting is precisely the fact that the users are relinquishing some of their control and ownership over the content that they've painstakingly created and contributed to the community. This content sharing represents a form of prosocial behavior, or "thee-regarding behavior", that is seen as the foundations for the creation of a "sharing economy" (Lessig,

2008). In the context of ccMixter, the open sharing of one's content is not only essential to the activity of remixing, it also seen as a catalyst for creativity and innovation. By providing a "shared commons" of user-generated content, ccMixter hopes to leverage the capabilities of networked technology to inspire "distributed creativity" (Boyle, 2008). It is envisioned that making available this pool of openly licensed music samples through the ccMixter website will facilitate the open flow of creativity and amateur participation in the music creation.
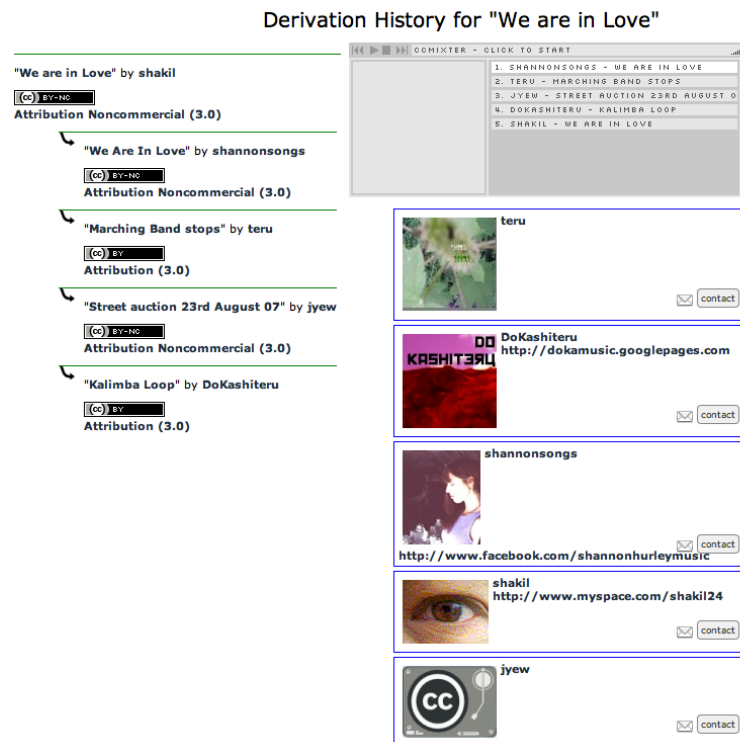
Figure 4.3: Screenshot of an uploaded sample displaying the sources that are used in the remix (as of January 11th 2011)

Another aspect of ccMixter that makes it ideal as the site of analysis for this dissertation is that ccMixter's online environment allows participants a holoptic (Bauwens, 2005) view of the sharing and reuse activity taking place between the members of the community. The community's website is built utilizing ccHost, an open source content management system that is a product of the ccTools project[5]. What is

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[5] According to Wikipedia, ccHost is an open-source back-end system written in PHP and uses a MYSQL database server. ccHost is primarily designed to store, track and share multimedia content. The software was presented with Linux World's Best Open Source solution award in 2005. (accessed June 25th, 2011)

distinctive about ccHost is that it was developed to explicitly track the reuse of content by attaching attribution information to all uploaded items. All uploaded derivative content, or remixes, will have metadata about the sources that have been reused prominently displayed (see Figure 4.3). This is very much like a list of references/citations found in academic publications. The only difference is that the attribution information on each uploaded remix comes in the form of a hyperlink, so that listeners are able to go directly to the source materials that were used in the creation. Besides the display of attribution information, the ccMixter website also organizes, makes searchable, and tracks the contributions and remixing activity of each user. Information about each user's activity in the community is explicitly displayed on their profile page. For instance, information about the number of contributions each user has uploaded to the comments or reviews left for other users are tracked by website (see Figure 4.4).
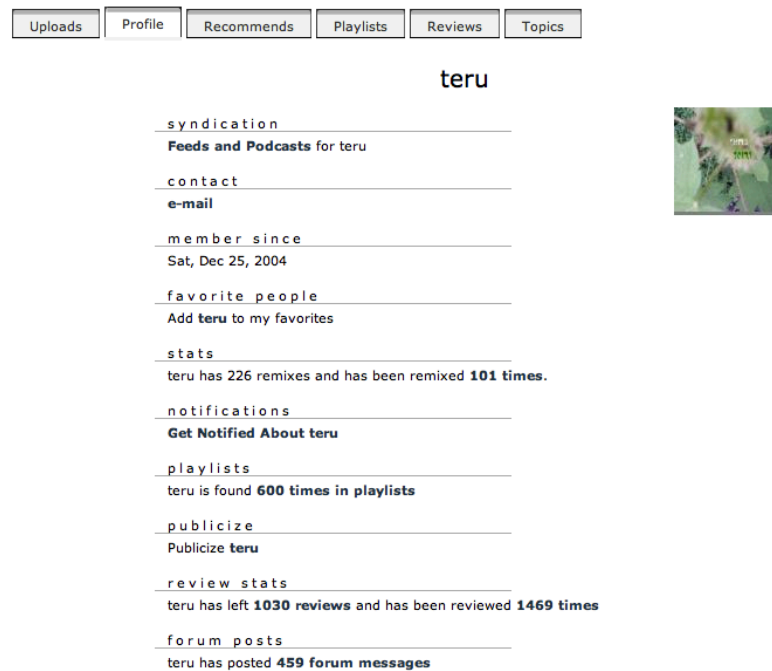
Figure 4.4: ccMixter user profile page displaying the user's activity in the community (as of January 11th 2011)

The functionality and design of the ccMixter website makes "socially transparent" the interactions, contributions and remixing activity of all the members in the community.

While other online music remixing communities exist and compete with ccMixter (see comparison table between ccMixter and other online remixing websites), none of them have the combination of open sharing and the use of OCS features that provide this degree of "social transparency". The ccMixter community not only exemplifies the behavior of open sharing that I am interested in, it also provides an opportunity to study and analyze open content behavior enabled by OCS applications "in the wild" (Hutchins, 1995).

4.3   Research Design and Methodology

The overall goal of this study is to develop a conceptual framework that mediates between understanding the complex dynamics of open sharing and the design of systems to support this form of behavior. The approach that I have taken is to concurrently and iteratively use the social performance framework to i) study/analyze ccMixter, and ii) refine the social performance framework based on the findings generated by this study of ccMixter. The most immediate outcome of this dissertation is to provide a sociotechnical understanding for why prosocial sharing behavior takes place in online contexts like ccMixter. This study aims to detail design implications, through the social performance framework, that can be applied to systems that encourage open sharing behavior.

4.3.1   A Case Study Approach

At its core, this dissertation presents a case study of the open sharing in one particular context, ccMixter. Rather than adopting a random-sample research design, the case study approach allows for a deeper investigation of the sociotechnical factors that contribute to the open sharing of content. ccMixter is a "paradigmatic case" (Flyvbjerg, 2006) of music sharing and reuse, where almost all of its members are amateurs/ hobbyists engaged in a very active, and well-regarded, online community[6]. There are other online communities that are focused on content sharing and reuse, and even

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[6] ccMixter began as a showcase project for the Creative Commons organization to drive adoption of the CC licenses with musicians. Working together with Wired magazine, ccMixter was launched in 2004 with a remix context that featured CC licensed music by Beastie Boys, My Morning Jacket, David Byrne, Chuck D amongst others. According to Victor Stone (2009), "The site out-lived the contest and continues to allow uploads of CC licensed music. The total impact in incalculable but four years later there are millions of pieces of audio on the Web under CC licenses, so in that sense, the project can be viewed as a raging success."

communities that are focused specifically on the remixing of music. However, in other online music remixing websites, such as Jamendo and Indaba, the emphasis of participation is on monetizing one's musical creations. As a result, these other communities do not emphasize an open approach towards participation, contribution and collaboration. For instance, the website IndabaMusic offer their own licensing terms for uploaded music to enable profits generated by the content to be distributed to the artist, music distribution company and to IndabaMusic themselves. And unlike ccMixter, the design and functionalities of these other websites do not embrace the properties of social transparency and social currency, which I believe encourage users to openly share and allow others to reuse their content. ccMixter is thus a paradigmatic instance where the sociotechnical features of the community emphasize the open sharing of content between the members. By analyzing ccMixter as a case study, I will be able to develop a more detailed and contextually appropriate understanding of open sharing behavior than is possible by comparing across other similar content sharing communities.

Additionally, each online music remixing community is slightly different from each other, in terms of their respective cultures, demographics and technical functionality. For instance, on IndabaMusic.com, users are able to visually remix tracks using the audio editing tool provided on the website. ccMixter, however, does not provide an interface to edit and remix tracks. Rather, the website functions more like a content management system that tracks the attributions and sources for each uploaded contribution, something that IndabaMusic.com does not do. These differences between the various online music remixing communities makes it hard to compare across different online communities. Thus, I focus on one particular population of interest, ccMixter, and I sample from that population. What is important, rather than the sample size, is the fact that "all subjects or cases in the same class as the subject(s) studied ... are equivalent on dimensions or characteristics that would affect the inference at stake." (Mohr, 1982). In the case of ccMixter, the "inference at stake" is understanding the "thee-regarding" motivations (Lessig, 2008) of individuals who share content that they've created/authored openly.

4.3.2 Mixed-Method Research Design

This dissertation employs a mixed methodological research design to address the complexities of what motivates the "thee-regarding" behavior of open content sharing on the Internet. To gain a detailed and comprehensive understanding of the phenomenon of open sharing online, I utilize a variety of methods to gather and analyze the data associated with this project. The project consists of two phases utilizing Social Network Analysis (SNA) and qualitative interviews (see Appendix A). As can be seen in Figure 3, the two methods employed for this project are designed to be complementary in nature (Erzberger & Kelle, 2003; Creswell & Plano Clark, 2006). Phase I of the study not only provides descriptive statistics of ccMixter, it also functions as a "purposive sampling method" (Howard, 2002) to identify interview subjects for Phase II of the study. Additionally, the SNA generated visualizations of participation patterns of individuals and groups in ccMixter. These visualizations functioned as visual prompts for the Interview study in Phase II. Employing such a mixed-method research design allows me to answer questions about motivations to share content online that cannot be answered by a single method. SNA on its own provides a structural picture of the sharing dynamics at work in ccMixter. However, in this study, SNA also allows me to identify interview subjects based on their activity and positions in the community. Specifically, the SNA reveals the individuals in ccMixter who are most likely to exhibit and sustain the behavior of prosocial content sharing. In the following subsections, I will provide more detail about the two phases of this dissertation study.

4.3.3 Phase I: Social Network Analysis of ccMixter

In this initial phase of the study, I utilized SNA methods to provide a statistical description of ccMixter that also to identify "core" members of the community to interview. To do this I used a variety of purpose built software and statistical packages developed for SNA. It is important to note that I used multiple SNA tools to compute the necessary figures and visualizations required for this project, including Pajek (Batagelj &

Mrvar, 1998), UCINet (Borgatti et al., 2002) & various packages installed in the R statistical computing environment[7].

Data for this phase of the project was provided by two individuals, Mike Linksvayer and Victor Stone, who were early administrators/developers of the ccMixter community and website. The data provided by them consisted of a server log snapshot of all activity in ccMixter as of March 26th, 2008. This server log data consisted of information about users, the content they've uploaded, the time/date that they uploaded their content and the "remix" links between the content. This data was then used to construct a "remix network" that focused on the relationships between the members as they share and reuse of each other's content. A link is formed between two users when they have re-used, or remixed another member's shared content (see top of Figure 3). Utilizing SNA and data mining of the ccMixter server logs, descriptive statistics about membership in ccMixter and the sharing and reuse activity were calculated. SNA of the server logs also enabled me to identify particular patterns and dynamics of the remixing and sharing activity taking place within the community. Specifically I was able to identify a small subset of 206 "Core" users within the ccMixter community. This "core" of the ccMixter community was identified using "bow-tie analysis" (Broder et al., 2000), a method that categorized the ccMixter users based on their sharing and remix relationships with each other. These "Core" users are characterized by the long-term engagement with the ccMixter community in terms of their sharing and remixing activity. Their engagement with the ccMixter community through content sharing and remixing best represents the kind of behavior that this dissertation is interested in investigating. In Phase II of this study, I describe the process by which I contacted and interviewed 24 "Core" members of the ccMixter community. In Chapter 5 of this dissertation, I will describe in detail the descriptive statistics that were generated through my SNA of the ccMixter remix network. In particular, I will highlight specific patterns of sharing activity that can reveal to us some of the cultural and structural factors which help motivate ccMixter members to openly share their content with others.

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[7] The R statistical computing environment requires the installation of specific packages to conduct various analyses and calculations. For SNA, the packages that were employed for this study were, sna (Butts, 2005), network (Butts, 2008) & igraph (Csardi & Nepusz, 2006).

4.3.4 Phase II: Semi-structured Interviews

Phase II of the project was designed to understand the motivations of the various categories of users identified in Phase I. The SNA methodologies employed have revealed specific insights and questions that warranted further investigation. Semi-structured interviews were conducted with users from mainly the CORE categories of users from the bow-tie analysis. In total, the bow-tie analysis identified a list of 206 CORE users. I contacted each user directly based on their user profiles on the ccMixter website. Of the 40 CORE users contacted to be interviewed, 20 individuals responded (See Appendix B). After each interview, I asked each interviewee if there were other ccMixter members that they would recommend I contact. This approach yielded another 4 interview participants who were a part of the CORE category of users.

Interview subjects were contacted directly via their email address on their user profile page on ccMixter. A uniform recruitment message (see Appendix C) was sent to each interview subject contacted. If the subject agreed to be interviewed, a follow-up email message was sent to schedule the interview and to send the informed consent documents (see Appendix D). Nineteen of the interviews took place online using the popular Voice over IP client, Skype (http://www.skype.com/). Conducting the interviews for this study over Skype had several distinct advantages. Firstly, I was able to conduct interviews with CORE ccMixter members who were located across the United States, Canada, and the Ivory Coast. Secondly, the majority of the interviews were conducted using the video chat feature found on Skype enabling me to have some level of "face-to-face" contact with the interviewees. And lastly, I was able to electronically share the visualizations produced by the SNA and have them incorporated as a vital part of my interview.

Five of the interviewees contacted for the study preferred to be interviewed via email or instant messaging. Admittedly, the interviews conducted through these methods differed from the Skype interviews. The instant messaging interviews tended to be shorter, there were very little digressions from the interview protocol and the interviewees tended to be more halting in their responses. The Email interviews also had little digressions from the questions I asked, but the interviewees provided more detailed responses to the questions.

Pilot-interviews were carried out with three individuals in ccMixter. These individuals were selected because they were either personal contacts or they were the administrators or initial developers of the ccMixter website. The rationale for conducting these pilot-interviews is to test and refine the interview instruments and collect information that may help to iteratively reframe some of the assumptions that were made in the social performance framework. Conducting these pilot-interviews provided an empirical basis to refine the analytical framework of social performances and my interview protocol. Another rationale for approaching key ccMixter administrators or developers to interview first is that these individuals could also provide a historical and behind-the-scenes perspectives of some of the design decisions for features that were implemented on the ccMixter website.

In general, all the interviews focused on questions about the intrinsic as well as extrinsic motivations for participating in ccMixter. However, I allowed the interview to stray from the interview protocol (See Appendix E) if the conversation digressed towards a topic that was interesting and relevant to the study. As can be seen in the interview protocol, the interview questions revolved around the topics of individual and social motivations for the open sharing of content. In addition, I also questioned the users about whether the features of the website – in particular those features providing "Social Transparency" – encouraged more participation. Additionally, I used the visualizations produced by the SNA in Phase I as prompts to motivate responses from the core users. I generated a visualization of each interview subject's ego network – where the interviewee is positioned as a focal node in a network of other ccMixter members with whom the interviewee has an existing remix relationship. These visualizations were shred with the users and served as prompts to generate discussion about the subject's position in the network and their identification with that position, who the subject is connected to and what the nature of the relationships that the subject maintains in ccMixter.

All 24 interviews were captured digitally and each interview lasted between 45 minutes and two hours. An external transcriptionist, unfamiliar with the goals of the study, was hired to transcribe the Skye interview transcripts. (The interviews that were conducted via email and instant messaging did not need to be transcribed.)

All transcripts were then analyzed utilizing a "top down, bottom up" approach (Chi, 1997). This approach entails analyzing the interview data with questions and codes that are driven by theory. At the same time, these codes can be refined and new hypotheses generated from the data. This analysis approach is very well suited for the purposes of this study – to apply, validate and refine the social performance framework based on an understanding of open sharing behavior exhibited in ccMixter. Using the "top down, bottom up" approach, I was able to investigate the applicability of the social performance framework by using it to analyze the interview data gathered. At the same, this analysis approach enabled me to refine the framework and make new hypotheses given the data that I have collected. The "top down, bottom up" approach towards the analysis of the data provided me with an appropriate middle ground, between standard hypothesis testing and grounded theory development, to develop a conceptual framework that is informed by an understanding of how people share openly and that has design implications for systems that seek to encourage this form of sharing behavior to emerge.

To aid the analysis and coding of the interview data, I utilized QSR International's NVivo 8 software, a qualitative data analysis application. I employed NVivo specifically for the task of coding the interview data with my initial hypotheses about the social performance framework. These initial hypotheses functioned as a set of "starter codes" used to analyze and better understand the interview data. Because the interviews were semi-structured in nature, the data collected included unexpected digressions or detailed elaborations about the process involved with sharing and reusing musical content on ccMixter. The deviations from the interview protocol (and from the social performance hypotheses) produced a set of codes that emerged, "bottom up", from the data itself. As more codes emerged from the data, I began structuring hierarchical relationships between the codes and also produced visualizations of these relationships (see Appendices F & G). As new codes and the relationships between them emerged, I return to the hypotheses made by the social performance framework and refined the assumptions and characteristics made by my conceptual lens. This method of "top down, bottom up" analysis of the interview data, ensured that the social performance framework was not only empirically informed, the design implications generated by this framework

are also contextually appropriate to the online behavior of open sharing that it seeks to encourage.

4.3.5   Triangulation: Integration of results from Phase I and II

As mentioned earlier, an important aspect of using a mixed method approach towards this research project is the ability to integrate findings from the two phases of the project. Phase I provided a structural perspective of the patterns and dynamics of open sharing and reuse of content produces. The SNA also helped to identify a core set of users to follow-up with the interviews. Phase II of the project delved more deeply into the individual, social and technical factors that motivate this sort of activity. The results of the interviews with the core users will also reinforce some of the findings produced in Phase I. For example, interviews with the core users revealed the nature and reasons for the reciprocal relationships with other core users. While the methods used in both phases of this project are complementary in nature, they also provide us with different levels of understanding of how and why open sharing behavior takes place. In addition, the two phases of this project helped validate and refine the various aspects of the social performance framework that has been proposed in this dissertation. Interviews with the authors and evidence of their participatory behavior (as revealed by SNA) helped to inform the various elements of the social performance framework. The overall aim of this project is to develop a conceptual framework that can be used to better understand the social and technical affordances the influence the open sharing of content. At the same time, this framework also embodies implications for the design of systems to encourage this sharing behavior. The application and refinement of the Social performance framework in this study will help to produce a robust explanatory lens that is both empirically informed and contextually appropriate to different instances of online open sharing.

CHAPTER 5
Characterizing ccMixter

5.1   Introduction

Music remixing, while an increasingly popular activity on the Internet, has tended to be a rather ad hoc and individualistic activity. ccMixter represents one of the first efforts to collectively organize and aggregate openly-licensed music samples via an online community. As mentioned in the previous chapter, the ccMixter community began life as a showcase project for the Creative Commons to highlight remixing as a creative activity and to drive the adoption of CC licenses. In effect, ccMixter represents an experiment in open licensing and prosocial sharing, all with the main purpose of allowing individuals to creatively and openly reuse the music of others. But what happens when content is prosocially shared and made freely available for others to reuse? What are the kinds of relationships that form between members of the community? How much of this openly shared music content will be reused? These are some of the questions that I answer in this chapter. I use social network analysis (SNA) to generate a quantitative description of ccMixter and to detail the structure and dynamics of prosocial sharing within the community. SNA enabled me to bridge the gap between the individual and group levels of analysis to generate a better understanding of the characteristics of the individual ccMixter member as well as some of the social processes involved with content sharing and reuse. This method also functioned as a sampling method to identify interview participants from ccMixter members who embodied the characteristics of prosocial sharing behavior.

In this chapter, I will detail the characteristics of the dataset used in this study. In particular, I describe how the ccMixter dataset is translated and defined in a network format appropriate for SNA methods. Next I utilize several network metrics to provide a quantitative description of the sharing and remixing activity within the ccMixter

community. Finally, I present my analysis of the community structure of the ccMixter based on the remixing activity between the members. In particular, the analyses in this chapter are focused on the following two main goals:

1. Describing the properties and dynamics of open sharing and reuse in ccMixter. I define the ccMixter dataset as a "remix network", where individuals are connected to each other via the sharing and reuse of each other's contributed music samples. Utilizing various SNA methods which I will describe in greater detail in the following sections, I detail the unique structural properties as well as the social dynamics that arise from sharing and remixing content in the community. I use the term dynamics purposefully to characterize the underlying social processes such as norms, roles and interaction patterns, which emerge as a result of the prosocial sharing and reuse of content. These processes have the potential to not only shape the culture of the ccMixter community, but also exert an influence on the motivations and behaviors of the individual member.

2. Identifying interview subjects who embody the traits of prosocial sharing and reuse. As described in Chapter 4, I utilized a SNA method known as "bow-tie analysis" (Broder et al., 2000) to identify a subset of "core" members within the ccMixter community based on their sharing and remixing activity. This core consists of members who are tightly interconnected through the sharing and remixing of each other's work. These are highly active members who not only contribute music samples but are also active sharers of content – traits that this project is interested in investigating. Because of these attributes they occupy a central position within the "remix network" and are structurally critical in keeping the community together. Consequently, these are the individuals who were interviewed in Phase II of this study.

5.2   Defining ccMixter as a Remix Network

In this study I focus on the structure of the relationships created between the members of the ccMixter community that results from their sharing and reuse of each other's contributions. As highlighted in Chapter 3, the data used for this project came in the form of a server log from the administrators of ccMixter. Those data were

manipulated and translated into a "remix network", which is a data form that is suitable for network analysis. To appear as a node in the ccMixter remix network, an individual must submit at least one contribution to the community's pool of music samples. This contribution can be a music sample, an *a capella* sample, or a remix track that incorporates both these samples. A link between two nodes indicates a remix relationship. Every time a member chooses to remix the work of another user, this creates a directed link between the original and the derivative work as well as between their respective uploaders.[8] I define the ccMixter remix network as a directed graph consisting of nodes representing ccMixter members who have shared or uploaded, at least one item on the website. These users, or nodes, are connected by edges representing remix/reuse relationships. These edges are weighted and highlight the number of times that a remix relationship occurs between two users. Figure 5.5 below illustrates the convention I will be using for the representation of this relationship in the ccMixter graph. In the figure below, an outbound link for User A represents an item that has been shared and reused by User B.
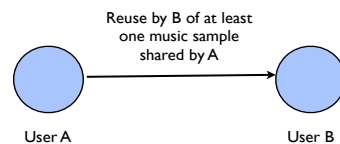
Figure 5.5: Defining the ccMixter author graph

5.3   A Quantitative Description of ccMixter's Membership

My analysis of prosocial behavior in ccMixter begins with a characterization of the membership and activity in ccMixter. The dataset was obtained from the ccMixter administrators on 26th March 2008 and it depicts all the users and activity in the community since its inception in April 2004. During this time period, ccMixter had 2,145

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[8] The ccMixter website relies on the users to provide attribution to the source samples that they use in their remix track. This attribution information is then used to track the remix relationships between users and between the contributed content. As such, if the user downloads a shared music sample, reuses it, but does not volunteer information about the sources used for the remixed track, or does not upload the track onto ccMixter at all, the ccMixter website is unable to track the remix relationships between these items. This attribution system will be discussed in further detail in Chapter 5.

active users who have shared at least one contribution on ccMixter. These users constituted 17% of the community's 12,776 registered members as most members did not share a sample with the community. Of these active ccMixter members, there were 1,698 (i.e. 79% of 2,145) engaged users who remixed at least one submission of another member or had at least one submission remixed by another member. The rest of the members (*n = 447*) uploaded music tracks but did not engage in any other activity; in other words, they are isolates in the network as they are not connected to the rest of the community in terms of remixing activity. In this study, I focus only the 2,145 active ccMixter members as they exhibit the prosocial behavior of sharing content that is the subject of this dissertation. For clarity, I make a distinction between *active users* (the 2,145 members who have shared at least one contribution) and *engaged users* (the 1,698 members who have been remixed or have remixed at least once). Figure 5.6 below illustrates the distinction between the various types of users found in ccMixter.

Engaged Users (1,698)

Active Users (2,145)

Registered Users (12, 776)
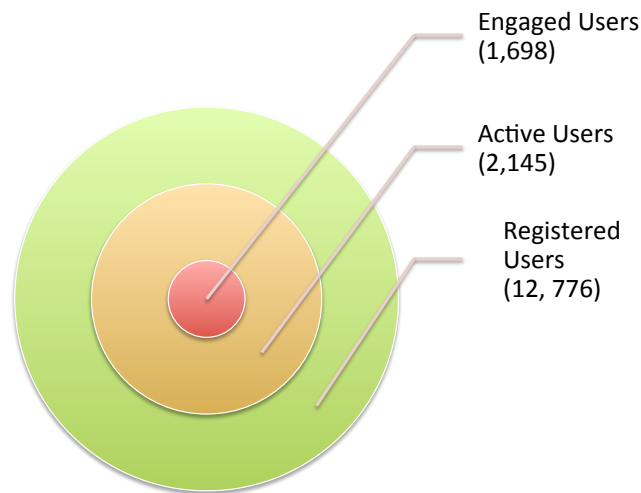
Figure 5.6: Types of ccMixter members based on their activity level (figure is not proportional to the numbers indicated)

5.4   Sharing Activity in ccMixter

In total, the active users of ccMixter shared 9,300 samples on the community's website. Figure 5.7 describes the frequency distribution of this shared content by the number of uploads per user. The median number of contributions shared by ccMixter members is 1, while the mean is 4.34 (*sd* = 10.75) with a minimum of 1 and a maximum

of 179 contributions shared by individual ccMixter members. As illustrated in Figure 5.7, the distribution of user contributions follows a right-skewed distribution where the majority of the community makes relatively few contributions. The skewed distribution of ccMixter's membership is very much congruent with those found in many online communities and virtual environments (Ling et al., 2005). For instance, in their study of peer-to-peer sharing of content on Gnutella, Adar and Huberman (2000) found that up to 70% of the users of the sharing service were *lurkers* or *freeriders* who benefitted from the content shared but did not share anything at all. Likewise, multiple studies of open source development projects (Lakhani & Von Hippel, 2003; Crowston et al., 2006) have observed this same skewed phenomenon where a small minority of active contributors accounted for the bulk of the user contributions.
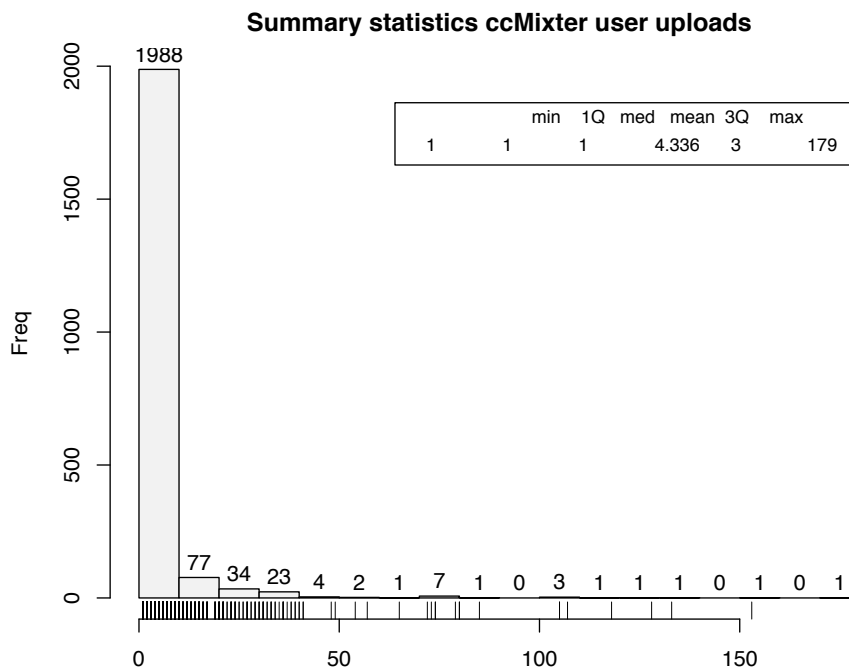
Figure 5.7: Summary statistics and frequency distribution of ccMixter user contributions

We see this same disproportionate distribution in ccMixter where only 17% of the registered members (or the 2,145 active users) are responsible for all the content shared in the community. However, looking more carefully at the contributions of these active users in ccMixter, I noticed that not all the active users have shared their content equally.

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About half of them (*n=1,075*) have only made one contribution and this is reflected in the relatively large "head" of the distribution in Figure 5.7. This produces a long tail of individuals who are power content sharers, i.e., those who upload as many as 179 contributions. This skewed distribution of content sharing highlights a key aspect of the ccMixter community structure; the existence of a small core of highly active users and a large group of peripheral members who make only one contribution to the community. This "core-and-periphery" structure is an important aspect of my analysis of the ccMixter community. In the following section, I will examine this core-and-periphery structure to a deeper degree.

5.5   The Dynamics of Remixing

As mentioned earlier, the focus of ccMixter is the remixing of content that is openly shared and uploaded onto the community website. According to Victor Stone (2009), "ccMixter is and always has been known as a 'remix site'". For him, the main purpose of ccMixter is to encourage the production of music through the reuse and incorporation of each other's music samples. Stone likens this interaction to having a conversation, or a "mixversation" (Lucas Gonze, cited in Stone, 2009), with other ccMixter members. This indirect form of interaction only takes place through the music itself. This metaphor of the "mixversation" highlights the value and emphasis the community places on remixing. To be a fully engaged ccMixter member, one has to be active in remixing the works of others and contributing new work back to the community as well. Because of the importance of remixing to the community, my examination of prosocial sharing in ccMixter would be remiss if it did not consider the influence of remixing and reuse on the sharing behavior of the members. Thus, it is necessary to first better understand the dynamics and patterns of remixing in ccMixter.

Table 5.1 describes the sharing and remixing of content in the ccMixter community amongst the 2,145 active members of ccMixter. Of the 9,300 contributions uploaded onto the ccMixter website, 46% (*n=4,253*) are original contributions. These are contributions of original user-generated music that do not contain or reuse the contributions of other ccMixter members. Often, these original contributions are made up of an *a capella* (or vocal) sample or a sample of a single instrument like a drum

composed or written by the individual member. The contribution of original content is crucial to ccMixter's goal of fostering creativity based around a shared commons of material. According to Stone (2009), "many of the samples and *a cappellas* on the site were created with the intention of uploading them to ccMixter for use by the remixers on the site". Thus, these original contributions form a repository of user-generated music on which other users can draw to create their own music remixes or reuse other ways such as music for self-produced videos on YouTube. One of the main attractions of visiting the ccMixter website is to access this pool of openly licensed original samples[9].

Table 5.1: Description of remixing activity in the ccMixter network

Network summary	Originals	Remixes	Total
# contributions *(percentage of total)*	**4,253** *(46%)*	**5,047** *(54%)*	**9,300**

Table 5.2: Proportion of originals reused

Summary of reuse activity	Originals
# Reused *(% of total)*	1,691 *(40%)*
# Not reused *(% of total)*	2,562 *(60%)*
Total original works	**4,253**

Besides original samples, another type of contribution that can be shared by the ccMixter users are the remixes, or derivative *mashups* that reuses the original samples shared by the other users. This remixed content accounts for slightly more than half (54%, *n=5,047*, see Table 5.1) of all the content shared on ccMixter. This table highlights

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[9] "Most sampling or mash-up web sites on the Internet stipulate that users forgo their rights to the new song once it is created. By contrast, the material on ccMixter.org is generally licensed to be used in any arena, not just the ccMixter site or a specific contest. The ccMixter site contains over 10,000 samples from a wide range of recording artists, including high profile artists such as Beastie Boys and David Byrne." (From http://en.wikipedia.org/wiki/CcMixter, accessed Feb. 16th 2011.)

how the sharing of original samples is generative and is responsible for producing a large part of the available content in ccMixter. Table 5.2 reinforces this point by showing that of the 4,253 original content contributed to the community, 40% *(n=1,691)* of this content is responsible for the more than half, or 5,047, of the content made available to the community. This means that 60% *(n=2,562)* of these original contributions never get remixed and contributed back to the ccMixter community.

The figures reported above indicate that the relationship between an original work and the remixes that it inspires often takes the form of a one-to-many, or "fan" shaped structure, in the network. These "fan" structures in ccMixter emerge because not all music samples shared get remixed, and the ones that do are reused multiple times over by many members of the community (Cheliotis & Yew, 2009). This "rich get richer" phenomenon is also reflected in other examples of remixing in popular culture as well. For example, the track "Funky Drummer" by James Brown has been credited for being the most remixed track in the world. The source of this reputation stems from the drumline and rhythm on this track, improvised and performed by Clyde Stubblefield (James Brown's drummer). This drumline has literally been sampled by hundreds of rap and hip hop artists since the 1980s till the present (McLeod & DiCola, 2011). One explanation for why certain tracks, like "Funky Drummer", attain outsized popularity maybe because producers rely on the sampling of specific works to achieve a sound that is considered representative of the genre. The more frequently a specific sample is used, the more likely it is that more producers will wish to use the same recognizable sample in their works.

Likewise, in ccMixter, individuals associated with specific musical styles or genres maybe highly sought after and remixed heavily. This phenomenon has been observed by Salganik, Dodds and Watts (2006) who carried out web-based experiments in an artificial "music market" where participants downloaded previously unknown songs either with or without knowledge of previous participants' choices. One conclusion from their study is that certain tracks or artists have outsized popularity because of "cumulative advantage" where popular tracks/artists become even more popular. This is similar to the processes found in preferential attachment (Newman, 2006). In the context of remixing, preferential attachment would mean that works exhibiting a high degree of reuse become

more attractive for others to reuse. This is the "rich-get-richer" dynamic that explains why the most populous cities attract more inhabitants than other cities, or why best-selling books get more sales. Likewise, in ccMixter, preferential attachment may explain why some samples becoming highly popular and reused by many others, while other contributions do not get remixed at all. In the following section, I will more closely examine the preferential attachment dynamic in ccMixter by paying attention to the remixing relationships that arise between the members of this community

5.6   The Dynamics of User Relationships from Prosocial Sharing and Reuse

In this analysis I look at remixing activity from the perspective of the users where a link between two users represents a remix relationship between them (see Figure 5.5). A different perspective of understanding remixing activity in ccMixter can be attained through examining the in- and out-degrees of the users in the community. The ccMixter network is a directed graph where node can have an in- and out-link. An in-link represents a remix relationship where the user has remixed at least one contribution of another member in his/her own work. An out-link represents a relationship where at least one of the user's own contributions has been used as a source in another member's work. Examining the in and out-degrees of individual ccMixter members provides a view of the community's structure through the central activity of remixing.
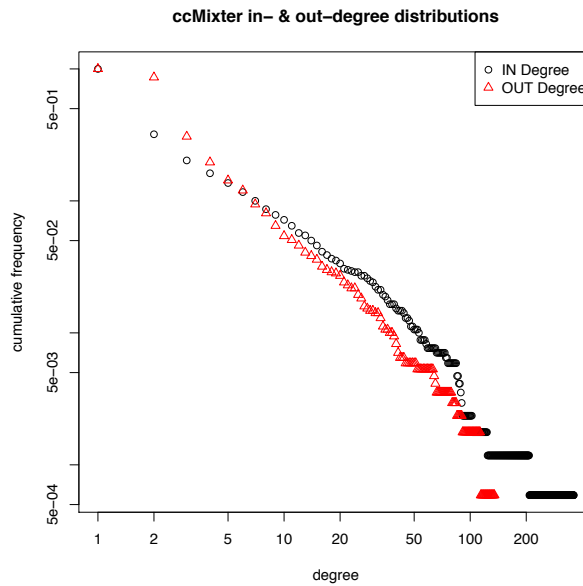
Figure 5.8: Cumulative frequency distributions of ccMixter network in- and out-degrees

Figure 5.8 highlights the cumulative frequency distributions of the in- and out-degrees of the members of ccMixter. As can be seen from the plot, both the in- and out-degrees follow a right-skewed distribution where users with low in- and out-degrees occur with the most frequency while high degree nodes appear much less frequently. This distribution highlights the fact that a large proportion of individuals in ccMixter have in- and out-degrees of zero or 1 (see Table 5.3). At the same time, the presence of relatively few 'power members', whose in- or out-degrees are disproportionately large, creates a long tail in the distribution plot. At the same time, low degree members make up more than 50% of the community, as can be seen by the large frequency of nodes with in- and out-degrees of one. This insight is validated and supported by the summary statistics of both distributions in Table 5.3.

Table 5.3: Summary statistics for the degree distributions in ccMixter

	Min.	1st Q.	Median	Mode	Mean	3rd Q.	Max
In-degree	0	1	1	1	2.85	2	134
Out-degree	0	0	0	0	2.85	1	359

Table 5.3 shows that the median in-degree amongst the ccMixter users is 1 and the median out-degree is 0. This difference in the medians highlights that at least half of the active ccMixter users have engaged in remixing at least once (in-degree). On the other hand, more than half of the active ccMixter members have not had their contributions remixed by anyone at all. This corroborates the earlier findings that 79% of the active ccMixter users ($n = 1,698$) have engaged in remixing at least once. However, despite the high engagement of the active users in remixing, 60% of the uploaded content ($n = 2,562$) on ccMixter does not get remixed. The different median degrees in both distributions point towards the fact that amongst the active ccMixter members at least half of them have uploaded at least one remix of someone else's work (in-degree = 1), at the same, these individuals' contributions don't get remixed at all (out-degree = 0). This asymmetric relationship between the in- and out-degrees illustrates the participation

dynamic of many newcomers who are attracted to remixing and the ccMixter community. It is likely that they are trying their hand out at remixing for the first time and as such, are producing remixes that not capture the attention of the other members enough to reuse. As highlighted in Figure 5.8 and Table 5.3, at least half of the ccMixter community is composed of this type of user who, if not encouraged to contribute more, will likely disengage after their one upload and remain at the periphery of the community.

While large numbers of ccMixter members seem to be only peripherally engaged with the community, it is important to keep in mind that the degree distributions are highly skewed with a few key power users accounting for heavy in-degrees of up to 134 and out-degrees of 359. To better understand these power users, I wanted to find out whether these highly active remixers in ccMixter are also popularly remixed by many others. In other words, do individuals who have a high in-degree also have a high out-degree and vice versa?

To answer this question, I examined at the correlations between in- and out-degrees of the nodes in the ccMixter network. The plot displayed in Figure 5.9 shows the joint distribution of both the in- and out-degrees for individual ccMixter members. In this plot, each node represents an engaged ccMixter member. Each node, or member, is positioned in the figure as a function of its respective out- and in-degrees. As evident in the plot, most of the ccMixter community can be found concentrated in the bottom left of the plot and a handful of power members distributed close to either the x- or the y-axis. Figure 5.9 suggests at least two different types of members in the ccMixter community. On one end of the distribution are the power users. These are individuals who have outsized in – and/or out-degrees. These members are characterized by the inverse relationship between the in- and out-degrees, especially for individuals at the tail of the skewed distribution, meaning that individuals who are popularly remixed by others (with a high out-degree), are not very active in the activity of remixing themselves (and have low in-degrees). Conversely, individuals who are prolific remixers with very high in-degrees, are not themselves reused by many others in the community, and thus have low out-degrees. At the other end of the distribution are the peripheral members have only remixed once (in-degree = 1) and whose contribution has not been reused at all (out-degree = 0). These members make up the bulk of ccMixter's membership and are densely

concentrated in the bottom left corner of the graph; this makes it difficult to ascertain if the above-mentioned inverse relationship holds for them as well.

Correlation between in– and Out–degrees of ccMixter users

Spearman's correlation results
r = −0.07897006
p−value = 0.001127
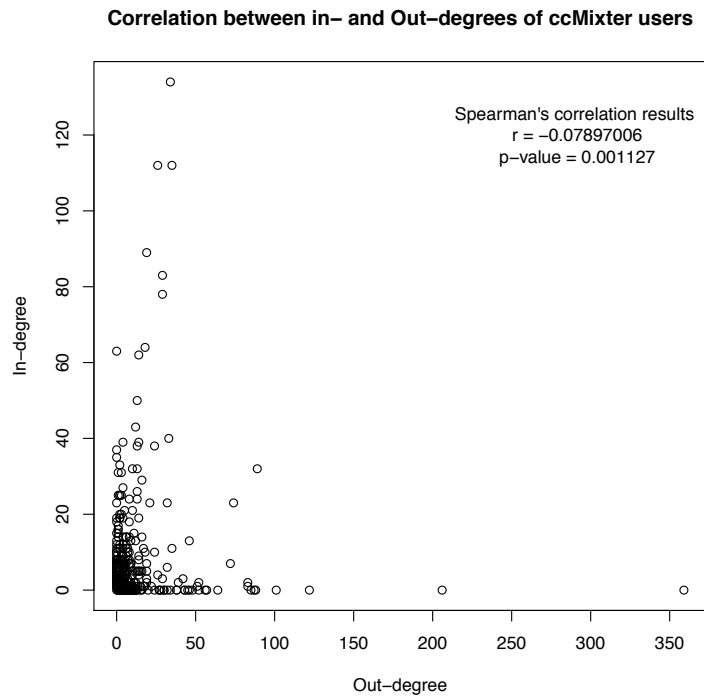
Figure 5.9: Correlation between In- & Out-degree for each node in the ccMixter network

A Spearman's correlation test[10] was carried out with the data and the results of the test point to little correlation between the in- and out-degrees of the ccMixter members (*r = -0.07, p = ≤ .001*). This finding indicates that, in general, there is a slight tendency for ccMixter members with high out-degrees to have low in-degrees, and vice versa. However, the size of the negative correlation is miniscule (*r = -0.07*). The low magnitude of the correlation may be explained by the very skewed degree distributions seen in Figure 5.9. As discussed earlier, at least half of the ccMixter members have an in-degree of 1 and an out-degree of 0, and make up the bulk of the nodes cluster in the bottom-left corner of Figure 4. The fact that there seems to be no systematic relationship between the in- and out-degrees of the members highlights that remixing is not an activity that is

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[10] Spearman's rho is a non-parametric statistical measure of the dependence between two non-parametric variables. This test was selected for the correlation analysis of ccMixter because of the skewed degree distributions of the data. This measure produces a correlation coefficient value between +1 and -1 that indicates the magnitude and direction of the association between two variables. If the correlation is 0, there is no association between the two variables.

evenly practiced across the ccMixter community. As highlighted by Figure 5.9, large numbers of the community engaged in remixing only once but are not otherwise engaged with the community. For the power members, the inverse correlation between the in- and out-degrees highlights that being very popularly reused does not motivate one to engage the community and be more active in remixing. Likewise, being a very active remixer does not make one more popular in ccMixter in terms of being remixed by others. While a member's remix popularity does not mean greater engagement and activity in the community, does being connected to similarly popular members encourage more remixing activity from the ccMixter members?

Degree Assortativity plot for ccMixter members
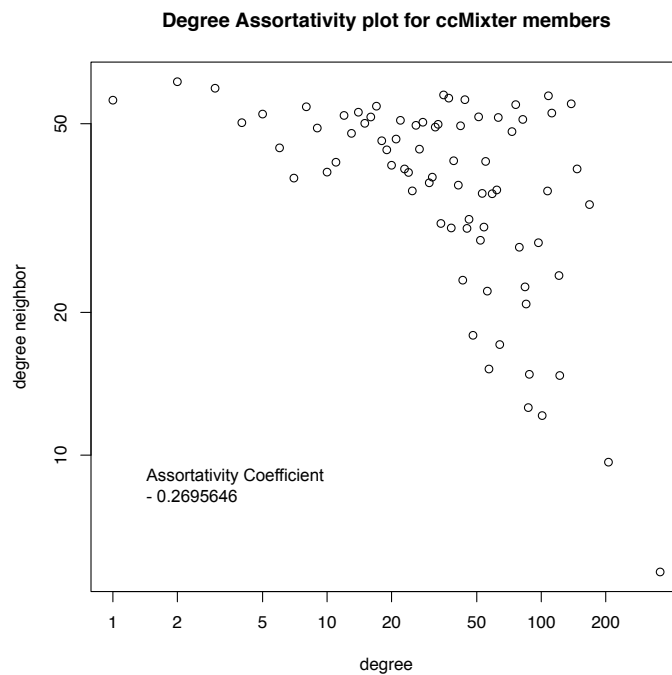
Figure 5.10: Degree assortativity of ccMixter members

Assortative mixing describes the tendency for nodes in a network to connect to others like them in some way (Newman, 2006). In ccMixter, assortative mixing translates into whether power members tend to connect to other similar members with high degrees. In other words, do individuals who are either popular or active remixers tend to be connected to other similarly popular or active members? For this analysis, I do not consider the in- and out-degrees of a node separately; rather I generate a coefficient that

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indicates the assortativity of the network as whole. Figure 5.10 shows that the ccMixter remix network has a negative, or disassortative (*r = -0.3*), tendency in the relationships between the members. In general, ccMixter users tend to be connected to other members that have a different remixing activity level (hence a different degree) than themselves.
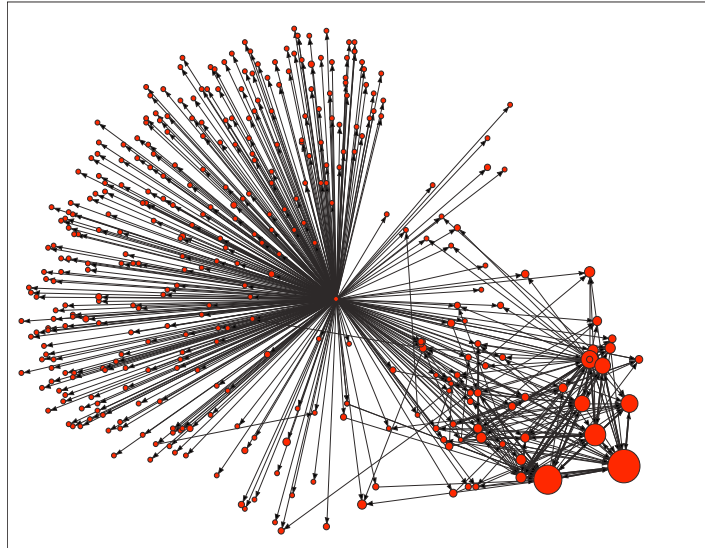
Figure 5.11: Fort Minor ego network

At the extreme ends of the degree distribution, there is an inverse relation between the high/low degree members and the degrees of the other users they are connected to (i.e., degree neighbors). This relationship is clearly illustrated by the outlier node in the bottom right of Figure 5.10. This node has the maximum out-degree of 359 in the network – meaning that this member is extremely popular and used by 359 other remixers. Figure 5.11 illustrates the ego-network of this particular member. What can be seen from this figure is an extremely disassortative relationship, where the nearest neighbors of this node tend to be nodes with an in-degree of just 1. Here we see the formation of a 1 to N, or "fan", relationship. I use the word "fan" in both senses of the word. Firstly, this form of disassortativity results in the fan-shaped remix structures such as the one seen in Figure 5.11. The central node in this figure is a highly popular member who has been remixed by many others, but has only remixed and uploaded once in the community and is otherwise not engaged with the ccMixter community at all. The second sense of the word "fan" is conveyed by the fact that the node in question is a popular recording artist,

Fort Minor. His contribution of music to ccMixter attracts a large number of "fans" that are drawn to ccMixter by his presence. However, these "fans" are only there to try their hand at remixing a track by their favorite artists and they do not necessarily participate in the community in any other way.

Overall, this analysis highlights how examining the degree distributions of the users can reveal the different remix relationships between the members and the different types of users based on these relationships. For instance, my analysis highlights three groups of users that emerged through examining the patterns in their remixing activity; 1) the peripheral members (who may be "fans"), and 2) the power user with their outsized in- and/or out-degrees but with little other engagement in the community. Additionally, examining the remix relationships in ccMixter reveals a small subset of the community who are responsible for sharing content that is reused by a large proportion of the ccMixter community. In the next section of this chapter, I will examine the community dynamics and structure of the remix network in order to more closely investigate the roles that different members play in the ccMixter community.

5.7   Community Structure

One of the fundamental questions with respect to the members of any social network is whether they occupy different positions in the structure of the network as this represents a difference in status, role, or influence. As described in the previous section, there is a stark dichotomy in the ccMixter community in that there is a small subset of members who are highly active and popular in terms of sharing content *and* remixing while on the other hand, there are also many peripheral members who only remix once and do not engage with the community in any other way, as illustrated in the Fort Minor example. Core-and-periphery structures have also been observed in other online prosocial sharing communities/environments. For instance, Crowston et al. (2006) used 3 different empirical methods to identify the existence of a small set of core developers in 116 Free/Libre and Open Source Software (FLOSS) projects. According to their study, identifying core FLOSS project members is important because many of the processes necessary for successful FLOSS projects (e.g. leadership, shared understanding of architecture etc.) are likely to be found with the core members. Similarly, by identifying

the core members of the ccMixter community, I will be able to observe and conduct further investigations on a set of individuals who have come to embody the characteristics and belief in the prosocial sharing in the community.

For my analysis of the core-and-periphery structure of the ccMixter, I utilize a SNA method known as the bow tie structure analysis (Broder et al., 2000). This analysis designates nodes in a network into to one of the following categories: i) a strongly connected core (SCC), ii) an in-bound link component (IN), iii) an out-bound link component (OUT), iv) tendrils and v) tubes. The core, or SCC, consists of members who are highly interconnected with each other based on the sharing and remixing of each other's work. The users are tightly linked in this component of the bow tie structure because every member is connected to every other member in the core through the remixing relationships. The IN component consists of ccMixter members who upload content that is used by nodes in the core but who do not use content from users in the core. The OUT component consists of members who are remixing works of nodes in the core but whose works are not used by the members in the core. Authors classified in tendrils connect to authors either in the IN or OUT components of the network but not to those in the core. These are authors who only remix the works of those in the IN cluster or who only are remixed by authors in the OUT cluster. The remaining nodes in the network are categorized as being disconnected from the rest of the network. These are members who form small isolated 'islands' by virtue of being connected to one or more other authors but not to the majority of authors in the network. In this analysis I will not pay as much attention to these members as they form only very small parts of the authors' networks. Table 5.4 presents descriptive information about the ccMixter network as a result of the bow tie structure analysis.

Table 5.4: Bow-tie components in the ccMixter network

Bow tie	SCC	IN	OUT	Tendrils	Tubes	Islands
ccMixter	12% (205)	17% (290)	20% (338)	49.6% (841)	0.4% (7)	1% (17)
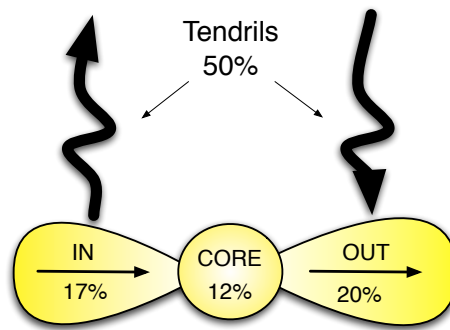
Figure 5.12 ccMixter Bow-tie structure visualization

Figure 5.12 displays the architecture of the ccMixter remix network according to its bow-tie components. In general, the Core, IN and OUT components of the ccMixter network are all relatively small (see Figure 7). Only about 12% of the authors in ccMixter are actively sharing and remixing content with each other in the core component, while 17% are in the IN cluster and 20% in the OUT cluster. The aforementioned components appear relatively small because the author network has very large tendrils (see Figure 5.12 and Table 5.4): 50% (or 841 members) of the authors are connected to either the IN or OUT clusters of the ccMixter network. A good illustration of what the nodes in each component of the bow-tie looks like can be seen in Figure 5.11. As mentioned earlier, Figure 5.11 highlights the remixing relationship surrounding the popular artist, Fort Minor and his many "fans". In this illustration, the many one-time remix "fans" of Fort Minor would be located in the tendril component of the ccMixter network. However, Figure 5.11 also shows a set of highly interconnected nodes (bottom right of Figure 5.11) that exhibit greater engagement with each other, and are also connected to Fort Minor too. Thus, if we were to transpose Fort Minor's ego network in Figure 5.11 onto the bow-tie diagram in Figure 5.12, the set of interconnected nodes would represent members of the Core component. And if that is the case, Fort Minor himself, having de facto zero in-degree-- the popular artist donating music rarely becomes an active member of the community-- is then a member of the IN component of the bow-tie.

The relatively small core of members in the ccMixter remix network is of value to the community because it helps connect about 80% of the community. Members belonging to the core are indeed key drivers of community activity both in terms of

remixes and in the total amount of content they upload to the community (see Table 5.5).
They also exhibit stronger ties and amongst themselves, form almost all reciprocal ties in
the author network of ccMixter. Table 5.5 also displays the relative standard deviation of
the metrics for the core and for the whole network, which is much lower in the core for
degree and uploads. Two values are given for degree, corresponding to the relative
standard deviations of in- and out-degree values (the average value is the same). The
lower dispersion of values in the core is most likely attributable to the fact that authors in
the core view each other as equal peers, thus also forming reciprocal ties.

Table 5.5: Comparison of ccMixter core to rest of network

SCC comparison	Core (n = 205)		Entire network (n =	
	Value	Rel. σ	Value	Rel. σ
Reciprocal ties	114	n/a	115	n/a
Average tie strength	2.15	1.44	1.95	1.20
Average degree (in, out)	6.8	1.5, 1.3	2.9	2.8, 4.7
Average uploads	21.4	1.3	5.0	2.4

So far I have only provided a macro picture of the core users. For a more detailed look at
who these ccMixter members are, I extracted the top twenty core members of the
ccMixter core component to more closely examine their sharing and remixing activity.
Table 5.6 below presents these top twenty members in terms of their of their overall
activity in ccMixter. The table depicts the user name of these core members and the
number of contributions they've shared with the community, the number of times they've
remixed someone else's work and the number of times their own work has been remixed.
As highlighted by this table, the core members are highly active in the community with
higher than average remixing activity and number of contributions shared.

5.8   Conclusion and findings

This chapter presents a portrait of the ccMixter community from the perspective
of sharing and remixing amongst its active members. I utilized several SNA methods to

describe the structure and underlying social dynamics that emerge as a result of the sharing and reuse activity. In general, the patterns of sharing and reusing of music samples highlight an uneven distribution of activity in the community. In both the sharing and reuse activities, there is a strongly skewed distribution where more than half of the community has only shared or remixed one item.

Table 5.6: Top 20 members of the ccMixter core in terms of overall activity level in ccMixter

Username	# uploads	# remixes	# as source
teru	179	34	134
gurdonark	153	36	113
Klaus_Neumaier	133	32	6
williamberry	128	19	7
victor	107	26	112
cdk	105	30	84
PorchCat	105	30	79
Fireproof_Babies	85	12	43
mcjackinthebox	80	14	62
Briareus	80	14	39
djlang59	79	90	33
shagrugge	74	19	89
djiz	74	16	29
duckett	73	18	64
ashwan	72	22	24
bombero	65	2	33
Nurykabe	54	13	5
oldDog	49	13	38
Tapsa	48	17	11

At the same time, there is a relatively smaller set of power users who are very popularly remixed by others or who are highly active and prolific remixers. As a result of this skewed distribution, I found a number of interesting characteristics about the ccMixter remix network. Firstly, there seems to be a weakly inverse relationship between in- and out-degrees of the power users in the network, i.e. members who are popularly remixed by others tend not to be active remixers of other member's content. Next, there

also seems to be a disassortative trend in ccMixter where power users (with high out-degrees) tend to be connected with many users who have only uploaded once and have very low out-degree themselves. Given these findings, I make the argument that one characteristic of prosocial sharing in remix networks is the prevalence of 1 to N relationships where one popular or power member is used by a large number of peripheral users. This form of "fan" relationships results in many peripheral participants who only contribute once or twice in the community. Based on these insights, one conclusion that can be drawn from this phase of the study is that popularity in remixing results in neither long-lasting prosocial behavior nor continued engagement with the community.

The individuals whose behavior that best exemplifies the prosocial sharing behavior, and who are the focus of this study, can be found in the "core" component of the ccMixter community. These core members of ccMixter are highly influential to the community because they are key drivers of community activity in terms of both remixing activity and the total amount of content they contribute to the community (see Table 5.6). On average, they shared more content and were more engaged in remixing, than the rest of the community. They were also more reciprocal in terms of remixing each other's work and this resulted in a higher than average tie-strength between the core members than the rest of the community (see Table 5.5). While these core members are not the most highly connected or the most central members of ccMixter, they do occupy key positions of influence in the core of the community. It could be argued that these core members embody the set of values and processes necessary for the success of a community that is built on the principles of prosocial sharing and reuse. Because of the important role that these core users play in ccMixter, it would be useful to include the core users as an important group of users in the typology of ccMixter users laid out at the beginning of this chapter (see Figure 5.9). Thus, more than any other type of users in the ccMixter, it would be a priority for this project to identify this set of core users and speak with them about what drives them to contribute to ccMixter.

Core users
(205)

Engaged Users
(1,698)

Active Users
(2,145)

Registered Users
(12, 776)
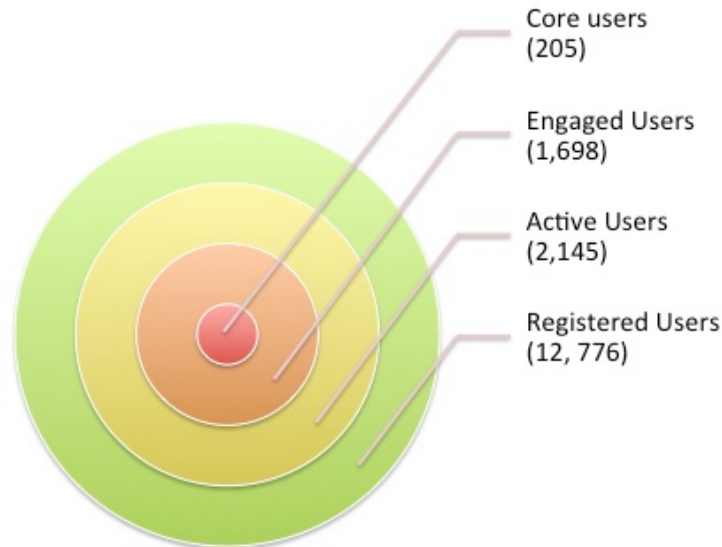
Figure 5.13: Types of ccMixter members (including the core category of users) based on their activity level

To summarize, using SNA methods to examine the community structure of ccMixter revealed two distinct groups of members in the community (see Fig. 5.13):

- A large number of peripheral members (n = 841) who have only shared or remixed once.
- A small core of members (n = 205) who connect about 80% of the community.

These two categories of users exhibit the most distinct and interesting (for this dissertation) sharing/remixing dynamic for the purposes of this dissertation. The other members that make up the bulk of the community reside in the IN and OUT components (n = 628, see Table 5.4) of the community and are either active in sharing or remixing but not active in both activities. And a small proportion of the community (n = 24, see Islands and Tubes categories in Table 5.4) are isolated from the rest of the community in terms of sharing and remixing activities. The CORE GROUP of ccMixter users best represents the behavior that this dissertation is interested in investigating. To then better understand the motivations that drive the prosocially share their work for others to remix, I conducted interviews with 24 members from this core group for Phase II of this study.

CHAPTER 6
Interviews with Core members

"to really be engaged you have to participate in the conversation at all levels—not just musically." (Subject SJ)

6.1   Introduction

A consistent finding across studies of online communities and user-generated content is that a small percentage of users are responsible for the majority of the content in the system. Studies of Wikipedia have shown that up to 50% of the entries have been contributed by just 0.5% of its users (Kuznetsov, 2006). Likewise, Mockus, Fielding and Herbsleb (2002) investigated the Apache httpd project and found that only about 15 developers were contributing up to 80% of the code for new functionality. In line with the literature, the skewed distributions of contribution and participation in ccMixter points out the existence of a small but active "core" of users who are responsible for much of the sharing and remixing activity within the community. Specifically, core members are responsible for connecting up to 80% of the ccMixter remix network. Additionally, the core users occupy highly influential positions in the community network as highlighted in the previous chapter. Given their important and central position in the network structure, many of the key social processes, community norms, and values are embodied by these core members (Crowston et al., 2006). In the context of this study, I interviewed these core members of ccMixter because they are likely to be most informative about the norms and practices that surrounds the behavior of prosocial sharing.

This chapter presents findings from my semi-structured interviews with 24 of the 205 core members of the ccMixter community. The interviews were designed to provide insight into the various motivations and system design/features that motivate core members of the ccMixter community to behave in a prosocial manner (see Interview Protocol in Appendix E). A further goal of this chapter is to use the social performance

framework as an analytical tool through which to better understand prosocial sharing behavior in ccMixter. The framework was applied in a "top down" manner (Chi, 1997) in my analysis of the interviews. Thus, my analysis of the interviews will address the following questions about prosociality in a remix culture:

1) Who are the core members and what are their backgrounds?

2) What are some of their personal motivations for joining ccMixter?

3) How do they identify with the ccMixter community?

4) How would they explain some of their sharing and remixing patterns uncovered by the SNA from the previous chapter?

5) What are the community norms and values that encourage them to share prosocially?

6) What are the system features on the ccMixter website that make apparent or surface these social norms?

By addressing these questions, this study will provide a better understanding of the prosocial actions of individuals in an online remix community and what motivates these prosocial behaviors. Additionally, this study provides a sociotechnical explanation for why individuals are willing to share music they've created for others to reuse. A claim that this study makes is that motivations for prosocial behavior are not only located in the individual. Rather, prosocial behavior can also be attributed to the behavioral dynamics that result from the technical and social constraints that shape user interactions. Thus, any investigation into the motivations of the core ccMixter members must take into account the individuals and their interactions with the ccMixter community, as well as the various features of the ccMixter system that encourage these interactions to occur.

As part of the analytical process, I also adopted a "bottom up" approach (Chi, 1997) where I would take note of emergent themes and other motivational factors that were not explained by the social performance framework. For example, there may be aspects of prosocial sharing that might be inadequately reflected in the framework. As such, while this framework was used to study ccMixter, it was also refined by the data that was the subject of the analysis. I argue that this iterative process helps to strengthen the framework's generalizability, i.e. its ability to explain prosocial behavior in a variety of

other settings and contexts in the future. I will elaborate upon this latter point in greater detail in the subsequent chapter.

6.2   Applying the Social Performance Framework

Given the "top down, bottom up" approach (Chi, 1997) that I adopted for the interviews, this chapter will report on findings from the interviews utilizing the following aspects of the social performance framework:

1) **The individual actor:** I began my analysis by characterizing the core members of ccMixter, in terms of their general demographic information, background and how they first got involved with ccMixter. In doing so, I gained a richer and more detailed characterization of the core members than was available to me from the SNA phase of this study. Asking the core subjects about their background and first contributions to the community also allowed me a glimpse into their varied initial motivations for joining the ccMixter community in the first place.

2) **Co-actors:** I have hypothesized that the ccMixter community, as a collective, exerts an influence on the individual motivations to share through group norms and scripts. In this section, I will be further examining the nature and process of collective identity formation amongst the core members of the ccMixter community. In particular, I will present evidence from the interviews that highlight the social currency that is at work in ccMixter and discuss how this currency gets translated into collective goals and norms for how to participate in the community.

3) **ccMixter system as scene and agency:** According to (Benkler, 2006), technology does not determine social structure, nor does it change human behavior; rather it creates feasibility spaces for new social practices and can *persuade* and *motivate* changes at the individual, group and community levels. Likewise, in this study I view the ccMixter site as an online space that not only mediates the interactions between the various members, it also compels individuals to behave more prosocially through its various features and affordances. Specifically, I investigate the role played by the various features and functionality of the site in encouraging prosocial contributions from users.

4) **Alignment of individual contributions:** One of the hypotheses that arise from the social performance framework is that the individual's prosocial sharing acts are expressions of one's identity and affiliation with the community. I investigate these core members' notion of self-identity and how it relates to their participation in the community and adherence to the prevalent social currencies. As highlighted in the previous chapter, the level of participation and amount of sharing are indicative of one's position and role played in the community. In this section, I present evidence from the interviews about the roles these core members see themselves playing in the community and how they impact motivations to share.

6.3 Demographic Description of the Individual Actors

I begin my analysis of ccMixter by focusing on the first aspect of the social performance framework, the individual actor. Through the interview data, I will provide a descriptive account of the demographic background and characteristics of the individual core members. Starting with a description of the individual's background and identity, this section will detail some of the common individual motivations for participating in ccMixter. As highlighted earlier, core members occupy a central position in the community and are thus likely to be the key drivers for the shared norms in ccMixter. Detailing the common characteristics of the core members will allow us some insight into the shared values and behavioral norms upheld in the community. This is an important aspect to the social performance framework as it highlights the relationship between the background and beliefs of the individual actors and the values and norms shared by the ccMixter community.

6.3.1 "Music is something I do on the side"

The core members interviewed for this study can generally be classified as amateur or hobbyist musicians (see Appendix B). Almost all the interview subjects held day jobs ranging from white-collar professions to blue-collar jobs. There were also two stay-at-home moms. For many of these core members, the distinction between their "real" work and what they do on ccMixter is very clear. For instance, RN, who is a commercial litigation attorney and a partner in a law firm in the Dallas area, says this,

This is definitely an avocation (*sic*) for me rather than a vocation. My day job is definitely as an attorney. I'm very happy as an attorney. Music is something I do on the side. (Subject RN)

My interview data suggest that almost everyone relied on their day jobs to make a living[11], and their involvement with ccMixter was seen as a side hobby and a "way to indulge my (*their*) creative impulses" (subject JD) in their spare time. The fact that most of the core subjects are hobbyists is very much inline with the growing numbers of amateurs participating in areas like astronomy, software development, and music production (Leadbeater & Miller, 2004). The incorporation of end-users and amateurs in areas like the music industry in particular is causing a sea-change in how music is made and consumed. Online participation and peer-production is turning end-users from consumers into producers and blurring the boundaries between amateur and professional work, especially in arenas like the music industry. The 2006 *Time* article celebrating the end-user as the "person of the year" proclaimed that this new digital democracy involves "(us) working for nothing and beating the pros at their own game" (Grossman, 2006). Likewise, in ccMixter, the boundaries between professionalism and amateurism become unclear in how the members' view their production of music. Many of the core ccMixter members take their hobbies very seriously and seek to produce music in a professional manner. Take the following quote from SJ, a paralegal with two children, as an example,

Literally I'm an amateur and I'm not doing this for money. But I'm a very serious, singer, songwriter—I consider myself a very serious artist. I take what I do very seriously. I'm not cavalier about it. And to that extent, I'm a professional…in that I'm constantly working on my craft and trying to improve technically and substantively. (Subject SJ)

Like many others engaged in the sharing and remixing of music in ccMixter, SJ is not a professional musician. However, she is committed to her hobby and seeks to produce work that is comparable to that of professionals in the music industry. In fact, when asked

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[11] With the exception of subject TB – who is a professional musician experimenting with ccMixter to make a record called "Calendar Songs". TB would write, perform and upload an *a capella* song each month for other ccMixter members to remix. She would then choose the best remix from each month to create an album of 12 songs. The profits for the album were then split 50-50 between herself and the 12 remixers. TB was the only professional musician that I encountered amongst the 205 core members who was actively trying to monetize the remixing of music. She represents an outlier in my data and providing further analysis for her motivations is beyond the scope of this study.

to define what distinguishes an amateur on ccMixter from a professional, PC, a state government employee responded that amateurs are,

> people who don't have access to a recording label and so on … I mean professional access to resources but amateur doesn't mean you're necessarily, worse off, in terms of your abilities."(Subject PC)

For PC, the only thing that distinguishes an amateur is access to professional resources like the advertising and distribution network of a record label. Other than that, he and SJ do not see any difference in the amount of effort or abilities between professional musicians. This highlights an interesting aspect of user-generated content; that the quality of the work produced by amateurs, when it is good, is likely to be comparable to the work of professionals. In a comparison between Wikipedia and Encyclopedia Britannica, Nature magazine found that "Wikipedia comes close to Britannica in terms of accuracy of its science entries" (Giles, 2005). In the same vein, the quality of the music produced by ccMixter members is also rated as comparable to music produced by professional musicians. When asked what attracted them to ccMixter in the first place, nine of the core members responded that the quality of the music produced by the community was a big attraction. According to CL, a business process engineer,

> "I think that yeah—the quality of the music—whether it is uploads or remixes—I think it's really good. So that and the fact that I really think there is a good community…it is kind of funny that neither of those two (*the quality of the music and community)* are a feature of the site itself." (Subject CL)

CL's quote highlights that not only was the quality of the music generated by amateurs like NV, JD and SJ, good enough to draw him to ccMixter, he also notes the importance of good community dynamics. CL's opinion was also shared by nine of the other interview subjects who emphasize that ccMixter is a source of good quality music, created and freely shared by amateurs pursuing their creative hobbies. It is precisely this individual ethic of amateurs seriously pursuing their hobbies that drives much of the participation norms and identification with the community. This will be looked at more closely in a later section and is important to the social performance framework. The amateur backgrounds, and ethos, of the individual member plays a large part in the formation of the group norms and identity of this online remixing community.

6.3.2 "The young ones are the thirty-five year olds"

Another interesting aspect of the core members demographic is that the average age is approximately 40 years old, a fact recognized by several interview subjects,

> … why did this (*ccMixter*) work as well as it did? The users of ccMixter—I sense that they tend to be older people. (Subject RL)

> The people at the core who set the spirit for the community and who hang around longer than for a remix or two—those people aren't young anymore. Yeah, the young ones are the thirty-five year olds. (Subject NV)

Both RL, a librarian, and NV, a software developer, suggest that age has a part to play in the culture and identity of the community. In general, the older age of the ccMixter members has been credited by seventeen of the interview subjects as being partly responsible for the tone of the interactions in ccMixter. In the following quotes, JL and JD, who both have been participants on other online remixing websites, compare their experience with ccMixter with other sites,

> I think this is a much more mature crowd. They're older and just have a strong love for the music as opposed to trying to hurt somebody's feelings. (Subject JL)

> I was really, very pleasantly surprised to encounter a group of people that were as intelligent and constructive. You know it can be very shark-like (*in the other remixing websites*). In any case where people are putting their creative endeavors on the line—whatever their media is—and people can get fairly nasty and vindictive. And that has not been the case (*in ccMixter*) at all. … (Subject JD)

The two quotes above highlight that the relative maturity of the individuals, and their interactions in ccMixter, is something that is appreciated and embraced as a distinctive trait of the community. Instructional technologist, ZM, describes one particular episode where he experienced, first hand, how polite and constructive interactions are actively cultivated in the community. According to ZM, he had been an active participant in more youthful Hip Hop communities where,

… you could show a lot of negativity. And you could insult somebody to their face. And you could um…express a lot of negative comments but at the end when it was all done … you shake the other person's hand and pat him on the back and say, I respect what you did. I respect the way that you battled me and you respect the way I battle you. And I wanted to see that in remixing.   Um…but you know I was … I guess I was unsuccessful in kind of bringing that about. Because the moment I started to insult other remixers, then I was put in my place. (Subject ZM)

The active cultivation of respectful and positive interactions is an important social norm in ccMixter's culture, largely because of its role in promoting positive interactions and promoting remixing amongst the members. The norm of politeness and respectfulness and its role in promoting prosocial sharing amongst the members will be discussed significantly in a later section of this chapter. The main point I wanted to underscore in the role of the individual member's traits and characteristics shape the culture and values of the community. In this case the age of its members, leads to particular behaviors, such as polite interactions, that are shared in common.

6.3.3   "This is music in its purest form. It's free and we're sharing it."

Another distinguishing characteristic of the ccMixter community as perceived by its core members is the non-commercial focus of the community and the culture of sharing that is engendered. LG, a web developer, compares his experience between ccMixter and Jamendo[12], another website that allows users to upload tracks and supports music remixing amongst the members;

I know for sure if I go to ccMixter … people upload stuff because they want to share. Whereas, I go to Jamendo and to me … my impression is that sharing is actually a secondary objective. They want to … they want to increase their band's profile. They want to get heard. Get paid. So that um…I would say they are different objectives. It's not that it is good or bad—just that they have different objectives. (Subject LG)

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[12] http://www.jamendo.com/en/

For LG, the key difference between the two remixing sites is the emphasis in the community on the value of sharing, brought about by the non-commercial nature of participation in ccMixter. When uploaded content are made openly licensed, it changes the dynamic of the interactions in the community significantly. According to CL,

> If there is no money to be gained, then the only thing that could be gained from ccMixter would be attention—interaction. It's interesting. It puts it on the head a little bit. (Subject CL)

Through this account of the demographic background of the ccMixter core subjects, we get a picture of the ccMixter community. It is a community of middle-aged amateurs that is brought together by a love of creating and sharing music with each other. Additionally, because of the non-commercial nature of the community, there is little need to be proprietary about the content they are sharing and focuses their attention on the interaction with each other. In the next section, I will detail some of the collective values held by the ccMixter community and how these values get translated into group norms and scripts for behavior. Additionally, I will discuss some of the ways in which the ccMixter community ensures compliance with these group norms and scripts.

6.4 The Importance of Attribution

While the previous section focused on the 'individual actor' component of the social performance framework, this section will begin an analysis of the community of 'co-actors' in ccMixter and their shared values and norms. The ccMixter community was setup by Creative Commons to be a living experiment for the open and free sharing of music could take place without the social and legal limitation of commercial interest (Stone, 2009). To a large extent, many of the core members interviewed participated in ccMixter because they shared this ideal of creativity based on the principles of a sharing economy. ST, a marketing and communications professional, outlines his perspective of the open and free sharing of music happening in ccMixter,

> It rises above that headiness that sometimes you find in the music industry. And so this is music at its purest form. It's free and we're sharing it. Do what you want with it. Give me some credit … that's the least you could do. (Subject ST)

For ST, the ccMixter community distinguishes itself from the commercial world through its embrace of the values of open and free sharing of music. The least that he would like in return for openly sharing samples is some credit or attribution of his work. Recent studies have shown that attribution is highly valued, and an important prerequisite for sharing to occur, in other online communities focused on remixing movies (Diakopoulos et al., 2007) and computer animations/games (Monroy-Hernandez & Hill, 2010). Likewise in ccMixter, Victor Stone (2009) notes that members consider the people they sample as benefactors, and attribution functions as a form of reciprocal currency. According to him, "Credit is currency."

The notion of currency is an important idea in this study. Currency here highlights information about a valued practice or social norm that can be used to determine one's membership, status and/or role in a community. In ccMixter, giving credit for the reusing the work of others is a practice valued by the community that has been reified in the form of attribution information on each uploaded track. The ccMixter website automatically displays attribution information on each uploaded track's page (see Figure 6.14). Two kinds of attribution information are provided; "in-degree" attribution information displays the source samples that a particular track has used (see "Uses samples from" section in Figure 6.14), and "out-degree" attribution highlights other contributions that have reused this particular track (see " Samples are used in" section in Figure 6.14). The attribution information displayed for each track thus functions as a form of "technology simplified social signal" (Monroy-Hernandez, Hill, Gonzalez-Rivero and boyd, 2011) or social currency, that conveys acknowledgement and thanks in the absence of other forms of compensation for the reuse of content.

Figure 6.14: Attribution information for the track *Bring it to me* displayed on each contribution's page (screen captured on May 28th, 2011)

Eight of the core interview subjects articulated the value they placed on the social norm of attribution. Most notably ZM highlights the importance of attribution to himself by saying,

> … if it's stuff I actually played as a musician or I actually created vocally—I think I would want to get at least attribution. (Subject ZM)

Because of the expectation of attribution in remix relationships, the original developers of ccMixter implemented an attribution scheme on the website where all contributors must declare any source samples that they have reused. This allows the display of attribution information for each piece of uploaded content showing the sources it has used, and/or pointing to all the other works where it has been reused or sampled (see Figure 6.14). Here, the norm and value of giving attribution in ccMixter culture has been surfaced by the system and made apparent for all participants. The importance of this feature to the community cannot be understated, as highlighted by IC in the following quote,

> ... the feature has a very important ... it allows you to search for the work you've used. And it automatically attributes ... so you don't have to worry about how you're going to link to that person or cite that person ... If you don't actively attribute people ... you don't get that community and linkages. So that's why i say ccMixter is the best I've seen so far. (Subject IC)

According to IC, the attribution information provides the ability for the individual to track the reuse of their work and is the basis on which the community is linked together. Without the attribution information, ccMixter would be merely a repository of freely available samples and not a community linked by remixing. In fact, the ccMixter developers/administrators take the notion of attribution one step further and even provide the "genealogy" of source samples used for each track (see Figure 6.15).

Figure 6.15: Derivation history chart for the track *Bring it to me* by ccMixter member colab (screen captured on May 28ᵗʰ, 2011)

By visualizing the remix history of a track, the ccMixter website provides its members with a way to trace the "genealogical relationship" between each member's contributions. This ability to visually trace the evolution of one's music as it gets re-interpreted by other individuals in their remixes is an important aspect of ccMixter for ES,

> I also get a huge satisfaction out of seeing my stuff remixed. It is an amazing honor to have someone sit with your work and build something with it. If it sits inside your head, or on a sheet of paper, or on your hard drive it will remain static, but if released onto a site like ccMixter it takes on a life of it's own and you can watch it, like a parent watching a child, make it's way in the world. Online mixing, and my relationships with the people I have found through it, have greatly enriched my life and have transformed my image of myself. Such is the potential power of such places. (Subject ES)

As highlighted by ES, remixing is not just about music but also about the relationships that are formed as you reuse another member's contribution. The remix history chart provides a nice way to surface how members of the community are connected to each other through their "remix relationships".

But more importantly, as evidenced by the following quote from ZM, surfacing community norms and values, such as attribution, has the effect of convincing ccMixter members the benefits of their contributions and may even encourage further contributions;

> I saw so many people sharing and I saw all the great things that were created that never would have been otherwise … so, if my stuff can be useful for somebody else … if the samples can be useful for somebody else … I have no problem with uploading them. (Subject ZM)

This dynamic of surfacing norms and values to make them apparent through the ccMixter system speaks to one of the core assumptions of the social performance framework – social transparency. By making the attribution information of every sample socially transparent, the ccMixter website provides a holoptic view (Bauwens, 2005) of the amount of content sharing and reuse taking place in the community. As highlighted by ZM above, this information makes the wider benefit of sharing music visible, and has the effect of motivating and rationalizing future decisions to contribute content.

6.5   Reviewing

One of the fundamental motivations for creating music is to have an audience and to receive feedback for one's creative output. This motivation is shared by many of the amateur musicians who participate in ccMixter. In fact, eighteen of the core members interviewed for this study responded that feedback and having an audience were significant factors in motivating their contributions to the community. When asked to explain what drew him to ccMixter in the first place, music professor OD, had the following to say,

> I think it's the response … after all what you want as a creator is people to be responding to what you're doing ... it (*ccMixter*) has a culture of people

> responding with sometimes critical comments but never in a totally negative
>
> manner. It's always a constructive element involved. So you're learning all the
>
> time. You're getting good ideas. (Subject OD)

According to OD, the culture of ccMixter engenders a particular type and quality of feedback that was particularly helpful to him, especially when he ventured beyond his comfort zone and explored other musical styles. For him, the feedback that he got was critical and helpful, but never negative.

Figure 6.16: Review section for the track Bring it to me uploaded by colab (screen captured on May 29th, 2011)

His comment echoes an earlier point made about the relative maturity of the members in ccMixter and their emphasis on positive and respectful interactions. In ccMixter, where the focus of the community is on the sharing of samples and remixes, the only space for members to directly interact with each other and leave feedback is in the review section for each uploaded sample. Figure 6.16 illustrates the review section for the contribution entitled *Bring it to me* uploaded by user, colab. Because it is one of the few ways in which members can leave feedback and interact directly with each other, there are certain community and behavioral norms expected of users when interacting through the

reviews. In the following sections, I will detail the three main norms found in ccMixter and explain how they are enforced by the community and/or incorporated into the design and features of the website.

6.5.1   Norms of Politeness and Praise

In a recent unpublished doctoral dissertation on the practices of credit giving in music culture, (Jansen, 2011) found a culture of praise and politeness in the review sections of the ccMixter website. He noticed a pattern of offering simple short lines of compliments and often, the provision of some technical advice. This norm of polite reviewing has been observed by core member, PM, as well. According to PM,

> On Mixter … the requirements are that you be courteous … for the review to have an impact. It needs to be courteous. Have some degree of humor mirth about you and understand what it took to put that track together and have respect for that … for the time and the effort and the ears that it took to do that track. I mean there are tracks that stand out way beyond others. But for someone to spend the time and put out a decent, listenable, melodic track … deserves some kind of kudos. And the review process is the way we do that. (Subject PM)

In PM's view, in order for the review to be effective, reviewers have to be polite and not too critical of the track being reviewed. Take for instance the reviews for the track *Bring it to me*. The following review was provided by IC, the creator/uploader of one of the source samples used in colab's remix:

> Niiiiiice! You've tweaked the opening vocals and acoustic a little, haven't you? The cadence of the vocals has a lot more fit to the acoustic guitars. Glad I could add my little bit to the conversation.[13]

In this review of *Bring it to me*, IC adheres to the community norm of politeness and praise by praising and providing encouraging words for colab, the author of the track. Additionally, Ivan acknowledges his part in the "conversation". The founders of ccMixter often use the metaphor of a conversation to describe the unique form of interaction found in the activity of remixing. According to Stone (2009), "by sharing a remix, community

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[13] Review for the track *Bring it to me.* Retrieved on May 27, 2011 from
http://ccmixter.org/reviews/colab/27607

members leave the musical version of a bread crumb trail for others to re-remix, forming a recursive conversation using remixing as a means of interaction." The metaphor of a conversation captures two main characteristics of remixing: one, the lightweight and indirect interaction between the members that takes place through their music, and two, the creative exchange of ideas that takes place through the remixing of each other's contributions. Given the active encouragement and value placed in remixing by the ccMixter community, it is important for the community to let its members keep the "conversation" flowing. As ES notes, leaving a highly critical or insensitive review might lead to members, especially new ones, to refrain from contributing. And hence withdrawing themselves from the "mixversation".

> Listening to others' work and reviewing it is probably one of the most generous acts people do on the site … As a matter of personal policy I will not leave a critical review in public, nor would I say anything critical to someone who I haven't had at least a little interaction with. My tendency is to read everything about a piece before I listen. A bad review might make me not want to bother taking the time to listen so I don't want someone else's work to suffer that fate at my hands. (Subject ES)

Given that the contributions to ccMixter are personal acts of creation and that many of the contributors are amateurs or newcomers, the reviews of the tracks have to be gentle, if not instructive. This explains the community's emphasis on the norms of niceness and praise in the review section. But how does the community ensure adherence with this social norm? According to NV, it is the core members of the community that do this,

> I think there is a tone being set by the inside community … and possibly because it's an older crowd who set the tone at ccMixter. And that's the people who review … they set the tone. And basically, it tends to be, actually to a fault … being nice to each other. I mean you know it's very rarely that somebody criticizes somebody else … something about somebody else's mix. But if they do … it's very gentle. (Subject NV)

NV's quote again echoes an earlier point about the relative age of the members in ccMixter and their emphasis on mature interactions. This is especially the case of the core

member of the community, who are the most active and well connected in the community. Through active moderation and modeling of behavior by the core members of the community, the norms of politeness and praise are enforced in the reviews that members give to each other's work. But because all the reviews are socially transparent – and can be viewed by any other member, this sends a signal to newbies and long-standing members that one's contributions will not be harshly criticized. Here again, we can see the social performance dynamic at work – the community norm of polite reviews is enforced because everyone's reviewing activity is socially transparent to all in the community. This sets the tone that "anyone who wants to play can jump in there and play" (Subject ZM) and ensures that the community is a safe space for anyone who wants to try their hand at remixing. And, as mentioned before, having a safe space to experiment and present their skills is important to a community of amateur musicians. Additionally, as can be seen from the description of how the social norm of politeness is enforces,

6.5.2   Learning and Mentoring

Another characteristic of the review section in ccMixter is that a lot of learning and mentoring takes place there. Through the reviews provided by the ccMixter members for each other's work, members are able to learn from and provided advice about creating remixes to each other. Core member YO describes some of the typical advice and mentoring that comes through the reviews.

> I like the fact that when people review they take the time and I know that they've listened … people have taken the time to say I really like this about your song or maybe your vocals need to be brought up a bit more. Sometimes you get detailed things like, 'At a minute and thirty-four seconds, I noticed that the timing was off'. (Subject YO)

Given the amateur demographic that ccMixter attracts, many of the member's contributions are far from perfect. Thus, a community norm is to always try and include something constructive to say about the track that is being reviewed. Take for instance the following review that colab, a core member of the community, left for a new member's upload,

Hah - this is pretty cool. Welcome to ccm (*ccMixter*) - great introduction. :) The build-up is terrific, great use of samples. One point of feedback - the sound is fairly wide across the board right now - what if you reduced the reverb on the basic drums (other than the reverse sections) to ground the track more? Great track though.[14]

As illustrated by the above review, besides adhering to the community norm of politeness and niceness, colab assumes the role of a mentor providing technical advice to improve a contribution. The mentoring of newcomers to ccMixter was a theme that emerged frequently in my interviews. In fact, seven interviewees indicated that they would go on the ccMixter site just to specifically check out contributions made by newcomers, and perhaps leave an encouraging review. JD explains why he does this in the following quote,

that's one of the things that's been a core value with me as being a user of the site … trying to keep my memories of being someone new to the site myself. And not being sure what it was all about and so forth … I love seeing … you know I'll check the people tab … just to see who is new to the site. And I'll try to go and do a quick little scan of their uploads and so forth and their profiles … because again it may be only one in every fifty but there will be … I'll come across somebody who is wow! This person is really talented … whether as a singer or remixer. And I'll try to call attention … I'll try to sort of make a big deal out of them a little bit … just so they don't get overlooked for that very reason. I'd hate to see somebody who was really talented and gifted … just find an utter lack of response from the site, in general and say, 'oh, well, what was the point of that?' (Subject JD)

JD's explanation highlights the notion that by playing the role of a mentor, his reviews serve to keep newcomers engaged and motivated in the ccMixter. By providing constructive and well-meaning reviews, JD confirms the value of the uploaded remix through his active listening of the track and provision of constructive critique. Additionally, by providing guidance and technical advice, JD is shepherding the new members to become more active contributors to the community themselves. And lastly,

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[14] Review for the track *Oh No (Go Pro)* left by colab. Retrieved on May 29th, 2011 from http://ccmixter.org/reviews/philberts/31978#126825

JD is personally surfacing and calling attention to new members that would otherwise go unnoticed given the large number of contributions to the community. The following quote explains the importance of having a set of core members and the role that they play in the community,

> So ccMixter has kind of evolved to taking a more positive, constructive criticism approach and it's interesting how they coded that in … And they have several people who have been members of the community who take constructive criticism reviewing to heart and they really go out and I think they teach the community … the new people who join … you know how to leave a review. And say both good and bad things but leave it in a positive sound. (Subject ZM)

In other words, core members like JD are performing the role of a mentor to not only improve the quality of the newcomers' work but to also ensure that they stay and become active participants in the future. As shown by the SNA described in the previous chapter, there is a danger that a newcomer, if not sufficiently engaged (or connected) with the core members of ccMixter, will become peripheral members who just upload once and fade away. JD's actions seek to ensure that the new member's content gets noticed and possibly remixed by a core member. By making the sharing and reviewing activity in the community socially transparent, JD is able to notice outstanding new members and bring them to the attention of the other core members. Additionally, JD's quote highlight the disassortative remix relationships discussed in the last chapter, where nodes with high degrees were connecting with nodes with low degrees. Once connected to a core member, the newbie (or peripheral low degree node) will stand to benefit from increased awareness and attention to their work from other core members of the community. The attention and mentoring from the core members is likely to lead to these newbie members to be more active in sharing and remixing. ES nicely summarizes this dynamic in the following quote,

> Once you begin engaging the site there's a sort of snowball effect in how much it involves you. If you post a bit of work you will get comments that you will need to respond to. If you listen and comment that leads to other conversations. (Subject ES)

ES's quote highlights the "snowball effect" that results from one's initial contribution to the community. Because of the socially transparent nature of the ccMixter website, contributions from new members can result in further interaction and engagement with the core members. And more importantly, these interactions with the core members through the reviews will likely also result in more remixing activity and contributions to the community. The "snowball effect" that ES describes is very much the same sociotechnical dynamic that the social performance framework is trying to convey; that 1) being made aware that one's actions are public, and 2) surfacing the activities of others in the online community can create sustained interactions between the members. In this case, social transparency allows core members to identify newcomers in order to mentor and model accepted behaviors to them. More significantly, social transparency also provides the opportunity to initiate interactions between the members and to sustain those interactions. And as discussed earlier, these sustained interactions can take place via reviews or through the sharing and remixing of each other's work. In the next section, I will show how social norms within ccMixter can be made even more explicit and incorporated into the features and design of the website.

6.5.3 Review ratios

Given the important community norms that take place through reviewing in ccMixter, it is understandable that much emphasis is placed on the giving and receiving of reviews amongst the members. In fact, membership in ccMixter is arguably more dependent on the reviewing of other people's work, than on the sharing or remixing of music. Up to eighteen of the interviewees specifically highlighted this point, which is represented by the following three quotes,

> But if all you do is upload samples or remixes … either one … depending on what your talent is … And you don't bother to review or comment or recommend anything. Then I guarantee you, after that … that initial flurry of remixes … it's (*the community's engagement with you*) going to drop off. Because one of the things people really appreciate is feedback. (Subject JD)

… the first time you upload, somebody might remix you because the guys that mix are really, really good about remixing newbies. But if you don't leave a review from that point onwards … you'll quickly be forgotten. (Subject YO)

If you're a newcomer and you leave nice comments, people will at least check out your music if nothing else. If you don't leave any comments and you just submit a remix and you go away and you don't participate—that's probably what's going to happen to your remix—it's just going to go away. It's just the love you take is equal to the love you make. You know? (Subject SI)

These three quotes underscore the importance of being engaged with the community through reviewing other people's work. If we were to take these quotes at face value, then the sharing of one's music samples is merely the price of entry, so to speak. To become truly involved with the ccMixter community, one has to take the initiative to review other people's work. For SJ, leaving reviews for others is an indicator of how active you are in the community,

… you're fueling the musical conversation by leaving bits and pieces that another mixer can pick up and reutilize. And then if you participate by leaving reviews or commenting on the forums … then you're letting the community know that you're an active participant. (Subject SJ)

The fact that reviews are seen as an indication of whether one is an active community participant is taken very seriously and was brought up in the interviews with nineteen of the core members. In fact, reviewing is taken so seriously that five of the core members discussed how they take notice of another member's *review ratio*, which is a mental calculation of how many reviews one has given and how many reviews one has received. This calculation is based on the reviewing activity information provided by the ccMixter interface on each user's profile page (see Figure 6.17). In the following quote, NV articulates why he pays attention to a member's review ratio,

To be honest … it's like okay, why would I want to take time out of my minutes, in my life and craft a review for you when you never do the favor to somebody else. You don't have to review me. I don't look at that at all. I couldn't care less … But if this is your second remix and you've gotten a dozen reviews and you've

left one … I'm not going to write a review. Because obviously, you're not

engaging with the community and I'm not going to waste my time with you. But

somebody … even if it's a pretty, bad remix … and somebody has started to leave

reviews for other people … I'm rather motivated to leave a review for them. So I

just try to reward behavior that I think is good for the community. (Subject NV)

According to NV, the number of reviews that one has left for others is taken as an

indicator of whether a member is active and engaged with the community. NV is thus

using the review ratio as a signal with which to reward the behavior of "engaged"

community members. The review ratio also serves as a metric for the core members to

assess their own participation in the community. For example, CL uses the review ratio as

a way to judge whether he's been performing his role as a mentor in the community

adequately,

I tried to make sure that the reviews I leave are more than the reviews I receive ...

I think in all I've left 700 reviews and have been reviewed 640 times. (Subject

CL)

For NV and CL, the review ratio thus becomes a form of social currency. As

highlighted earlier, social currencies are indicators of value, or metrics, for an activity

that is seen as important by the community. For both of these core members, the review

ratio surfaces the level of engagement of a member that they may not be familiar with. As

a social currency, the review ratio serves a signal to other members about how well or

how much one has engaged with the community. The ccMixter website also aids the

assessment of a member's review ratios by displaying information about their reviewing

activity in several places; on an individual's profile page (see highlighted section in

Figure 6.17) and below their user icon image in the review section (see Figure 6.18). The

fact that the system makes the reviewing activity of an individual apparent in multiple

ways, helps to support and drive a particular prosocial activity that is valued by the

community. In displaying the review ratios for each member, the ccMixter website

capitalizes on the socio-technical dynamic of the social performance framework. Here,

both the social value placed in reviewing and the technical functionality and design of the

website are used to encourage the performance of a certain behavior – in this case giving

out reviews to the works of others. By using surfacing and displaying behavioral norms

on a member's profile page, the administrators of ccMixter are signaling and reifying desired behaviors towards both newcomers as well as established members. In the following section, I provide more detail about some of the key technical features and affordances of the ccMixter system that promote and sustain the prosocial sharing of content in the community.

Figure 6.17: colab's profile page on ccMixter with his *review ratio* highlighted (screen captured on May 30th, 2011)

Figure 6.18: colab's user icon with the number of reviews he's submitted highlighted (screen captured on May 30th, 2011)

6.6   The Role of Technical Features and Affordances in ccMixter

In order to support a community culture that revolves around sharing, the developers of ccMixter have made several deliberate design decisions to motivate specific user behaviors, some of which have been more successful than others. To illustrate this point, in the first three years of ccMixter's existence, the developers implemented a rating system to foster participation from members and to help visitors identify highly rated content on the site. This feature allowed members to rate each other's contributions by clicking on a five-point star rating system. This is a common feature found in many online communities and social networking sites. However, the system never quite worked, as it went against the culture of ccMixter and did not promote an open and free sharing environment. According to ST, the rating system did not encourage individuals to display behaviors that would encourage sharing and remixing. Instead the five star rating system encouraged individuals to socially collude with each other in order to get high ratings. Individual members would mutually agree to give each other high ratings for their contributions. One outcome of that was,

> pretty soon everything on the site or at least from the active people … was all like four and a half stars or five stars…nothing was three or two … So the idea of the star system … actually that pissed a lot of people off because there were a lot of people who liked the star system for their own ego scratching reasons. (Subject ST)

JI highlights another outcome of deploying this star rating system,

> … if you ever wrote somebody a bad review … you would get bombed … every song (*you uploaded would be rated with a*) … one, one star…I think that's a big reason why he (*Victor Stone, the main administrator of ccMixter*) changed it. (Subject JI)

Thus the decision to implement the rating system essentially failed because it resulted in behavior that was inimical to the open and free sharing culture that the community was trying to cultivate. ccMixter members became so concerned about their own ratings that many members' feelings were hurt when they got a three star rating and below. Eventually the star rating system was replaced with a "thumbs-up" icon where members can express whether they "liked" a track or not. And according to Stone (2009),

after deploying this new system, he "never got another email about ratings-related hurt feelings."

As can be seen from the illustration of the failed implementation of a rating system in ccMixter, the technical features and design of an online environment can encourage and promote particular behaviors from the users. As the five-star rating example shows, the developers of ccMixter have been very deliberate in their choice of functionality to implement on the website. In general, their choices for design and features have leaned towards the promotion of a culture and community that encourage the prosocial sharing of music samples and remixing. To promote this free sharing culture, the administrators have adopted various design features and tools that persuade and nudge individual members to, directly or indirectly, behave in a prosocial manner.

One of the main ways that the ccMixter community encourages individuals to behave prosocially is by making socially transparent and signaling valued norms of behavior in the interface of the system. Behavioral norms, such as providing attribution for reused samples and maintaining acceptable review ratios, are valued primarily because they serve to encourage and sustain interactions between the members. And in turn, these interactions support the culture of prosocial sharing and remixing within the community. In the following two sections, I will provide more detail about how the social currencies of attribution and review ratios are served by the social transparency in ccMixter, and in turn, how they motivate prosocial sharing amongst the ccMixter members.

6.6.1   Social Transparency and Attribution

As discussed earlier, displaying the attribution information for remixed tracks serves to ease the social expectation of gratitude and thanks that comes with sharing one's work. Additionally, making sure that attribution information is required for each upload and is automatically displayed, helps to reify the importance of attribution to prosocial sharing and remixing. Anyone who wants to download any of the tracks on ccMixter will see that remixing is an artistic activity that is built on the works of others. Another technical aspect of making attribution socially transparent is that the website also provides the links to the source tracks used in a contribution. As shown in Figures 6.14

and 6.15, each of the source tracks attributed is directly linked, enabling anyone to navigate to individual samples that were used to create a particular remix. To make things even more convenient, the administrators of ccMixter also implemented an audio player in the remix history chart (see Figure 6.15) to allow the easy preview and listening of the source samples used. Making both the attribution information and access to the source files easily accessible and socially transparent assists with the discovery of music by other remixers. SI describes how the automatic attribution of source tracks, in particular *a capella* samples, allows other members of the community to discover new members to remix and collaborate with.

> Sometimes it's a matter of hearing a new remix that features a new vocalist on ccMixter that hasn't been remixed very much. And people go wow … check that out. Who are you? And all of a sudden, three days later there're ten remixes of that vocal track. Because everybody is like … oh, wow, check it out! (Subject SI)

Openly displaying all the sources used in a track helps individuals track down samples that would otherwise not have been discovered by particular members. This discovery of new music may inspire and motivate them to create their own remixes to contribute and share with the community. JD more clearly articulates this dynamic in the following quote,

> And it's almost like a domino effect. I'll stumble across an artist that's maybe new to the site. And um…I'll listen to their stuff and like it and remix it. And then somebody else will notice what I've done and say, "Hey that's pretty cool." They'll grab it and do something entirely different from what I've done. And I'll listen to that and be inspired in a completely different direction, based on that remix. And it just goes from there. (Subject JD)

Much like the "snowball effect described by ES earlier, JD's describes a "domino effect" resulting from being able to view, and even listen, to the source tracks used in a remix. The prominent display of attribution information and access to the source music files facilitates a user's creation of new remixes, which may in turn inspire other members to discover the same source track and create their own remixes. Here again, we see the social performance dynamic at work in this "domino effect" of remixing. By automating much of the work involved in providing attribution, the ccMixter website not

only makes apparent the value of prosocial sharing, it also make the discovery of new music to remix easy. Thus the tools and affordances of the website facilitates users to create their own remixes. These remixes in turn will most likely be contributed back to the community, hopefully encouraging the users to provide attribution information as well. These new remixes may inspire yet another set of contributions from other members in the community. As suggested by the social performance framework, the affordance of social transparency not only makes apparent community norms, it also reveals the remixing activity of the individual member. The ability to transparently see the source track used by a member can have the effect of generating and sustaining the activities of sharing and remixing music.

6.6.2 Social Transparency and Identity

Another important role that social transparency plays in the ccMixter community is that it allows individuals to project their individual identity and make public their identification with the community. By surfacing and displaying representations of the various contributions and activity on the profile page of the individual user, the ccMixter website provides a summary of the individual's history in the community and his/her role within the community. When asked about whether he identifies with the ccMixter community, RL directs me to his profile page on the website and says,

> … if you go to the profile page I think it is summarized already. I'm featured five times in the player's list. I've been remixed five times. I have strangely one forum message…what's that? I have thirty-two reviews. I've been reviewed twenty-seven times. (Subject RL)

In RL's response to my question, he utilizes his profile page in the community as a handy summary of his past activity within ccMixter. The website represents his various contributions and other activities in the community via numerical figures, much like colab's profile page highlighted in Figure 4. A large part of this has to do with the fact that much of the social interaction and activity can be logged and tracked by the system. This tracking and displaying the history of an individual's contributions not only conveys the activity of the individual member in the community, it also allows others to make judgments about the position of the individual user in the community. And as my

interviews with the core members has shown, ccMixter members do assess each other's activity level in the community is by looking at the accumulated number of reviews or the number of contributions listed on an individual's profile page. During my interview with RL, I asked him to make a quick assessment of my own profile page on the ccMixter website. Because I have only made one contribution to the community, RL describes his thoughts when he encounters the profile of a user like myself,

> So I look at your profile and I see um…I think personally, I would hope that you upload more stuff … you have only one upload … so then personally, I would hope that you would be uploading more samples. Maybe I would be exploring to see what I could use. (Subject RL)

In RL's view, there is certainly more scope for me to be an active member of the ccMixter community. My one contribution positions me precariously at the periphery of the community, hence RL's only advice to me is that I should contribute more to become a more active member. By looking at my profile page, RL and other members can assess how active I am in ccMixter, and by extension, figure out my position in the community. It is important to note that identity formation is a mutually constitutive process between the individual and the community. As explained by the social performance framework in Chapter 3, when made socially transparent the activities of members in an online community have a dual nature – they are both expressive of one's identity and are also affirmations of one's identification with and position within the community. In the following quote OD nicely summarizes this idea of how one's contributions to ccMixter can constitutive of both personal online identity and identification with the community;

> Like any Internet relationship, people can be who they chose to be. And there is a sense that some people are adopting a definite persona through their contributions... And it's not so much me offering something as me becoming part of something bigger. So you're losing some of that sense of defining yourself in terms of your identity. Which I think is a huge element to what … you know this twenty-first century culture is all about … you're defining yourself in different ways or you're giving yourself multiple identities. You're becoming an element within something you're quite identified with … so I would say I feel quite identified with ccMixter. (Subject OD)

OD highlights how contributing to ccMixter allows individual members to perform their online identity through their contributions to ccMixter. At the same time, members are also expressing their identification with the community. Underlying OD's quote is the suggestion that if individuals identify with the goals and aims of a particular online community, they will be likely to adhere to the community norms and expectations for how to behave. Membership in ccMixter community requires individual members to act in line with specific group norms and expectations, such as providing attribution information and reviews, all with the overarching purpose of promoting prosocial sharing and remixing. How much one performs according to these norms determines one's position in the community and signals how much one has identified with the community as well. In the next section, I will discuss how social transparency makes some of these norms of behavior apparent through the display of various social currencies within the community.

6.6.3 Social Transparency and Social Currency

As defined earlier, a social currency is an indicator of value that a community uses to promote behaviors or actions that are central to its overall goals or purpose. In another sense, a social currency is the reification of group norms, or scripts for behavior, that identifies one as a member of the community. A primary function of social currencies in an online community is to ensure that members contribute or behave according to community norms that are sometimes not made explicit. This especially pertinent for new members, as highlighted by CL who recalls the difficulties he had as a newcomer to ccMixter:

> Because it's not … it doesn't say welcome to ccMixter and here's everything you
> need to know. It's nothing like that at all. Okay, you join and as you start to
> behave in a particular way … you will either be told … that's great or that's not
> the way we do things here. (Subject CL)

CL's early time in ccMixter involved figuring out the various social norms in ccMixter, and this often was accompanied by the guidance and feedback provided by the more established and core members. CL's experience also highlights how newcomers can be

stewarded towards the activities and behavior that are most valued by the community, in other words the social currencies of the community. Interfaces that make explicit the social currencies of particular groups help orientate and guide newcomers more quickly towards becoming fully fledged members of the community.

Another function of social currencies is that it allows a member's contributions and actions noticed by the rest of the community. ST highlights this utility of social currencies in the following quote;

> …there are a couple social currencies on ccMixter. And in a way these are currencies in which … that help you stay active in the community and gain visibility in a community. Otherwise, you'll just be inactive and fade into oblivion and no one will hear of you. (Subject ST)

By performing actions that are valued by the community, individual members are likely to gain visibility and get the attention of the core members. And as highlighted in the interviews earlier, being connected to a core member may set off a "snowball effect" of contribution and feedback, causing a member to become more active in the community. However, as highlighted by ST in her quote, there are multiple social currencies at play in ccMixter. I have already introduce the notion that reviewing the contributions of others functions as a social currency in ccMixter. But what are some of the other social currencies at work in the community? According to RN,

> … the currency of ccMixter, as a social network is samples first—remix, first and samples, second and third, social relationships. (Subject RN)

In RN's view the three primary social currencies in ccMixter are; firstly, creating remixes from the works of others; secondly, contributing samples and remixed works to the pool of shared content on the website; and lastly, forming social relationships with each other. It is interesting that of the three social currencies identified by RN, he did not highlight reviews as a social currency. I believe that the members of ccMixter equate the reviewing of each other's work as a form of maintenance of reciprocal social relationships in the community. I will discuss it at length toward the end of this section. In the next paragraphs I will elaborate on how the social currencies of remixing and sharing samples are assisted by the affordance of social transparency in the ccMixter website.

Given that the primary focus of ccMixter is on promoting free culture and remixing, the fact that sharing music samples and remixing are highly valued in the community should hardly be surprising. The primary way in which the ccMixter website makes these two social currencies transparent is through the individual member's profile section, as highlighted in Figure 6.17. In each member's profile, one can not only determine the amount of content shared with the community, that content is also freely available for anyone to download or preview. Additionally, the profile section also displays metrics like the number of remixes generated by a user and the number of times he/she has been remixed by other users (see Figure 6.17). As shown in my findings from the last chapter, it is primarily the core members of the community that are heavily engaged in both activities. This is important to note, as making the activity of the core members socially transparent provides other members models of accepted and valued behavior in the community. ZM highlights this point when he describes how being able to see the activity of the other members inspired him to do be more involved in the community.

> I saw so many people sharing and I saw all the great things that were created that never would have been otherwise. And it's like—how can you stop those opportunities from existing—those remixes, from existing…so, if my stuff can be useful for somebody else—if the samples can be useful for somebody else—I have no problem with uploading them. (Subject ZM)

ZM's quote highlights that making socially transparent particular behaviors and activities can generate even more of that particular behavior in an online community. In this case, ZM is more inclined to prosocially share his work with others when he is able to see the products of the sharing and remixing activity of others. One can imagine that when other members view ZM's activity in the community, they are likely to be similarly inspired to share and remix as well. Thus, by designing ccMixter to highlight particular social norms and desired behaviors, the administrators of the community have utilized properties of the website to encourage the display desired and valued behaviors. Being able to view the activities of others, especially the core members of the community, can have the effect of encouraging other members, especially newcomers, to behave in a similar manner.

The third, and final, social currency that I would like to discuss is that of social relationships and how ccMixter's system design helps with the formation of these relationships. It was very obvious, through the interviews, that the core members do form relationships with each other. However, these relationships are formed in a very particular fashion. This is because the ccMixter website offers little opportunity for the members to directly socialize and interact with each other in the system. Most of the direct communication in the community happens through the reviews that members can leave for each other's contributed samples. In the following quote, IC provides some insight into how social relationships are formed in ccMixter.

> … to me the reviews are like your number of friends. They're not really reviews.
> (Subject IC)

As discussed earlier, reviewing is highly valued by the community because it gives member's a sense of audience for their music, it provides the community members with a means to directly communicate with each other, and when made socially transparent, the reviews provide members with advice, mentoring and even the modeling of acceptable behaviors in the community. Given the importance and emphasis placed on reviewing in the community, it is not surprising that members use it as way to assess each other's position in the community. As described earlier, the display of reviewing activity allows members to calculate each other's "review ratios", which are informal calculations of the number of reviews left for others contrasted with the number of reviews a member has received. During the interviews at least five of the core members highlighted that they paid attention to the *review ratio* of another member. For instance, NV describes how determining the "review ratios" of a member enables him to assess a particular member's engagement with the community,

> But you've reviewed many people … that is a pretty good social currency. And generally across the board because for example … I know even if you've never reviewed me but you have reviewed other people more than you have been reviewed … I know you're a good community member. I respect you. If you have received more reviews than you have written … I lose respect for you. (Subject NV)

In NV's opinion, reviewing is a highly valuable form of social currency and the *review ratio* becomes a proxy for a member's good standing in the community. This proxy information helps core members, like NV, determine whether an individual is a newcomer, or someone who is likely to become a peripheral member. The *review ratio* is thus an indicator for the type or role of a member, based on their contribution of reviews. Underlying the importance of the *review ratio* in ccMixter is its role in helping the members form reciprocal relationships with each other. The *review ratio* is essentially a signal for how helpful, responsive and reciprocal a member is likely to be. In my interviews with YO and ZM, they elaborate how reviewing can lead to reciprocal remix relationships between members.

> Because that's the way … if you don't give feedback … how do you expect other people to give you feedback. And I've also experienced that if you give feedback to people … they remember you … especially those ones who come … newbies … right? If you go and review their stuff … chances are somewhere down the line … they're going to remix you. (Subject YO)

> … it (*the reviews*) definitely drives me to check out what they've uploaded. Because if I see a name there that I've never seen before who has reviewed my stuff. I'll probably more than likely go to their page and see what they've uploaded, if they've uploaded anything. (Subject ZM)

From the above two quotes, we can see that reviews help to connect individual members to each other, and once connected, members may decide to further interact with each other. Also, the two quotes highlight a reciprocal dynamic that takes place when members review each other's work. That when made aware of each other, through the transparency afforded by the ccMixter website, they proceeded to further investigate each other's profile. Allowing every member's profile page and activity to be scrutinized by anyone creates a reciprocal dynamic that is at the crux of this study's argument. Here again, we see the social performance dynamic at work in ccMixter. When online systems make the social currencies of a community transparent, users are able to view the prevailing social dynamics of the community. In the case of ccMixter, the social transparency involved with the review ratios encourages members to participate more

fully in the community by not only uploading music, but also interacting with each other through the reviews. The relationships that result from these interactions can motivate even more activity and contributions from the members. Much like the "snowball effect" described earlier, this reciprocal dynamic is clearly and succinctly articulated by RN in the following quote:

> Yes, when people remix me, review me, give any feedback—that incentives me to participate more. And I try to review and remix and also participate with awareness that out there is a social contract at play. (Subject RN)

What RN describes is a reciprocal dynamic that is different than the one described by YO and ZM earlier. The reciprocal dynamic that RN describes is less determined by particular relationships with individuals and more motivated by the awareness of a "social contract at play" in the community. Assuming that RN's "social contract" refers to the various social currencies described so far, then the affordance of social transparency is a key feature of the ccMixter website that makes these social currencies apparent for the members to observe and behave accordingly.

6.7   Social Performances in ccMixter

The main argument put forward by the social performance framework is a socio-technical one. The framework takes into account the behavioral dynamics that result from the technical and social constraints that shape the interactions of the users. In this section of the paper, I will triangulate the findings from both Phase I and II of this study using the social performance framework. To do this, I will revisit the three hypotheses made at the start of this study in Chapter 4 for why prosocial sharing occurs in ccMixter and assess them in the light of the interview data presented in this chapter.

6.7.1   Hypothesis 1: Social Currencies

In Phase I of this study, I undertook a structural analysis of ccMixter that revealed the existence of a small but active core of members in the community. This group was responsible for much of the sustained sharing and remixing activity and best exemplified the long-term prosocial sharing that this study is interested in investigating. In Phase II of the study, I provide a richer characterization of these core group of ccMixter members in

terms of the background and their personal goals for joining ccMixter. In particular my analysis of prosocial sharing in ccMixter highlighted how the particular shared traits of the core members are responsible for much of the norms and practices of the community. In particular, the importance of giving and receiving reviews are a result of the shared amateur background of the members. Being amateur musicians, reviews are a key channel through which members are able to get feedback about their music and learn through interacting with more experienced members of the community. In fact, reviewing is valued so highly in the community that is used as a metric against which to gauge the role and engagement level of a member. Take for instance the adoption of the *review ratio* as a measure of engagement with the community. Many of the core members interviewed highlighted using the review ratio as a means with which to assess whether or not to engage with a new or peripheral member. The *review ratio* thus becomes a form of social currency, or a reification of the community values and norms in an informal metric maintained by community members.

As discussed previously, there are often multiple social currencies adhered to by an online community. Likewise, in ccMixter there are several social currencies that are actively observed in the community. Some of the social currencies discussed at length during the interviews were, 1) sharing music samples or *a capellas*, 2) sharing remixed works, and 3) reviewing the works of other members. These social currencies are observed for several reasons. Most importantly, they promote and sustain the essential activity of prosocially sharing music content. Without the regular contributions of openly licensed content from its members, the ccMixter community would be unable to continue with its *raison d'etre*, the promotion of a free culture based on remixing freely shared music. Take for instance the social currency of reviewing and the attention given to the individual member's review ratios. As highlighted earlier, reviewing is important to a community of amateur musicians because it provides feedback, mentoring and most importantly, a sense of audience to an individual who would otherwise not have an outlet for his/her music. And review ratios are significant because encourage prosocial interaction and reciprocity between the members. As suggested by the interviewees and by the social performance framework, the interaction and reciprocity through reviewing

can have a multiplicative dynamic that encourages individuals to create more remixes and share more content.

In the light of my analysis of ccMixter, it would be safe to conclude that prosocial sharing in this online remixing community is partly motivated by the presence and observance of social currencies in the community.

6.7.2 Hypothesis 2: Social Transparency

A central argument being made by the social performance framework is that technical systems can and do play a role in motivating particular behaviors from the individuals who use them. In particular, the framework proposes that prosocial sharing can be partly motivated by online systems that afford a socially transparent view of the activities and behavior of the other members in the community. The rationale behind this hypothesis is that when online behavior is made holoptic, or publicly viewable by everyone, then the actions of the individuals take on a performative dynamic and is akin to public behavior. When under the scrutiny of the public eye, individuals will also be more likely to display behavior that conform to group norms and expectations.

As shown by my analysis of ccMixter, social transparency is afforded in a number of ways on the website. For instance, social transparency is afforded through the tracking of a member's activity on his/her profile page (see Figure 6.17), the public posting of reviews for each uploaded track (see Figure 6.16), and the display of attribution information in each track's "remix history chart" (see Figure 6.15). What is common amongst all these instances of social transparency is that they serve to represent, signal, and bring to light behaviors and activities that are highly valued and deemed as social currencies, by the community. Take for instance the tracking and display of the reviewing activity of on a member's profile page and user icon. By prominently highlighting the reviewing activity of a member, the administrators of ccMixter are not only signifying the importance of reviewing to the rest of the community. By associating this information with aspects of a member's online identity (i.e. the profile page and the user icon) and making this information publicly viewable, the developers are also tying membership in ccMixter with being an active reviewer as well. Another effect of making the member's reviewing activity socially transparent is that it becomes reified as a way to gauge an

individual's position in the community. As highlighted in Phase I of this study, ccMixter attracts a great number of peripheral members, who do not participate actively and are hence not connected to the core group of the community. Connecting with a core member of ccMixter places a newcomer, or peripheral member, on a trajectory of being more active in the community. As highlighted by the interviews, being connected to one core member will raise the visibility of a peripheral member, leading to a "snowball effect" where other members are likely to review and remix the works of the peripheral member. This will likely lead the peripheral member to engage more actively with the community, hence motivating him/her to share more of their music.

There are many other advantages and ways that social transparency can be used to encourage prosocial sharing behavior. However, it is important to note one limitation of social transparency (and by extension, the social performance framework). Social transparency is most effective when individuals have contributed once already and are interested in sustaining their membership in an online community. Further study is required to assess if social transparency is effective in motivating individuals to prosocially share their work if they have not even made an initial contribution in the first place. PC most eloquently articulates this limitation of social transparency in the following quote,

> It's (*ccMixter is*) more like the church covered-dish supper model. You bring your stuff to the table and set it down and people eat it. Some people love what you've done. Some people don't. Some people don't even try it and so they don't know. But the payoff is that you know you've a) expressed yourself and B) you've made someone happy. And C) you may have possibly, changed their outlook on the world. And that's the way I view it. (Subject PC)

Social transparency is a powerful tool that can capitalize on the social currencies to promote and encourage prosocial sharing. However, like PC's quote suggests, there is little that an online community can do to forcibly motivate contributions from individuals who are not inclined to share.

6.7.3 Hypothesis 3: Alignment of Identity

Underlying the final hypothesis made by the social performance framework is the perspective that an individual's, as well as the community's, identity is mutually constructed through participation in an online community. By performing the behaviors and activities dictated by a community's norms and scripts, an individual is establishing his/her identity as a member of that community, and at the same time, reinforcing the community's values through his/her contributions. This mutual construction of the identities is made a little more complicated in online communities because all the interactions take place online and are mediated through a website. Consequently, online communities that make their currencies socially transparent enable individuals to align their contributions and participation with the community's norms and values to become fully engaged members of the community.

Similarly in ccMixter, the prosocial sharing of one's musical creations can be motivated by identification with the values and goals of the community. By combining the affordance of social transparency with the behavioral norms prescribed by social currencies, the activities and behaviors that are of value and importance to the community can be publicly highlighted for all members. Thus, to be an active and engaged member of the community, individuals have to align their participation with the social currencies in the community. Take for instance the social currency of reviewing in ccMixter. Making each member's reviewing activity publicly visible has two important effects on motivating prosocial sharing. First, it functions as a metric against which other members can assess an individual's engagement with and position in the community. Reviewing thus becomes an indicator if a member is likely to be engaged with the community and continue contributing samples and remixes. As highlighted earlier, core members in the community are more likely to interact with, provide reviews and remix the works of individuals who have provided more reviews to the community than they have received.

This engagement provides the new member with a more feedback and interaction, resulting in more contributions from the individual. Second, making the each member's reviewing activity public allows the individual member to observe the norms and practices that surround a key activity in the community. In order to be a more active and engaged member in ccMixter, the individual must thus adopt norms and practices such as

politeness when extending reviews. Doing so makes it more likely that reciprocal reviews and other forms of valuable interactions from other members will take place. It is this social interaction that thus guides the individual member to contribute and share more of their work with others.

This hypothesis suggests that making social currencies publicly visible, especially ones that promote the values of sharing and remixing, will result in a dynamic akin to behavior in a public environment. It invites both self-examination and identification with the community, on the part of the individual member. It also brings the scrutiny and modeling of expected behaviors from the rest of the community.

6.8   Conclusion

In general, every individual I interviewed highlighted not just one, but a variety of motivations for why they share their creative work on ccMixter. There was a great diversity in the motivations articulated during the interviews about why these core members initially decided to participate in the community. These initial motivations were often very personal and associated with very specific background attributes of the interviewee. Some examples of these early motivations ranged from finding a space for artistic/creative experimentation to opposing the corporatization of music culture. However, ccMixter provided the common ground that brought together the disparate motivations of the individual members into a set of shared values and goals in the community.

The social performance framework offers a socio-technical explanation for how an online environment and a collective of individuals can jointly motivate prosocial sharing behavior. The framework takes into account both the social and the technical factors that shape the users actions and behaviors. In particular, the framework highlights how members of an online collective are likely to adhere to group norms if those norms are made socially transparent. The publicness afforded by social transparency invites both the scrutiny of "many eyes" and individual self-regulation of behavior, resulting in behavior that identifies with the norms and scripts of a community. At the same time, social transparency also highlights community norms and social currencies that are constituted by the free sharing and creation of music by the individual members. What

results is a dynamic of co-construction enabled by the affordance of social transparency. The performance of actions by individual members displays one's identification with the community, and at the same time, the surfacing of community norms helps to motivate individuals to behave in particular ways.

CHAPTER 7
Conclusions, reflections, and next steps

7.1 Introduction:

The central concern driving this study has been to understand what motivates individuals to prosocially share content that they have created to make it available for others to reuse. However, as can be seen from my study of ccMixter, prosocial sharing is not motivated by individual calculations alone. There are often social, contextual and environmental factors that influence the individual's decision to share and contribute. As shown by the analysis of ccMixter, it is difficult to tease apart the interaction between individual motivations and the values and goals of the community's. Further, it is necessary to account for the role that technical affordances play in influencing prosocial behavior amongst members of an online community.

To provide an account of what motivates prosocial content sharing on the Internet, I proposed an analytical framework that takes into consideration the social dynamics of the community and the influence of technological features on the individual member's decision to share prosocially. Combining theories from a variety of fields such sociology, social psychology, and human-computer interaction, the social performance framework provides a socio-technical explanation for what motivates the enactment of prosocial behavior in online environments. The framework makes two basic observations; firstly, social currencies evolve through the interactions of online communities. And secondly, when the interfaces and tools make these currencies transparent, users then become conscious about public scrutiny of their actions. As a result of the joint influence of these two factors, members are more likely to modify their behavior and perform according to the community's norms and expectations. Additionally, the social performance framework suggests that social transparency creates a feedback loop that helps to reinforce and sustain the prosocial behavior amongst members of the community.

The social performance framework was conceived with two main purposes in mind; Firstly, as an analytical tool to help understand the socio-technical factors that promote prosocial sharing in online remixing communities. And secondly, the framework also has implications for the design of systems to encourage prosocial sharing and community participation. In this chapter, I will assess the effectiveness of the social performance framework in aiding the analysis of prosocial sharing in communities like ccMixter and the designing of future systems that promote this behavior. Additionally, I will be discussing future implications of the framework in terms of specific projects that I have planned already and how it contributes to a much wider personal research agenda.

7.2   Assessing the Social Performance Framework

I propose that the social performance framework can be used to both analyze and help design systems that promote prosocial sharing; consequently, I now evaluate the practicality and explanatory power of the social performance framework. In this section, I will assess some of the successes and failures of this framework in terms of the following three roles; 1) as a rhetorical tool to help make sense of and communicate the complex phenomenon of online prosociality, 2) as an analytical tool to provide a compelling description and understanding of prosocial sharing in an online community, and 3) as a design tool to make inferences to suggest features and improvements for the design of current and future systems that promote prosocial sharing behavior.

7.2.1   The Social Performance Framework as an In-Between Theory

According to Fitzpatrick (2003), socio-technical systems are hard to design because they involve multiple stakeholders and require not just technical solutions, but social ones as well. To solve this difficulty, Fitzpatrick turned to theoretical frameworks as a way to mediate between the social and technical concerns of designing and building socially embedded systems. For her, the problem is fundamentally one of communication, as the various social and technical stakeholders of a system often lack a common understanding or language with which to describe the issues plaguing a socially embedded system. Theoretical frameworks help solve this problem by bringing a common set of abstractions and language. In Fitzpatrick's case, she developed the

Locales framework, based on easily understood metaphor of places to generate better understanding amongst the different stakeholders of her system.

In a similar vein, I have developed the social performance framework to better account for the technical and social factors that influence prosocial sharing in online communities. Unlike current explanations of motivations such as Fitzpatrick's, my work examines user motivations as a socio-technical phenomenon. By using the metaphor of a performance, the framework brings together individual theories from a number of domains to frame prosocial sharing in an online community as a socio-technical phenomenon. Drawing heavily, but not exclusively, from the work of Burke (1969) and (Goffman, 1959; 1966), the metaphor of social performances helps to conceptually describe how online publicness and transparency, together with community norms, can influence an individual to prosocially share. By using the language of performance, the social performance framework frames disparate concepts such as social currencies and the technical property of holoptism (social transparency), into a coherent package. Doing so helps make a socio-technical explanation of prosocial motivations accessible to social scientists, as well as, systems designers. The framework also helps these two sets of audiences speak to each other with the use of a common language. However, as a tool that bridges both the technical and social worlds, the social performance framework does suffer from a number of limitations as well.

Firstly, and most importantly, as an in-between theory that facilitates communication between multiple stakeholders, my examination of the social performance framework remains exploratory within the constraints of this dissertation project. A priority for future work would be to utilize and assess the social performance framework as it is applied to other systems that encourage prosocial sharing. A second issue with regards to the framework as an in-between theory is its potential to water-down the original theoretical ideas and constructs from which it was derived from. The danger of oversimplifying theoretical ideas is that they then become vulnerable to misinterpretation and inappropriately applied. However, in the case of prosocial sharing in online environments, many of the theories of motivation were developed pre-Internet, thus there is a great need to either update these original theories or develop new ones. The social performance framework represents a pragmatic middle ground that can stand

on its own in sensitizing developers and researchers to the need to consider factors such as the technical environment, the broader influence of the community and the role of social currencies.

7.2.2 Social Performances: A Social-Technical Framework

Besides functioning as a rhetorical tool, one of the main purposes of theoretical frameworks is to explain and make sense of a complex phenomenon. According to Halverson (2002), theories (she includes frameworks with theories) need to have descriptive power and be able to convey a conceptual understanding of what is happening. Additionally, this description must be conveyed at the right level of detail to enable the researcher or the developer to make inferences that can lead to design insights, or even make predictions about consequences.

By applying the social performance framework to ccMixter, I have attempted to 1) provide an understanding of the prosocial sharing of music and remixes in the ccMixter community; and 2) validate the framework's explanatory and descriptive abilities.

As a tool to provide an understanding of how and why prosocial content sharing occurs in ccMixter, the social performance framework provides insights that would be hard to perceive if we were to merely consider motivation as an individual calculation. At its core, the framework describes a behavioral dynamic that is akin to Goffman's (1959) notion of "impression management". When an individual's actions are made public and open to "mutual monitoring" (Goffman, 1966), the person would thus tend to self-regulate their behavior by performing according to social norms and behavioral scripts. In this thesis I have applied my own theory, the social performance framework, to explain this behavioral dynamic in ccMixter. Specifically, the framework revealed the relationship between the activity of reviewing, the technical affordance of transparency and how both these factors helped encourage and sustain contributions of music by the members of the community. The relationship between these three aspects of ccMixter was not obvious and the social performance framework helped to flesh out this connection. In general, I can confidently say that the performance framework performed well in generating an understanding of the complex dynamics that surrounds prosocial

sharing in ccMixter. However, there are several shortcomings with the social performance framework that need to be addressed before it can be widely adopted as an analytical tool.

The first limitation that I would like to highlight is that my theoretical framework has only been applied and validated against one case study. I developed the social performance framework to address what I saw as a shortcoming of the literature that explained the motivations online prosocial motivations. This dissertation documents my argument for a sociotechnical explanation of online prosociality, the formulation of the theoretical framework by framing theories from various fields with the metaphor of performance, and finally, and applying the framework to a case study of ccMixter. The effort represented in this dissertation is only a start in a broader research trajectory. To further improve the explanatory power of the social performance framework, future work will need to apply the framework in other contexts. I will elaborate on this in greater detail in the future work section of this chapter.

Another limitation of the social performance framework as a tool for understanding prosocial behavior is that it does not account for how to motivate prosocial sharing from individuals who are not interested, or unwilling, to subscribe to the culture and values of an online community. This perhaps describes the large numbers of peripheral members who are not connected to the core component of the community. The framework is focused on the dynamics of membership, and thus one could argue that a flaw with this study is that it focused only on a core group of self-selected subjects. However, it is important to point out that members of the core group were precisely who I was interested in investigating because they exhibited prosocial sharing behavior that was the focus of this study. Future work can rectify this issue by interviewing peripheral members as well. Though admittedly, one reason why no peripheral member was interviewed is because of the difficulties in contacting individuals who have no inclination in contributing further to ccMixter.

7.2.3   Using the Social Performance Framework for Design

In using the social performance framework to study ccMixter, I have claimed that the framework can reveal insights that can aid the design of other systems that promote

participation and sharing. As a tool to help design, the framework can advise designers and developers in two main ways: firstly, the framework itself can be used as a heuristic when developing new systems, and secondly, the findings generated through the application of the framework can produce design improvements or feature suggestions for existing systems. In this section, I will discuss in detail how the framework can aid designers in the above two ways. Additionally, I will highlight some of the shortcomings of the framework as a design tool and suggest future work that can address the limitations highlighted.

As a heuristic to aid design, the social performance framework makes a number of prescriptions to promote the culture of prosocial sharing in an online system. The first heuristic that a designer might employ is identifying actions and behaviors that are of value to the community and that would motivate prosociality. These behaviors and actions can ultimately function as the social currencies in the community. Further, developers and designers should think about making these behaviors socially transparent, such as by providing a leaderboard of the top remixers, reviewers and uploaders in a remix community. While seemingly straightforward, I believe that the hardest part of using the social performance framework as a design heuristic is in formulating the purpose, goals and values of the community, in order to target specific actions or behaviors of value. Thus, one value of using the framework as a design tool is that it places the needs of the community as the starting point, rather than the strictures of technology.

The second way that the social performance framework can be employed as a design tool is through its use in identifying features or design elements that can be improved in an existing community. For instance, my use of the framework to study ccMixter revealed that review were an important social currency in the community. However, my interviews highlighted a problem where *a capella* tracks tended not to get reviews. Users who shared instrumental samples and remixes tended to receive many more reviews than *a capella* contributors. Subject YO articulates the nature of this problem in the following quote,

> Most vocalist don't get a lot of—I mean, I've received a lot of reviews on remixes
> that I've done where I've put vocals over somebody else's music. But straight

reviews on the vocals themselves or the songs themselves, rarely happens. And it

is usually from other vocalists. (Subject YO)

This problem surfaced primarily because the social performance framework

emphasizes the important role of social currencies, in particular the currency of

reviewing. By highlighting this problems like this, the framework can contribute towards

improving the design of the ccMixter website. For instance, in this instance, the

community may want to implement a feature where *a capellas* cannot be reused unless a

review has been left for the vocalist who contributed the track. Other design ideas may be

to have automatically generated visualizations displaying the individual member's

contribution of reviews according to the three content types highlighted; instrumental

samples, remixes and *a capella* tracks

To conclude this section, I have discussed several ideas for future work

employing the social performance framework in service of understanding and design. In

the last remaining pages of this study I will propose several ideas about how to improve

and extend the social performance framework. Specifically, I will discuss one ongoing

project that applies the social performance framework in another online content sharing

and reuse community. I conclude with a proposal about how the social performance

framework can be extended and made a part of a broader research agenda.

7.3   Future Work 1: Comparison Study with Scratch

In terms of future work, I have already lined up a comparison study that will

enable me to extend and validate the explanatory power of the social performance

framework by applying it to a second online content sharing and remixing community,

called Scratch. I have begun collaborating with Andres Monroy-Hernandez, who is a

member of Mitch Resnick's "Lifelong Kindergarten" research group at MIT. Andres is

the administrator of the Scratch community. This community was developed to support

the Scratch programming language and is devoted to the sharing and reuse of animations

and games developed using Scratch. In Scratch, like in ccMixter, users openly share the

content that they've created for others in the community to reuse. However, unlike

ccMixter, the demographics of this community skew much younger (the average age in

the community is 16yrs old). Also, the content that is being shared, programming code to

create animations and games, is quite different from the music samples being shared in ccMixter. In this project, I will apply the social performance framework to investigate whether the dynamics of social transparency and social currency are also at work in the Scratch community. Does this same prosocial dynamic exist in Scratch when young people share animation/game programs? As suggested in the previous section, one of the main goals of this dissertation is to inform the design and development of systems that encourage prosociality. By extending my research to an analysis of Scratch, I hope to be able validate the Social Performance Framework's generalizability and explanatory power by looking to see what the Scratch system makes socially transparent. Does this transparency lead to specific kinds of social currencies being formed? And how might this compare with the social currencies formed in ccMixter?

Applying the social performance framework in multiple contexts can also allow me to conduct design experiments to improve the frameworks usefulness in designing other systems. An illustration of one such design experiment is an study of attribution methods across both ccMixter and Scratch. As highlighted in Chapter 6, attribution is an important social currency in ccMixter as it conveys acknowledgement and gratitude towards the authors who have shared their work to be reused. Attribution plays a similarly important role in Scratch. However, both communities have rather different methods of providing attribution and credit. A recent study of Scratch by Monroy-Hernandez et al. (2011) found that Scratch users made a distinction between attribution- and credit-giving. Scratch users preferred the "sincerity", "good intentions" and "effort" required to provide manual credit, as opposed to the "technologically simplified social signal" from the automated attribution. In contrast, in ccMixter attribution is provided automatically only, as long as a member declares the source works used when uploading a track. However manual credit giving does occur in the reviews of each track. It would thus be interesting to conduct a design experiment across the two online communities to test different methods attribution across the two communities. Do either, or both, communities prefer automatic attribution or manual credit-giving? Additionally, it would be interesting to be able to test empirically whether automatic attribution or manual credit-giving results in more sharing and remixing activity in the two communities. The results of the test will enable me to assess the salience of different attribution methods

and this can aid the design of systems that bypass common disputes involving acknowledgement for the reuse of shared content.

7.4   Future Work 2: Prosocial Sharing Systems as Spaces for Moral Behavior?

In a 2006 essay titled "Commons-based Peer Production and Virtue", Yochai Benkler and Helen Nissenbaum make the claim that participation in online social spaces holds the potential to enable more people to adopt prosocial virtues as their own, and as a result become more moral individuals. This claim fits into the research agenda of a nascent community of scholars who assemble themselves under the banner of "Values in Design", or VID for short (Knobel & Bowker, 2011). These scholars believe design should be concerned with how humans will behave given a particular set of constraints or affordances. And a source of these affordances are the values and assumptions of how humans can and will behave depending on how technological systems are designed. Likewise, I too believe that individuals can be compelled to behave in particular ways, either positive or negatively, based on the how the tools and interfaces are designed to make possible certain actions while constraining others. Take for instance the current popularity of using "game mechanics" in the design of learning systems. Adopting "game mechanics" privileges the stance that learning should be fun, but at the same time individualistic and competitive, in the design of learning systems. The social performance framework highlights how a socially transparent space can enable the development of "social currencies" (or group scripts/norms) for appropriate behavior in the system, as decided by members of the community.

However, as noted throughout this study, technology alone cannot determine prosocial behavior. Rather, technology creates feasibility spaces where prosocial behavior can be motivated at the individual and group levels (Benkler, 2006). To better understand prosocial behavior in online social spaces like ccMixter, it is necessary to take into account both the social and the technical factors that shape the users' actions and behaviors. This dissertation highlights the use of the social performance framework as a tool with which to account for the individual, group and technical factors that serve to motivate the prosocial sharing of music samples in the community. I believe that the framework can contribute to the VID research agenda by bringing a sociotechnical

approach towards understanding and designing for valued behavior as determined by the members of a community. As such, I see that future work using the social performance framework should be submitted to venues where the VID community gather and engage with them about how the framework can contribute to furthering our understanding of technologically-mediated values and behavior.

7.5   Conclusions

The act of sharing one's work for others to modify, reuse, and even make profit from is a fundamental behavior that is relied on by many collaborative applications and collective efforts on the Internet. From open source software development to Wikipedia, there are many instances of technologically-mediated collaboration that is reliant on this form of prosocial sharing behavior. However, what drives individuals to share in such a manner? And given that there is no tangible profit to be made, what drives these individuals to continue contributing their work? These are the two central questions that have driven this dissertation project where I have developed an analytical framework and applied it to an online community that exemplifies this form of prosocial sharing behavior. My main goal of doing so is to put forward a theory as a tool to better understand the sociotechnical factors that influence prosocial sharing, and consequently to help design systems that promote this form of behavior.

In this final chapter, I have described some of the strengths and weaknesses of the social performance framework, and proposed how several avenues to strengthen its explanatory and inferential power. In general, the framework should be applied to more settings and contexts in order to better assess its applicability and usefulness towards researchers and systems developers. There is therefore much opportunity for future work using the framework. I have already begun to chart a research trajectory with both concrete projects that are currently being pursued, as well as, fitting the social performance framework within a broader research agenda of "values in design". My long-term goal is to conduct further investigations, such as field studies, design-based research and experimental work, to obtain a generalizable understanding technology-mediated prosocial behavior and to design prototype systems that encourage this behavior.

Appendix A: Research design for ccMixter study

Phase I: Social network analysis

Characterizing ccMixter as a network

Visualize and characterize the ccMixter data as a network of users connected via their sharing relationships (see below)

Reuse by B of at least one work of A

Author A → Author B

Describing participation patterns in ccMixter network

Social network analysis measures enabled us to identify frequencies and patterns of participatory behavior amongst the ccMixter users. Some highlighted findings:
- 1,698 'active' users out of 12,776 registered
- 9300 contributions from users
- the vast majority of these contributions (7115) were not reused

Identifying core and peripheral components of the ccMixter network

Employed bow-tie (component) analysis to categorize the users of ccMixter into CORE and peripheral components.

Characteristics of users in the CORE component of the ccMixter network

Some descriptive statistics characterizing the CORE users were generated. Compared to the rest of the network, participation patterns amongst CORE users were much higher.

Phase II: Qualitative Research

Pre-Interviews with key contacts in ccMixter

Design and testing of interview protocol
make initial contact with ccMixter admin

Interviews with CORE & peripheral users in ccMixter

Semi-structured interviews with the CORE & Peripheral users:
- Begin with the top 10 contributors in ccMixter CORE
- Snowball approach = interview up to 30 other users that have a relationship with the top 10 contributors

Content analysis of the users profiles and contributions

Collect data from the public user profiles of the interview subjects

Analysis of qualitative data

Development of codes and themes from the analysis of interview data and the data from the user profiles

Integration of findings from interviews and social network analysis

Triangulation of results from the Network analysis of the CORE & peripheral users and the Qualitative analysis methods used.

The findings will help to validate the Social Performance theoretical framework

Appendix B: Interview subjects (core members) for Phase II of ccMixter study

#	ID	Age	Gender	Occupation	Member since	method	Notes
D1	IC	NA	M	NA		Skype	ccHost Developer
D2	ML	NA	M	VP of CC		Skype	ccHost Developer
D3	JP	NA	M	CC Business Development fellow		Skype	ccHost Developer
D4	LG	NA	M	Internet music developer		Skype	ccHost Developer
P1	RL	37	M	Librarian	Oct 4, 2006	Skype	
P2	JI	36	M	?	Feb 21, 2005	Skype	
P3	RN	51	M	Litigation Attorney	Feb 21, 2005	Skype	
P4	SJ	50s	F	Paralegal	Jan 5, 2009	Skype	20yrs ago had career in music mother of 2
P5	JC	37	M	Metal Business	Jun 2, 2007	IM	
P6	DZ	30	M	Systems Developer	Jul 28, 2005	Email	From the Ivory Coast
P7	JD	36	M	"blue collar, std wage"	Mar 16, 2007	Skype	Musician in past
P8	EO	39	M	"diff occupations"	Dec 25, 2004	Skype	Admin of ccMixter
P9	YO	42	F	MarComms	Aug 8, 2006	Skype	Sister to P8
P10	ST	45	M	MarComms	Dec 27, 2004	Skype	
P11	NV	50s	M	Software Developer	May 25, 2007	Skype	
P12	JL	40s	M	Prison guard	Apr 30, 2005	Skype	
P13	ZM	32	M	Instruct'l Technologist	Dec 21, 2005	Skype	Studied music
P14	CL	37	M	Business Proc Engin	May 28, 2007	Skype	
P15	ES	44	F	Lawyer	Sep 28, 2007	Email	
P16	SI	41	F	Sommelier	Oct 1, 2007	Email	Mother to 14 yrs old boy
P17	TB	30s	F	Musician	Dec 10, 2006	Skype	Professional musician
P18	PM	60	M	Retired	Aug 11, 2008	Skype	Past as a touring musician
P19	OD	53	M	Music Professor	Feb 28, 2007	Skype	Tries to keep ccMixter id secret
P20	SM	20s	M	Systems Admin.	Jun 23, 2005	IM	
P21	PC	32	M	Civil Servant	Oct 26, 2006	Skype	

Appendix C: Subject Recruitment Communication for ccMixter study

Dear (fill in bracket with name of subject),

My name is Jude Yew and I am currently a doctoral candidate at the School of Information, University of Michigan. I am currently in the midst of a research project examining open contribution systems – online applications that encourage sharing and participation from the users. In particular, I am interested in finding out more about what motivates users to participate in these systems.

I am contacting you today because you have been an active participant in ccMixter, the online music sharing and remixing community. I would be very interested in speaking to you and scheduling an interview with you about your involvement with ccMixter. I envision that the interview would take no more than an hour of your time and will take place over the phone or through a video chat client. I would also be very happy to schedule this interview at your convenience.

Please do let me know if you would be willing to speak to me about your participation in ccMixter? Also, if you need more information about my study, I will be more than happy to furnish you with the necessary details. I look forward to hearing from you soon.

Regards,

Jude Yew
Doctoral Candidate
School of Information,
University of Michigan.
http://judeyew.net

Appendix D: Informed Consent Document for ccMixter study

Participation as social performances:
Understanding the motivations for online participatory behavior
Jude Yew, School of Information, University of Michigan
Stephanie Teasley, School of Information, University of Michigan

This interview is part of a research project investigating participation in open contribution systems. In this interview, I will be asking you questions regarding your participation in the online music sharing and remixing community, ccMixter. By participating in this study, you will be helping to advance our understanding of why people exhibit participatory behavior in online environments. This understanding will contribute to design recommendations for the developers of systems that encourage contributions and participatory behavior from the users.

Jude Yew, a Doctoral Candidate at the School of Information, University of Michigan will be conducting this study. Thank you very much for agreeing to do this interview.

This interview is expected to take no longer than sixty minutes. Although you may not receive direct benefit from your participation, others may ultimately benefit from the understanding and use of online social media as a tool to enhance civic participation.

Also, should there be a need to follow up this interview with further questions, we seek your consent to contact you for one additional time.

There are no direct risks to you if you decide to participate in this research. Participation is entirely voluntary, and you are free to withdraw at any time and skip any question or topic at any time.

All the data generated by this study will be kept in the strictest confidence and only the researchers on this project will look at your responses directly. In any report, presentation or paper to others outside the project, your data will either be aggregated with others' or made anonymous. You will not be identified in any reports on this study. All data will be kept for record-keeping purposes until the conclusion of this study. Should you choose to withdraw from the study, all data relevant to you will be destroyed.

Your participation in this project is voluntary. Even after you have agreed to be interviewed, you may decide to leave the study at any time without penalty or loss of benefits to which you may otherwise be entitled.

If you have read and agree with the conditions concerning your participation, please print and sign your name below:

print name :_____

signature :_____

Consent for Audio Recording of Interview:

For the purpose of analysis and record keeping, we also seek your consent to audio record the proceedings of this interview. This recording will be archived and kept for future studies at the end of this research project. Please sign below if you are willing to have this interview recorded (specify audio or video). You may still participate in this study if you are not willing to have the interview recorded.

_____

Signature   Date

Thank you for your help!

If you have any questions problems or concerns about this research please feel free to contact the following persons below.

Investigator: Jude Yew, 2225-9, 1075 Beal Ave, School of Information North, Ann Arbor, MI 48109-2112, 734-647-9550, email: jyew@umich.edu

Faculty Advisor: Research Assoc. Prof. Stephanie Teasley, 2222, 1075 Beal Ave., School of Information North, Ann Arbor, MI 48109-2112, 734-763-8124, email: steasley@umich.edu

Should you have questions regarding your rights as a research participant, please contact the Institutional Review Board, 540 E. Liberty Street, Suite 202, Ann Arbor, MI 48104-2210, (734) 936-0933, email: irbhsbs@umich.edu

Appendix E: Interview Guide for ccMixter study

Social Performances
Semi-structured interview guide

This project is part of a doctoral research project at the University of Michigan, School of Information. In this project, I am trying to better understand online participatory, sharing and altruistic behavior. In particular, I am attempting to find out what motivates users, like yourself, to contribute and share music samples on ccMixter.

Your responses will be kept confidential and your identity will remain anonymous in our reports. We will use the results to better understand the factors and implications of online participatory behavior. Our findings will also result in design implications for the development of systems that encourage sharing and participation.

The interview should take about 60 minutes.

If you have any comments/questions, please feel free to contact me at jyew@umich.edu
Thank you for your time!

Interview context information:
Date:
Time:
Venue:
Special considerations for interview:

General biographical/demographic information:
Information – general info about the respondent's use and contributions to ccMixter.

- Can you tell me a little bit about yourself? How old are you? What do you typically do for a living?
    - o Probe: Do you consider yourself to be a musician?

- Are you active in any other online communities?

- How did you get involved with ccMixter?
    - o Probe: when was that?
    - o Probe: Can you show me your very first contribution to ccMixter and tell me a little bit about how you became involved with this community?

- Can you tell me what you typically do in ccMixter? Are you involved in the administration of the online community in any way?

Motivations for participating/contributing in ccMixter:
Information - goals, aims and intrinsic reasons for participating and contributing to the ccMixter community.

1. Why do you think that people participate on the ccMixter website?
2. What do you get out of participating in ccMixter?
    a. Probe: Has that changed over time?

b. Note: the response to this question will dictate which of the following questions to raise with the interviewee.

Contribution patterns:
Information - frequency of contributions, remixing patterns

- Can you tell me how many music samples you contributed/remixed in ccMixter?
  - o Probe: Compared to other ccMixter members (e.g. contest participants), you are a lot more prolific in your contributions to the community. Why do you think that is so?

- Were there other ways in which you contributed/participated in the ccMixter community?
  - o Probe: Did you recommend the work of other users?
  - o Probe: did you contribute reviews?

- Did you participate in any of the contests on ccMixter? If so which one?
  - o Probe: Did you think that the contests have an impact on your motivations to participate in ccMixter?

Affordances of the ccMixter website:
Information - whether any aspects of ccMixter's design and functionality had an impact on the user's motivation to contribute.

3. What do you like about the design of the ccMixter website?

- What frustrates you about the design of the ccMixter site?
  - o probe: Do you think that other people would find that to be a barrier/barriers as well?

Identification:
Information - participation as expression of individual identity, roles played, collective identity?

- How do you see yourself in relation to the ccMixter community? Do you identify with this community? Do you see yourself as a part of this community?
  - o probe: Do you think that your contributions help reinforce your identification with the group?

- Do you play any formal roles in the community? Do you play any informal roles in the ccMixter community?
  - o probe: Can you show me some evidence of those roles on the ccMixter website?

Social relationships/reciprocity:
Information - strength of social relationships, reciprocity, degree

- Are there particular users on ccMixter whose works you tend to/prefer to remix? Do you exclusively remix and share samples with specific individuals in ccMixter?
  - o Probe: Show network visualization of relationships (as a webpage) between respondent and other users on ccMixter as a concrete stimulus for the respondent's recall.
  - o Probe: Can you tell me why you have such a strong relationship with user X?

- o Probe: Can you tell me why you don't want to work with some of the other users?

- Tell me about some of the other people you interact with in ccMixter. Can you show me who in ccMixter you have such relationships with? Do you know any of these people outside of ccMixter?
  - o probe: do you share most of your music with this individual? Is this relationship reciprocal?

- Did you have a criterion for using the samples of these users? If so what were they? Can you show me what some of these criteria were?

- Do you think that these relationships have an impact on your participation in ccMixter?

Publicness:
Information - social transparency =making socially significant information available, supporting awareness of norms governing the community & supporting accountability for actions.
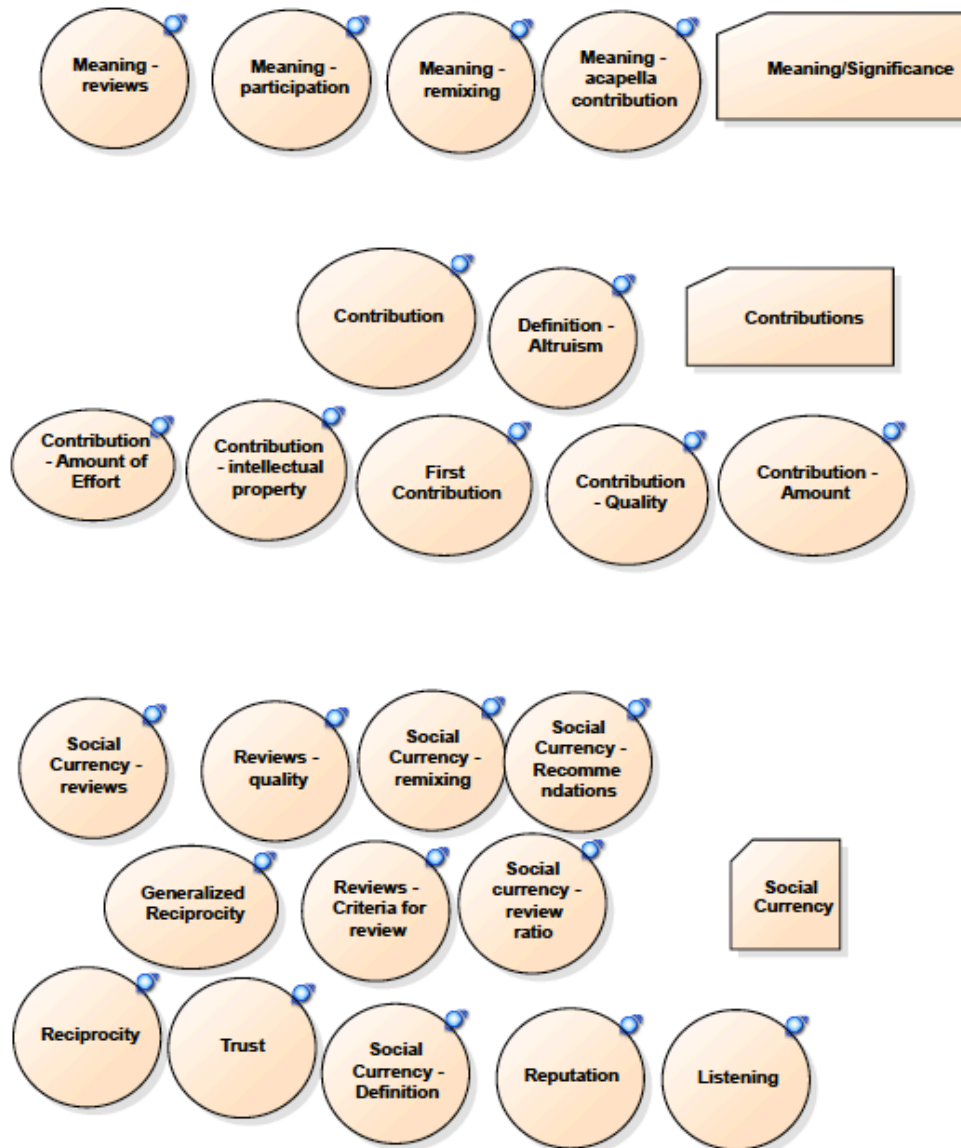
- Do you have any concerns/reservations about other people using your work?
  - o Probe: How would you know if someone else has used your work?
  - o Probe: Would you still contribute samples to ccMixter if you could not track the use of your work?

- What other relevant information encourages you to contribute samples to ccMixter?
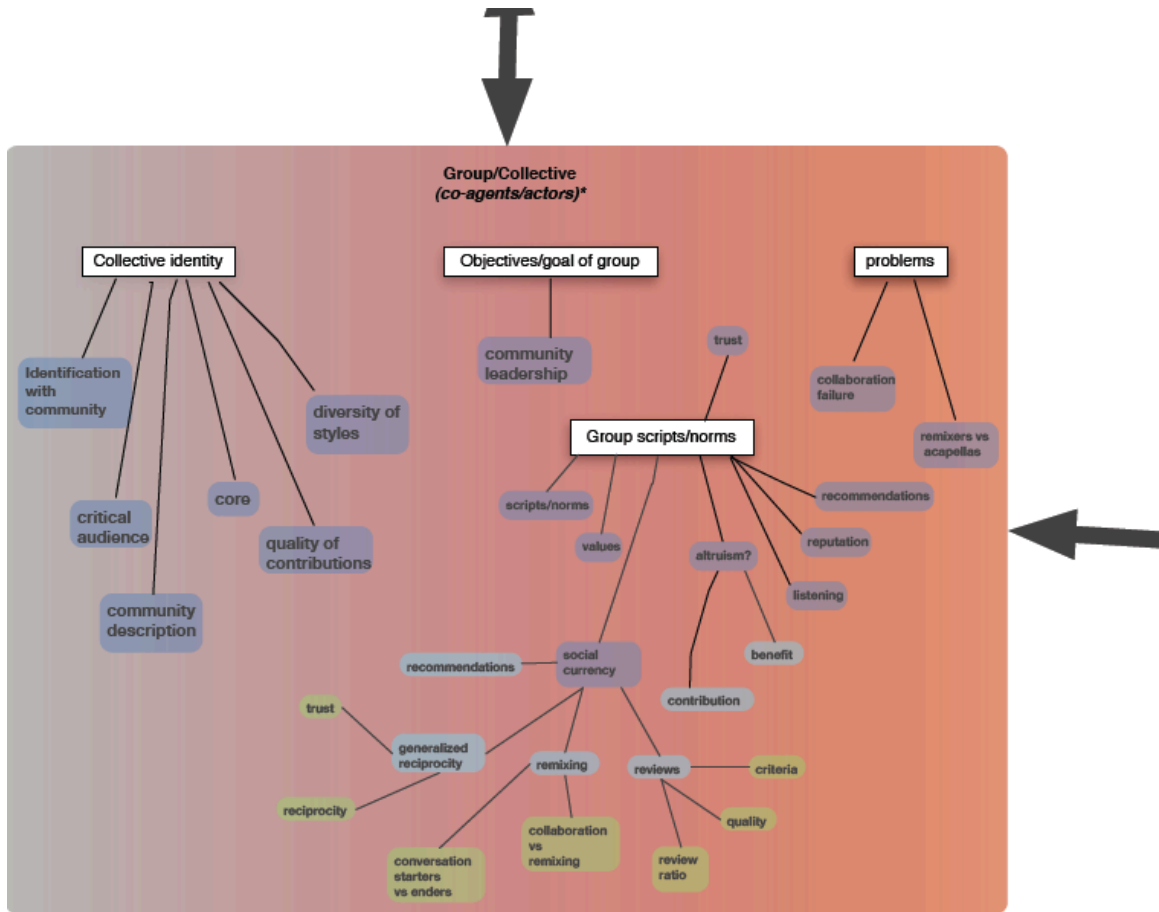
Group norms:
Information - group norms, scripts, objectives or goals of the group

- How would you describe the aims and goals of ccMixter? What are they about?

- How do people come to know about these aims/goals?

- What happens when members step outside these aims/goals? Can you give me some examples?

- Do you think that these goals/aims have shifted over time?

Appendix F: Sample of codes that emerged from the interviews

Meaning - reviews

Meaning - participation

Meaning - remixing

Meaning - acapella contribution

Meaning/Significance

Contribution

Definition - Altruism

Contributions

Contribution - Amount of Effort

Contribution - intellectual property

First Contribution

Contribution - Quality

Contribution - Amount

Social Currency - reviews

Reviews - quality

Social Currency - remixing

Social Currency - Recommendations

Generalized Reciprocity

Reviews - Criteria for review

Social currency - review ratio

Social Currency

Reciprocity

Trust

Social Currency - Definition

Reputation

Listening

Appendix G: Sample of interview codes fitting into the social performance framework

Sampling of fitting codes into the social performance framework

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