

Tags and Tunes:
Last.fm™, Folksonomy, and New 'Types of Music'

by

Adrian Dusanowskyj, B.F.A

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment
of the requirements for the degree of Master of Arts

Department of Mass Communication

Carleton University

Ottawa, Ontario

8 May 2009

© Adrian Dusanowskyj, (2009)



Library and
Archives Canada

Published Heritage
Branch

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque et
Archives Canada

Direction du
Patrimoine de l'édition

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file *Votre référence*
ISBN: 978-0-494-52010-9
Our file *Notre référence*
ISBN: 978-0-494-52010-9

NOTICE:

The author has granted a non-exclusive license allowing Library and Archives Canada to reproduce, publish, archive, preserve, conserve, communicate to the public by telecommunication or on the Internet, loan, distribute and sell theses worldwide, for commercial or non-commercial purposes, in microform, paper, electronic and/or any other formats.

The author retains copyright ownership and moral rights in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

AVIS:

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque et Archives Canada de reproduire, publier, archiver, sauvegarder, conserver, transmettre au public par télécommunication ou par l'Internet, prêter, distribuer et vendre des thèses partout dans le monde, à des fins commerciales ou autres, sur support microforme, papier, électronique et/ou autres formats.

L'auteur conserve la propriété du droit d'auteur et des droits moraux qui protègent cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

In compliance with the Canadian Privacy Act some supporting forms may have been removed from this thesis.

While these forms may be included in the document page count, their removal does not represent any loss of content from the thesis.

Conformément à la loi canadienne sur la protection de la vie privée, quelques formulaires secondaires ont été enlevés de cette thèse.

Bien que ces formulaires aient inclus dans la pagination, il n'y aura aucun contenu manquant.


Canada

Abstract

When asking the question “what ‘types of music’ do you listen to?” we tend to overlook the fact that any answer given is contingent upon not only matters of preference, but also matters of aggregation. This thesis looks at the introduction of the technologies of tagging and the implementation of architectures of folksonomy in the organization of music online. In looking at the case study of Last.fm, the analysis shows that there is indeed a range of emergent new headings being introduced in processes of music’s classification now that individuals have been given the freedom to tag music as they wish. By looking at the role of the technology of tag radio as an intermediary, the study further evaluates the extent to which these newly-formulated categories stand to be situated as viable new categories of musical listening.

Table of Contents

Abstract.....	ii
Table of Contents.....	iii
Table of Figures.....	iv
Introduction.....	1
The Music We Listen To.....	6
Last.fm – A Case Study.....	11
Chapter Outlines.....	17
Chapter 1 – Tagging & Folksonomy.....	19
Tagging and Folksonomy: An Overview.....	19
Non-Exclusivity: There is No Shelf.....	25
The Relative Popularity of Tags: An Introduction to Tag Clouds.....	28
Tagging and the Introduction of New Labels.....	34
Conclusion.....	38
Chapter 2 – Emerging Labels: New Genres.....	40
Building Genres through Tagging.....	40
Familiar Genres in Last.fm’s Folksonomy.....	43
Emerging Genres: Recent Developments in Tag Growth.....	46
Conclusion.....	51
Chapter 3 – Emerging Labels: Non-Genre Contexts.....	53
Non-Genre Contexts in Last.fm’s Folksonomy.....	55
Looking Ahead: Learning to Appreciate Tags as More than Just Labels.....	68
Chapter 4 – Tag Radio.....	71
Mediating Musical Listening.....	78
“Feasibility Spaces”.....	79
Evolving Feasibility Spaces for Musical Listening.....	82
Tag Radio.....	87
Tag Radio and the Changing “Types of Music” to which People Listen.....	92
Further Thoughts: Tagging and the ‘Types of Other Things’ People Consume.....	98
Chapter 5 – Conclusion.....	104
Appendix A – Top 250 Tags Ranked by Growth (in %) (January 2008 – January 2009).....	115
Appendix B – Top 250 Tags Ranked by Tag Use as of January 2009.....	120
References.....	125

Table of Figures

Figure 1 – Top Tag Cloud – Technorati.com	29
Figure 2 – Top Tag Cloud – Flickr.com	29
Figure 3 – A Last.fm "Tag Cloud".....	30
Figure 4 – Tag Cloud for Track "I Shot the Sheriff" by Eric Clapton.....	31
Figure 5 – Tag Cloud for Track "Come Fly With Me" by Frank Sinatra.....	31
Figure 6 – Tag Cloud for "La Vie En Rose" by Louis Armstrong	32
Figure 7 – Eight tracks all sharing the tag "rock"	33
Figure 8 – Tag Cloud for Top 150 Overall Last.FM Tags.....	43
Figure 9 – 20 Fastest Growing Tags (by percentage growth).....	47
Figure 10 – Two Tag Cloud Interpretations of the Top 150 Tags	50
Figure 11 – Results for Tag Search: "Guitar"	57
Figure 12 – Results for Tag Search: "Warped"	58
Figure 13 – Top 10 Results for Tag Searches: "Catalan" and "Kurdish".....	60
Figure 14 – Top 20 Results for Tag Searches: "Girly", "Queer", and "Gay"	62
Figure 15 – Top 12 Results for Tag Search: "Cooking"	63
Figure 16 – Top 12 Results for Tag Search: "Road Trip"	63
Figure 17 – Top 12 Results for Tag Search: "Workout".....	64
Figure 18 – Tag Clouds for the Most Popular Songs Tagged "Cardio"	65
Figure 19 – Results for Tag Searches: "Melancholy", "Angry", and "Cheerful"	66
Figure 20 – Popular Tag Stations (source: www.last.fm).....	90
Figure 21 – Top 10 Tracks for the Tag Radio stream for the Tag: "Melodic"	91
Figure 22 – Tag Clouds for Top Tracks Tagged "Melodic"	92
Figure 23 – User posts citing various unconventional tag phrases.....	97
Figure 24 – Top Tag Cloud - Amazon.com (October, 2008)	99
Figure 25 – The Top Tags for the Movie: "Citizen Kane" - Source: www.imdb.com	100
Figure 26 – Top Movies Tagged "Rebellion" (source: www.imdb.com).....	102

Introduction

In the midst of the recent shifts in the nature of musical consumption and circulation that have taken place over the last decade or so, there is perhaps no technology that has had a greater and more far-reaching effect on the structure of musical culture than the internet. Since the mid 1990's through to the present day the internet has arguably become one of the most significant driving forces challenging existing models and bringing about a set of new practices, particularly when it comes to matters pertaining to the distribution, dissemination, and mediation of music. For the most part, when attention has been paid to evaluating the impact that the internet is having on the realm of music and its related industries and institutions, the perspective of this focus has fallen on examining the numerous ways in which the introduction of the internet in matters of music's circulation and distribution has brought about serious concerns for the record industry – challenging existing business models and bringing about significant change with respect to the economics and industrial logics pertaining to the management, marketing and sale of recorded music. However, what is often overlooked when scholars consider the impacts of the internet on the topic of 'music in the twenty-first century' is that there have been several equally significant yet under-appreciated developments in how musical content is being aggregated for its listeners, and, by extension, the ways in which the practice of listening to music for a growing number of consumers and audiences is now being influenced by a changing set of technologies and an evolving set of mediating circumstances. This study (both in compliment as well as in contrast to the body of research being carried out to address the internet's effects on music's distribution) sets out to situate itself in the midst of what is currently a relatively under-represented area of inquiry – focusing on the effects that new online approaches are having on

the organization of musical material in the contexts of the online channels through which music is being experienced and in which individuals are increasingly engaging in acts of exploration, discovery, and consumption. In short, this is a study of some key issues surrounding musical listening in the age of the internet. Scholars conducting research in the fields of economics, law, and marketing have focused their efforts predominantly on the task of studying the different sales points in which individuals are obtaining music through online channels. I argue that it is equally important to consider and examine the ways in which online channels and web-based mediating environments are playing a role in governing what mixes of music these individuals are experiencing and influencing how these mixes and clusters of music are being formulated. It is with these considerations in mind that this study sets out to examine important yet often unaddressed issues concerning music's aggregation in online contexts.

Contemporary research into processes of mediation in online environments has been slow to emerge. It is only over the span of the past few years that attention has begun to be devoted to the study of the various online arenas and channels that are acting as intermediaries between audiences and the music they listen to, thereby regulating, influencing, and informing patterns of consumption, experience, and musical listening habits. One of the reasons for this dearth of research into the particularities of online mediation centers on the fact that processes of mediation were, in the eyes of many scholars, slated to become a thing of the past in the internet age. In the early days of the internet, a great deal of energy was devoted to both highlighting the belief that the internet was working to disintermediate the relationship between producers and audiences as well as better anticipating the broader social and cultural consequences of this expected development. The internet was thought, by many, to be ushering in a new era and a new cultural environment in which content would simply be made available to individuals via

the World Wide Web, but in which this content would in no way be prepared, prearranged, or packaged for its audiences (Jones, 2000; McLeod, 2005; Negroponte, 1995; Wallis, 2006). The presumption was that when content and audience became entirely disintermediated (Mosco, 2004), users would be given an opportunity to acquire precisely what they want without being guided in their decisions by an external mediator and without being required to consume entire clusters or categories of content as aggregate offerings. At its onset, the age of the internet was predicted to be an age in which we witnessed the elimination of the traditional role of gatekeepers whose influence had already been formally addressed in earlier media study (Lewin, 1947; D. M. White, 1964) and the removal of existing filters from processes of cultural negotiation and experience.

Discussions on the topic of disintermediation have been further compounded by related discourses pertaining to the ongoing and observable trends towards further disaggregation of content from the cultural units in which it would have previously been encountered. Over the course of the last decade, in being made available in digital file formats, a great deal of musical material has been disaggregated from the format of the recorded album, resulting in the rise of an era in which songs can now be selected and appreciated individually (Drew, 2005, p. 535; *IFPI:07 Digital Music Report*, 2007). Many pundits have deemed the transition to the per-track model of musical acquisition in online contexts a near-certain sign of the pending “death of the album” as a unit of musical content (Campbell, 2003; Conroy, 2007; Fong, 2007; Glass, 2006; Shirky, 2003). What is significant about this scenario is that as music becomes disaggregated from its album format, the number of individual options from which consumers can select from goes up, often by a factor of ten or more. While individuals have thus far typically been faced with the ongoing task of choosing which music to consume from among a selection of albums,

when songs are disaggregated from albums as well as from mediated ‘flows’ (Kompore, 2002; Sandvig, 2007) consumers are given the chance to populate their musical listening habits on a song-by-song basis. In addition to offering users a tremendous level of freedom and flexibility as they construct their musical menus, this contemporary situation also brings with it several concerns. As consumers are given access to a growing number of musical works, and as musical works find themselves disaggregated from their former units, listeners are finding themselves once again pursuing tools and techniques through which music might somehow be re-aggregated for their benefit and through which processes of selection might be mediated so as to restore some semblance of order to what might otherwise dissolve into a disjointed and un-navigable abundance. The prospect of wholesale disintermediation and disaggregation, once seen as a blessing bestowed upon consumers by the technologies of the internet, has since come to be recognized by a growing number of individuals and scholars as a challenge to be overcome and a problem demanding some type of solution. The combined effects of the disaggregation of music from its previous units, coupled with the disintermediation of the relationship between content-provider and consumer, foster a situation in which individuals can, in theory, consume precisely what they want, but in which they also run the risk of being overwhelmed as they go about browsing a seemingly infinite sea of available content. As Steve Jones (2000), writes, “the internet brings potential for broadening the scope of listening possibilities, but also potentially overwhelming the listener with choice” (p. 216) [(see also: Stiksel, in Benedictus, 2006, p. 1)]. Barry Schwartz (2003) refers to this syndrome as the “paradox of choice”, explaining that when given too many options, we often become paralyzed, unable to make any choice at all. In order to overcome these pitfalls, consumers have begun to once again seek out new and alternative filters in online contexts to avoid being overwhelmed. In an age that features a largely unprecedented

abundance of cultural works available to audiences in increasingly unmediated ways, consumers end up requiring the assistance of some form of filter to help them in aggregating desirable content and weeding out undesirable material. As Jon Herlocker (1999) writes, in order to overcome the flood of available content consumers constantly “seek assistance in identifying the most interesting, worthwhile, valuable, or entertaining items” (1999, p. 2). In recognizing this renewed push towards recommendation and assistance, many have gradually shifted the focus of their efforts from touting the disintermediation of music towards trying to overcome the curse of abundance in some effective and positive way. As musician Peter Gabriel famously explains, “the first wave of the digital revolution was about the freedom of choice...I think the second wave will be about freedom *from* choice” (Gabriel, as cited in Derbyshire, 2006). With this consideration in mind, in this thesis I examine one of the new approaches to the organization and aggregation of music through which users are being granted ‘freedom from choice’ and through which listeners are encountering music in new and remediated clusters in online contexts. While this study will address this renewed emphasis on mediation, it will also highlight the fact that this return to aggregation and this return to a renewed appreciation of mediating filters does not simply bring about a contemporary scenario in which consumers are once again encountering music in the same kinds of clusters that they most often would have encountered before. The research presented here in this thesis will show that in finding creative ways to aggregate music and mediate experiences of it today, we have not simply hearkened back to the approaches of the past. Instead, several new approaches are coming to the fore and numerous innovative strategies for the aggregation of content are fostering notable changes in the articulation of musical consumption and changes to the categories of content to which listeners listen. This is a study of one such strategy.

The Music We Listen To

Before venturing into the analysis that will be carried out here in this writing and before introducing the case study that will be addressed, it is useful to, at least briefly, first note some of the themes to which this thesis closely relates, in particular, the theme of musical taste.

Musical taste, and indeed ‘taste’ as a notion in general, is a concept that has gone through many theoretical treatments and has been understood in numerous different ways throughout the course of history. There have been periods in history, particularly during the era of the enlightenment, when the notion of taste was deemed to refer to the act of correctly demonstrating discriminating sensibilities and exhibiting a proper appreciation for the right objects. Kant in *Analytic of the Beautiful* (1790) famously described taste as a matter of ‘disinterested judgments.’ Montesquieu (1970 [1777]) described taste as the faculty of discovering the degree of pleasure which we should receive from an object that comes within the sphere of our perceptions. With respect to music, the belief in a comparable objectivity of taste has persisted up until as recently as the mid-twentieth century in both the fields of musicology (Hanslick, 1986 [1891]; Hastings, 1974 [1822]) and more general cultural theory (Adorno, 1941, 1973; Adorno, Leppert, & Gillespie, 2002; Goffman, 1951). However, with time, the subsequent theorization of taste has since evolved in a general thrust towards a series of definitions that describe taste as being much more subjective, personal, and pluralistic (Hille, 2004; Meyer, 2000; Russell, 1997). More recently, taste has broadly come to be treated not as one unitary goal but as a concept relating to the matter of unique individual preference, as can be noted, with respect to musical taste specifically, in the definition put forth by both Abeles (1980) and Price (1986), each of whom describe musical taste as a concept relating to an individual’s stable long-term preference for particular types of music. However, very often questions of musical taste do not only allude

to matters of underlying preference. Such questions also gesture to equally significant issues relating to the exercising of those preferences in practice and the translation of tastes into consumptive behavior. Russell (1997) illuminates this consideration nicely when he writes that the question of one's taste in music relates closely to the matter of the types of music an individual chooses to listen to. In fact, the relationship between taste and consumptive behavior is often so firmly established in our minds that when one wishes to discern an individual's taste in music, one will often ask the following question: "What types of music do you listen to?" As a means of bridging issues of taste and issues of aggregation, this question – "what types of music do you listen to?" – will become a central and recurring element framing the discussion throughout the remainder of this thesis. It will be shown that despite its apparent simplicity, this one question is in fact much more complex and its responses are much more complicated and nuanced than we might initially take them to be. Although on the surface the question simply elicits a statement of fact, any answer that is given in reply is formulated under the influence of a significant set of mitigating factors.

In many cases, upon discovering that an individual has made a certain choice in the types of music they listen to, we often tend to move in the direction of more closely interrogating the matter of why they have made this choice and why they have chosen the particular types of music they do in fact listen to over others. With respect to matters of musical taste, a great deal of intellectual focus has fallen on trying to better understand why particular individuals gravitate towards particular types of music. There is an extensive body of literature which presents various theories attempting to offer an explanation as to the interplay of motivations and factors governing an individual's musical taste. Some have focused on addressing socio-economic status and class standing as factors in taste (Bourdieu, 1984; D. Holt, 1998; Lamont & Lareau, 1988; R.

Peterson & Simkus, 1992; Steiner & Weiss, 1951; Veblen, 1939 [1899]). Others have looked more closely at the social and interpersonal facets of taste (Meyer, 2000; R. Peterson, 1992; R. Peterson & Kern, 1996), while others still have looked at neurological and psychological considerations as a driving force in our musical preferences (Lerdahl, 1992; Levitin, 2006; Mandler, 1975; Minsky, 1981). Although it is useful to recognize the various factors that might inform declarations and expressions of these tastes, in the end, this study, though touching upon themes of musical taste, in no way purports to address matters of motivation with respect to these tastes. Rather than addressing the factors that might lead an individual to prefer certain examples of musical material over others and the factors that might lead this individual to make certain consumptive choices, this study poses equally important research questions concerning the nature and structure of the aggregates of music that serve as the ‘types of music’ to which people might choose to listen, and for which individuals might plausibly come to declare a taste. Listeners often tend to gravitate towards a certain assortment of musical works over others and much intellectual effort has been devoted to the task of trying to understand *why*. However, in contrast this study approaches issues of a listener’s musical choices by probing just a little deeper into the often ignored issue of *for what*. Where a great deal of prior study in the area of musical preference and taste has approached the topic from the point of view of *motivation*, this is a study of musical preference with respect to issues of *aggregation*. It in no way presumes to shed any light on why individuals make the choices they do, but what it does more fully illuminate is the ways in which new assortments of musical works come to be established as ‘types of music’ by looking at the evolving range of ‘types of music’ to which an individual’s choices in musical listening might plausibly refer. This study examines the question of what might feasibly qualify as a ‘type of music’ today as we witness a continued evolution of intermediary forces and

continue to see changes in the structure of the musical aggregates which these intermediary frameworks make readily and conveniently available – particularly in the online realm. In discussing these themes, this thesis looks more closely at some recent developments with respect to the categories under whose headings musical material is being brought together for current-day listeners. It presents an evaluation of the ways in which one new approach to aggregating music online is bringing about several key developments in terms of the range of words and phrases with which contemporary listeners can reasonably, honestly, and accurately answer the question “what types of music do you listen to?”

The study engages with these issues by looking more closely at one case study, the website and music recommendation service Last.fm (www.last.fm), and examining one of the organizational strategies and approaches to the aggregation of music that this online arena employs. In particular, the study examines the software framework that enables Last.fm’s users to “tag” – i.e. assign their own keyword labels to – the music found in Last.fm’s collection and investigates the practices through which users themselves are beginning to play a more prominent role in the annotation and subsequent classification of musical content. Tagging – the name given to the process through which this user-driven labeling of music takes place – will be introduced in greater depth throughout the next chapter (Chapter 1) before the writing embarks further into the practical evaluation of the actual tagging activity being carried out by Last.fm’s users. The next chapter will also introduce the reader to the closely related concept of “folksonomy”, a term coined in 2005 by Thomas Vander Wal as a title for the semantic space and organizational vocabulary whose construction ongoing tagging acts contribute to. Later in the writing, following a closer empirical analysis of the manner in which Last.fm users are labeling content by tagging it, the discussion will also lead to a stronger focus on a third aspect

of Last.fm's tag-based or, if you will, 'folksonomic' organizational strategy, specifically the feature of Last.fm through which tags are employed in informing the aggregation and presentation of music to listeners – the feature of “tag radio”. These three facets combine to form the totality of Last.fm's tag-based recommendations system architecture. Tagging, an act of annotation, is best described as a process. Folksonomy is to be understood as the outcome or product of this process. Tag radio, itself functioning as a mediating framework and as a communicative channel, constitutes the practical application of the outcome of tagging acts in the service of facilitating listening experiences based on the ways in which users have tagged (i.e. labeled) particular works of music.

Given the close ties and obvious interdependency of tagging, folksonomy, and tag radio offerings, it would be somewhat shortsighted to discuss any one aspect of this system outside of the context of the other two. The discussion found in this thesis is therefore formulated around all three of these facets, each a core part of what ends up constituting one overarching system of organization, and this study is structured in such a way that it reflects the primary chain of their dependence on one another. In the chapters that follow, the analysis gradually progresses from the introduction of tagging-as-practice to the empirical evaluation of folksonomy-as-outcome, before concluding with a more thorough discussion of the impacts and effects of tag radio as an application of this organizational paradigm to the task of presenting listeners with aggregate mixes of musical works. To summarize in brief, this thesis study looks at the mediating influence of Last.fm as a notable contemporary mediator in the realm of musical experience by looking at the current articulation of tagging practices, the emerging collective semantic space of folksonomy, and the intermediary framework that builds upon the underlying structures of

tagging and folksonomy and enlists these structures in the process of presenting content to audiences engaged with Last.fm, and, more specifically, with tag radio.

Last.fm – A Case Study

While tagging and folksonomy, two topics central to the discussion here in this writing, are steadily finding broad use throughout the World Wide Web and are by no means limited to one online venue, it is nevertheless useful – both in the interest of brevity and clarity, and in the interest of maintaining a manageable scope – to engage with these subjects by way of a single case study through which the significance and effects of this mediating framework can be investigated. As already mentioned, the subject of the discussion here in this writing will be the popular online music recommendation and discovery arena, Last.fm. Last.fm has been chosen as a case study for this thesis primarily because it is one of the most broadly-utilized services in which tagging and folksonomy are being employed in the aggregation of music for a relatively large user base and listening audience. Established in 2002 in the United Kingdom by a small team of computer programmers, Last.fm has quickly developed into somewhat of an influential player in today's media landscape and has shown itself to have significant clout as one of the new filters through which listeners negotiate their listening habits. At the same time, Last.fm has gathered recognition as a significant new gatekeeper, regulating a growing number of individuals' awareness of musical content. Over the past few years, Last.fm has seen a steady increase in user traffic, as well as a growing level of media coverage and attention. In May of 2007, Last.fm was purchased by the US-based network, CBS, for a price of \$280 million ("CBS Buys Last.FM, an Online Radio Site ", 2007), a buyout which has further fueled Last.fm's growth. Between August, 2007 and August, 2008, Last.fm saw the number of monthly visits to

its service increase by 41.5% (source: www.compete.com). In February 2008, it was estimated that the website had 21 million unique users visiting it at least on a monthly basis, with an estimated additional 19 million individuals engaging with Last.fm's recommendation and discovery services through widgets embedded in other websites (Kiss, 2008). The popularity and already high levels of use of this service, especially in light of its very recent emergence, make it deserving of attention. The widespread use of Last.fm as a recommendation system and filter and signs of its continued growth as a mediator in the cultural landscape further reinforces the assertion made in this writing that Last.fm is a valuable site in which to situate contemporary research as we look to better understand the current state as well as prospective direction of musical listening in the age of the internet.

In dealing with the subjects of tagging and folksonomy through the lens of Last.fm, this study sets out to examine the extent to which tagging practices currently taking place in this online environment and mediating space force us to: 1) recognize the validity and vitality of a new set of terms and headings as musical categories, and 2) include these terms in the list of what we take to be viable 'types of music' to which an individual might listen. In the past, musical works have typically come to be aggregated for its listeners into 'types of music' through the framework of what has now become a familiar and pervasive set of categories used in the classification and filtration of music – namely, musical genres. As a consequence of the widespread mainstream use of genre designations in the aggregation of musical content prior to its delivery to audiences, genres have generally entrenched themselves in the minds of many individuals as the default 'types of music' to which an individual might be expected to listen. The perception of musical genres as default 'types' has become extensively reflected in the manner in which consumptive behaviors and musical taste have been understood, not only in

casual circles but even in scholarly contexts. The conceptual and analytical model that has been most broadly employed in the scholarly goal of better understanding patterns of musical listening has typically centered on identifying listening habits as they relate to a list of musical genres (Aucouturier & Pachet, 2003; F. Holt, 2007; Lambiotte, 2006; Moore, 2001; Negus, 1999b; Pachet & Cazaly, 2000). Empirical studies of the social dynamics of musical audiences and demographics of consumers have likewise often employed approaches and experimental designs founded upon a similar range of default categories to which musical listening has generally been presumed to relate (Bennett, 1999; Gans, 1974; Hennion, 2003; North & Hargreaves, 2007a, 2007b, 2007c; Rentfrow & Gosling, 2007; Roe, 1992). Today, however, as technological circumstances and mediating approaches evolve, the continued kneejerk deference to genre categories as the sole ‘types of music’ for which individuals might declare a preference is becoming increasingly tenuous. What this study will show is that through environments such as Last.fm a set of circumstances is introduced in which musical genres no longer hold as dominant a position in framing the clusters in which musical works might be encountered and experienced as they previously have held. Up to this point, it could be argued that the question “what types of music do you listen to?” might just as well have been phrased “what genres of music do you listen to?” However, what will be noted here in this thesis is that in the case of tag-based listening and through the technologies of tag radio, the range of the ‘types of music’ to which an individual might listen is no longer as implicitly limited to the terminology of musical genre as it once might have been. This study examines some of the new headings individuals are citing today when describing the ‘types of music’ they listen to, presenting the results of an investigation of tagging and folksonomy that takes the reader through an empirical evaluation of

observable practices taking place in the realm of Last.fm and then leads them into a more in depth discussion of the theoretical consequences and implications of this development.

Interpretive Framework

In looking at the topics of tagging and folksonomy through the case study of Last.fm, this thesis centers on two overarching research problems. First, the study involves an examination of the observable practices through which users are taking matters of content's classification into their own hands through tagging practices – a set of practices that are introduced and described in greater depth in Chapter 1. Next, it provides an evaluation of the ways in which the folksonomy that arises from these tagging practices is then implicated in processes surrounding the clustering of music into listenable experiences through the Last.fm framework. To summarize, this study will balance an investigation of the effect that tagging and folksonomy are having on contemporary issues surrounding music's *annotation* with an investigation of the parallel effects that this same system is having on issues of music's *aggregation*. These two facets of the study are explained in greater detail below.

Tagging: The Labeling of Music

The first major portion of this writing is devoted to examining tagging and user-driven practices of labeling music. The analysis will look at the ways in which granting users the freedom to tag music in a manner of their own choosing has resulted in several notable outcomes. First, it will be shown that the transfer of responsibility from professional cataloguers to the users themselves results in a situation in which already familiar labels (i.e. music's genre headings) now stand to be applied to works of music to which they would not have previously been applied. Secondly, beyond allowing for the reconfiguration of existing links between works

and existing categories, tagging technologies facilitate the introduction of entirely new labels. This facet of the discussion will itself be subdivided into two components. First, the analysis will show that tagging makes it possible for musical works to become associated with a slew of new and emergent genre headings that have thus far not yet been recognized as categories of music in the schemes employed in music's mainstream organization. Second, the analysis will show that individuals are also often citing non-genre contexts in the course of tagging musical works and, in doing so, are expanding processes of music's classification beyond the categorical scaffolding of musical genre in its traditional forms.

This analysis of tagging practices as contributing inputs in the building of Last.fm's folksonomy involves a statistical evaluation of raw data pertaining to the uses of various terms and phrases as tags. This data was gathered over the course of the research process of this thesis, i.e. between January, 2008 and January, 2009, through Last.fm's Application Programming Interface (API). Having only recently been made available to the public, Last.fm's API data is indispensable as it allows this research, and the conclusions drawn from it, to be empirically substantiated and supported. This study capitalizes on the opportunity to use this newly-available data by employing several datasets gathered through the API framework and using them to evaluate patterns and developments in tag use in the case study of Last.fm. The study has been designed to not only look at the current status of tag use, but also to present an examination of changing levels of tag use over time. In presenting the numerical statistics in their raw form, as well as through conducting several basic statistical operations in order to unearth patterns from the data, this study is able to not only draw several conclusions concerning the current structure of Last.fm's folksonomy, but also to make a series of projections concerning the directions in which tagging practices might be likely to go in the future.

Tag Radio: Listening to Music According to its Labels

After evaluating the tagging practices contributing to the growth of Last.fm's folksonomy, the writing builds from a discussion of the inputs feeding this tag system to further examine the significance of these tags as influential in the regulation of consumptive behaviors and to note the outputs stemming from this same system. Research presented in this study will address the effects of tag-based organization on a growing number of contemporary musical listening experiences. Last.fm will be presented as more than simply a database in which a record of the tags that users have ascribed to content is maintained. The discussion will address the ways in which tags come to be implicated in the construction of consumable aggregates of music through the technology of tag radio. This becomes a notable development given that users of Last.fm, when listening to music through tag radio, are frequently building their listening menus and cultivating their musical preferences in ways that take them beyond the habits and consumptive behaviors that would have more commonly been formulated up to this point. As the practices of both music listening as well as musical discovery begin to take place through the framework of tag radio, important questions come to the fore concerning how this evolving feasibility space for musical experience serves to expand the range of aggregates in which music can plausibly be enjoyed by its audiences and subsequently leads to both a growth in the number of, and a change in the nature of, the terms and phrases that stand to be plausibly invoked in the contemporary expression and declaration of musical taste.

Chapter Outlines

The structure of this writing takes the following form. Chapter 1 – *Tagging & Folksonomy* introduces the principles underpinning the central subjects of this study in greater detail. The chapter elaborates upon the themes of folksonomy and tagging systems and reviews the relevant theories and scholarly literature relating to this nascent phenomenon. This chapter provides a theoretical outline of the potentials of these new organizational approaches and the principles and organizational philosophies that inform their implementation. This theoretical base will be the foundation onto which subsequent chapters will erect a closer empirical analysis of tagging in practice. Chapter 2 – *Emerging Labels: New Genres*, begins the shift towards a more detailed empirical analysis of the various ways in which Last.fm’s users are putting into practice the principles discussed in Chapter 1. Much as the title suggests, this chapter looks specifically at evaluating the ways in which Last.fm’s users are developing and publicizing new genres in the act of tagging music. Chapter 3 – *Emerging Labels: Non-Genre Contexts*, continues in the empirical evaluation of tagging practices and user-driven contributions to Last.fm’s folksonomy by looking at the ways in which users are not only citing new genre headings in the act of tagging music but are also often citing a range of terms and phrases that do not purport to circumscribe a genre of musical works. In this chapter, a cursory overview of some of the non-genre contexts which taggers often gesture to when labeling music is presented, and, much as the last chapter drew on empirical research to support its claims regarding the growth of new genre terms, this chapters draws upon data gathered in a statistical reading of Last.fm tagging patterns in order to support claims relating to the emergence and proliferation of non-genre labels in Last.fm’s folksonomy. As Chapter 3 draws to a close, the discussion begins to shift its focus away from tagging practices towards the treatment of Last.fm’s folksonomy as an intermediary

framework. Chapter 4 – *Tag Radio*, looks at the function of Last.fm as a recommendation service and examines the role that tags are beginning to play in the contemporary aggregation of music. This chapter focuses squarely on the manner in which all of the types of tags discussed in chapters 2 and 3 stand to become underlying criteria in the formulation of listening experiences specifically through Last.fm's tag radio feature. Using Benkler's (2006) theory of "feasibility spaces" as a theoretical lens through which to examine the differences between tag radio and the intermediary technologies that have preceded it, this chapter presents tag radio as a tool which contributes in broadening the scope of feasible musical listening acts. The discussion on the subject of tag radio will examine the ways in which users can now conveniently build their musical diets through the criteria of individual tags, thereby ushering in an era in which any number of unique and unconventional terms can become the basis for an aggregate of musical works and an era in which the mix of music to which any particular tag has applied needs to be more fully appreciated as a 'type of music' in its own rite. Chapter 5 provides a summary and review of the discussion that has taken place throughout this writing. It generally serves to tie together all the various threads running through the discussion and analysis and it offers a closing argument with respect to the effects that tagging and folksonomy together with the intermediary framework of tag radio are having today, and are likely to have to an even greater extent in the future.

Chapter 1 – Tagging & Folksonomy

Tagging and Folksonomy: An Overview

The central discussion of this thesis centers on two aspects of one approach to the online organization of music: that of tagging and folksonomy. It is useful to begin with a solid understanding of what the terms tagging and folksonomy mean so as to ensure conceptual clarity.

The term “tagging” refers to a set of web-based practices in which individual users apply keywords to online digital content, thereby labeling it with their own terms and phrases. As Chris Anderson (2006) writes, when tagging content, users are essentially “typing in any words they choose to make their own categories” (p. 161). As one browses the contemporary web, they will likely come across countless websites that provide a feature through which the content in their respective catalogues can be annotated by users. Over the course of recent years these tagging features have become a core characteristic of the overarching shift to “web2.0” – a catchphrase coined by author Tim O’Reilly (2005) as a means of referencing the emerging set of online arenas in which user contributions are not only allowed, but invited. The origins of tagging practices on the internet are closely tied to the development of the website and online social-bookmarking service, del.icio.us (www.del.icio.us). Its founder, Joshua Schachter, launched the site with the vision of implementing some form of user-generated labeling in the organization of website bookmarks. Though it was not necessarily the first service in which user-driven tagging was taking place, del.icio.us certainly can be credited with popularizing the concept of tagging, introducing it to a broad population of users for the first time. Since the debut of del.icio.us in 2003, tags have become a feature of online organization schemes in numerous contexts and have

been utilized with various forms of content found or made available on the web. Tagging approaches have come to be employed in the classification of 'blogs' in the case of online blog-hubs, such as Technorati (www.technorati.com). Furthermore, YouTube (www.youtube.com), Google Video (video.google.com), and Hulu (www.hulu.com), have all begun to employ tagging features in conjunction with their respective catalogues of streaming video. Tags have also been extensively utilized in relation to photographs, most notably in the case of the online photo repository site, Flickr (www.flickr.com). In 2005, Amazon (www.amazon.com) introduced tagging features to the organization of content which they offer through their catalogue. Likewise, the Internet Movie Database (www.imdb.com) has also recently adopted tagging as an organizational framework used in helping its visitors navigate the films that are registered in its database catalogue. These are just a handful of prominent examples in which tags have been implemented in the organization of content over the course of recent years. Of course, in this thesis, the interest falls only on the case of Last.fm, whose administrators implemented tags and introduced a tagging system to the site's repertoire of features and services in August, 2005.

In terms of its principles, and in terms of the underlying philosophies that inform its use, tagging is part of a broader overarching contemporary shift towards a renewed "culture of participation" in online contexts (Schonfeld, 2005). As Leonhard (2008) explains, "we are now witnessing a seemingly ubiquitous trend to media forms that allow, or better yet, promote participation [...] and user engagement" (p. 56). In the midst of this trend we are witnessing a growing number of instances in which consumers are adopting roles that combine the functions of consumers with those of producers (Leonhard, 2006; Tapscott, 2006; Toffler, 1987), thereby establishing the collective of web-users as an entity that Dan Gillmor (2004) has famously called "the former audience." While the actions of this former audience in the production of user-

generated (or remixed) content has already garnered a great deal of attention (Jenkins, 1991, 2006; Lessig, 2001; Tapscott, 1999, 2006), we frequently overlook the fact that processes relating to the labeling of content are also being opened up to the contributions of users, and that these users are participating more actively not only in processes of production, but also in the indexation and annotation of content already in broad circulation. A task for which a small group of professionals has typically been responsible is now turned over to the collective of individuals that make up an audience of consumers – in essence, being ‘crowdsourced’ (Howe, 2006, 2008). In the past, professional cataloguers and taxonomists have typically held positions of greatest influence in the development and implementation of particular schemes for the organization of cultural content (Fidel, 1994, p. 573; see also: Weinberger, 2007, pp. 46 - 58), but with tagging it is increasingly the cumulative experience of individual users that guides processes of classification which these individual users would previously have had arguably much less direct control over. In commenting on the nature of media in the mid-twentieth century, Adorno and Horkheimer once wrote that “there is nothing left for the consumer to classify as producers have done it for him” (Adorno & Horkheimer, 1944, p. 125). Following the popular implementation of tagging systems in online contexts, one might sooner assert that in today’s day and age there is actually relatively little need for the producers to classify at all, as it is the consumers themselves who take on this responsibility through acts of tagging. As Jeff Howe (2008) goes on to explain, “just as librarians once created indexes to organize the contents of their libraries by subject matter, Web users are increasingly indexing both the content they create and consume with ‘tags’” (p. 239). When a site includes a feature that allows users to tag content, individuals are invited to contribute to the organization of whatever content the site provides by way of recording and registering with the site’s database any number of personally chosen terms or

phrases (i.e. tags) which then get associated with that content as part of its ‘metadata’ layer¹ (Howe, 2008, p. 240; Weinberger, 2007, p. 21). Kevin Kelly, cofounder of *WIRED Magazine*, describes tags as “a public annotation – like a keyword or category name that you hang on a file, Web page or picture” (in Tapscott, 2006, p. 41), or, as in the case of Last.fm, one that you attach to works of music.

Over time, practices of tagging give rise to a new semantic space called a folksonomy. The term folksonomy was coined by Thomas Vander Wal (2005) who established and popularized the term as a way of alluding to the fact that this emerging tag-based organizational structure exhibits hybrid traits of two sensibilities – the bottom-up ideals of folkness and the organizational utility of a taxonomy (see also: Green, 2005; Howe, 2008, p. 240; Tennis, 2006; Weinberger, 2007, p. 165). Anderson (2006) defines folksonomy as “after-the-fact categorizations based entirely on whatever people choose to say is meaningful about something” (p. 162). Weinberger (2007a) defines folksonomy as “an ordered set of categories that emerges from the way people tag items” (p. 165). In summary, while the term ‘tagging’ refers to the activity through which the classification and ordering of content takes place, the term ‘folksonomy’ refers to the resulting semantic space and organizational vocabulary which develops as the result of tagging activities.

In principle, tag systems are generally underpinned by a rather straightforward set of organizational philosophies. Tagging provides a means of recording the sentiments of consumers and capturing the ways in which they, rather than content’s producers, believe the content in question should be labeled (E. Peterson, 2006). In drawing on the contributions of users rather than a small group of elite professional cataloguers, tagging and folksonomy together function as

¹ The term metadata can loosely be understood as the supplementary record concerning a content’s qualities, nature, traits or characteristics which is linked to (and persistently associated with) a given piece of digital content. Metadata is essentially information about information; data about the data.

a counterweight to what some authors have described as the centrality and authority of traditional taxonomies (Feinberg, 2006; Kroski, 2005). By allowing for the transfer of the responsibility for the indexation of content onto the users, tagging systems complicate the relative monopoly of influence that professional cataloguers have thus far held in the placement of particular music under particular headings. Specifically in the realm of music, those on the side of the recording industry have maintained control of a taxonomy of music that has served them well in the goal of facilitating and ensuring the success of commercial marketing practices (F. Holt, 2007).

According to Negus (1999a) the music industry has developed very specific techniques for structuring the musical realm and “intervening in the world” (p. 504). Tagging throws a wrench into this process. When one looks at the scenario emerging around tagging technologies, it appears that today the “traditional record industry is simply no longer invited to the party” (Leonhard, 2008, p. 38). Instead, processes are beginning to emerge in which the meanings and interpretations end-listeners take away from their experience of music are being privileged over the classificatory wishes of music’s producers. In empowering users with the opportunity to contribute in the labeling and classification of content, tag systems harness what Shirky (2005) calls “user-produced organizational value.” As Kroski (2005) goes on to explain “in this new age users have been empowered to determine their own cataloging needs. Metadata is now in the realm of the ‘everyman’” (p. 1; see also: McBride, 2008). It is, as Leonhard (2008) insists, that in the contemporary climate of the web in which the contributions of users are suddenly beginning to be seen as resources of tremendous value, “the power is starting to move to the edges of the network, rather than continuing to come from the middle” (p. 53). As power over processes of annotation and classification moves to the periphery (i.e. from the media industries to the users and audiences themselves) the process of classifying music is becoming significantly more

complex than it generally was under the purview of professional cataloguers on the side of the corporate production of music – on the side of the music industry (Frith, 1992; Garofalo, 1999; Negus, 1998, 1999a, 1999b; Wallis, 2006).

When looking at the effects of tagging on the classification of content in the realm of online folksonomies, one will immediately see that there are significant developments taking shape on account of the fact that the responsibility for the annotation of content has now been entirely turned over to a collective of new labelers. When individual users are given the right to tag music, works often find themselves associated with labels with which they were never previously or formally associated. Even when considering only the narrow scope of options with respect to a musical work's membership in one of a short list of familiar popular genres, now that users have been given the freedom to tag music as they wish, works of music do not always find themselves affiliated with the same genre under which professional cataloguers have situated them. A song that professional indexers might once have classified as jazz, some listeners may think of as soul. A work which a professional cataloguer might have classified as rap, users might label as pop or R'n'B. Tagging democratizes the designation of established categories, empowering users and granting them greater say with respect to the heading or label that a work of music might be affiliated with. In and of itself, this is a significant development as it means that music now stands to be classified according to genre based on how listeners, and not producers, believe it should be classified. Although authors and artists have generally always had an idea of how their work might be situated amidst a broader cultural order, these ideas do not always match the way audiences might understand, interpret, and subsequently classify these very same works (Weinberger, 2005). Evaluating the differences of opinion between professionals and “the wisdom of the crowd” (Surowiecki, 2004) with respect to the subjective

processes of music's classification into genre categories can potentially be a rich area for further inquiry.

Non-Exclusivity: There is No Shelf

Tagging technologies not only foster a situation in which a work might come to be labeled by users with a heading that differs from the one professionals would have used, but they also enable a situation in which a work can be labeled with different tags by different users. Taggers often do not agree with where professionals have classified a particular work, but even more importantly, taggers often do not agree amongst themselves either. Different individuals will often express a different opinion with respect to which category a work might be affiliated with. Rather than demand that a consensus be reached, folksonomies allow for, and in many ways benefit from, differences of opinion between various individual taggers.

Taxonomic approaches to order have typically demanded that an item be situated in a category, essentially exhibiting exclusive membership in one container. Clay Shirky describes taxonomy as a system in which content gets "organized into non-overlapping categories that get more detailed at lower and lower levels – any concept is supposed to fit in one category and in no other categories" (as cited in Anderson, 2006, pp. 158 - 159). To date, taxonomy has proven itself to be a relatively effective strategy and has been used extensively in processes of cultural classification. But one could argue that the perceived value of taxonomy as an organizational approach, particularly in the contexts of the organization of music, hinges on the fact that, until recently, when one looked to organize music, they were typically faced with the task of organizing some form of tangible commodity or physical good. The taxonomic framework, where a concept is supposed to fit in one category and no others, has become an incredibly

practical strategy given those circumstances. For as long as recorded music has existed in formats that require it to be affixed to a medium (i.e. wax cylinder, vinyl record, LP, 8-track cartridge, cassette tape, or compact disc), its producers, distributors, promoters, marketers, and retailers have had to figure out the most effective way to organize music as a set of tangible goods, as physical commodities that occupied space and had a certain mass. The classification of music into aesthetic or cultural categories has typically reflected the fact that we have recognized that the contexts in which these classifications will end up being applied in a practical capacity has been one which has involved the sorting of objects in the real world. As such, the classification of music according to a taxonomy has typically taken place with the implicit goal of best facilitating the subsequent sorting of music in the real world (Negus, 1999b; Pachet & Cazaly, 2000). The question of how music should be classified has become a euphemism for the question of where particular musical products should be placed. Anderson (2006) refers to this as accommodating the “physics of materiality” (p. 159) by developing a system for the organization of musical products, and not music itself. Today, following the rise of the internet as a distribution and mediation channel and following the extensive migration of musical consumption into the digital realm, the contemporary framework through which music is made feasibly available to listeners and audiences does not demand the same things from our approaches to classification that prior circumstances have demanded. When recorded works of music take on the form of a digital file which exists (if one can even say it ‘exists’) only in a database or on a hard drive as a string of code, they cease to be affixed to a tangible medium made of atoms of matter (Negroponte, 1995). Many have already noted that in the contexts of digital catalogues, playlists, and databases, music has come to exhibit an “immateriality” (T. McCourt, 2005; Styven, 2007) and an “intangible essence” (Jones, 2000), earning it the status of

a “hypermobile commodity” (F. Holt, 2007, p. 28). Many thinkers dealing with issues of web-based classification have begun to foreground the fact that now that musical content no longer occupies space nor has a mass, we should reformulate our way of thinking with respect to the approaches we adopt in the organization of music now that we no longer necessarily have to accommodate the accompanying task of finding a place for tangible products in real-world spaces (Fields, 2007; Gruber, 2007; Shirky, 2003, 2005; Steels, 2006; Weinberger, 2005, 2007). Simply put, in an online environment, “there is no shelf” (Shirky, 2005). This change in circumstances opens up a new realm of possibilities when it comes to the range of organizational approaches that can successfully be adopted – possibilities which the system architecture of tagging and folksonomy takes full advantage of.

In contrast to the demand for unitary membership put forth by taxonomic philosophies, in the contexts of a folksonomy tags are allowed to function in an entirely non-exclusive and non-exclusionary manner (Golder & Huberman, 2006). Tagging repudiates the tenets of a taxonomic approach in which an item is required to fit in one category and in no others. In tag systems, the use of one term as a tag for a particular item does not preclude the use of any number of other terms in relation to the same item – even if subsequent tags might be considered contradictory to the first. As Weinberger (2007) explains, in the realm of folksonomy, “allowing customers to tag items lets the products be in multiple categories at once” (p. 189). Tags function as labels, but the content to which they apply is not contained within them in the same way that we have generally thought of content as contained within a category. Since there is no material content that exists in any tangible sense, the items that are being tagged don’t have to be ‘contained’ anywhere, and while, as Weinberger says, products can *be* in multiple categories at once, this is a very different sense of ‘being’ altogether. Once again, as Shirky writes, “there is no shelf” (Shirky, 2005); but

there is also no object. Because the things we are labeling don't have to be situated anywhere in a traditional physical sense, the relationship between works and the tags with which they are associated is allowed to remain one of affiliation, not membership. A work is free to be affiliated with many different tags at once and the types of "either/or" binaries associated with the tenets of conventional classification are entirely avoided (Crawford, 2006; Kroski, 2005). When multiple terms get associated with the same work, the perceived significance of each term in relation to its neighbor can be figured out based on the relative number of times that each of the different terms has been applied to that item. In a way, the sum total of the tags affiliated with an item together with the information pertaining to their relative popularity and use with respect to that item end up constituting a rather complex and unique signature for the content in question – a kind of tag fingerprint. This fingerprint, which contains information about not only which terms have been cited in tagging this content but also how often each term has been cited, is then frequently depicted in the form of tag clouds.

The Relative Popularity of Tags: An Introduction to Tag Clouds

A tag cloud is a textual graphic that serves as a representation of the manner in which a particular item has been tagged or a representation of the relative popularity of tags in the folksonomy in general. In either case, tag clouds serve two general functions. First, they list which tags have been used. Second, they provide a sense of their relative popularity.

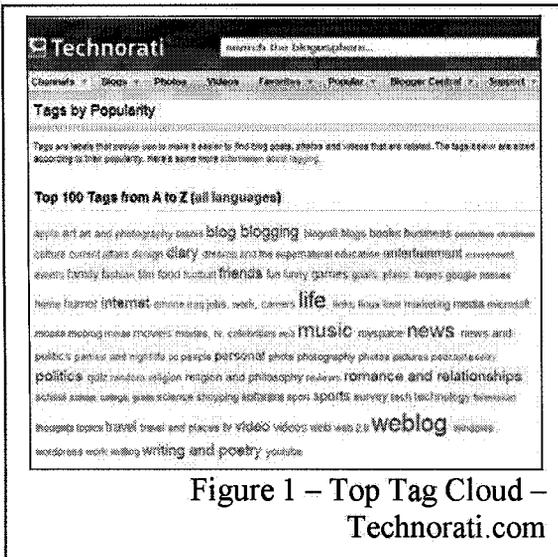


Figure 1 – Top Tag Cloud –
Technorati.com

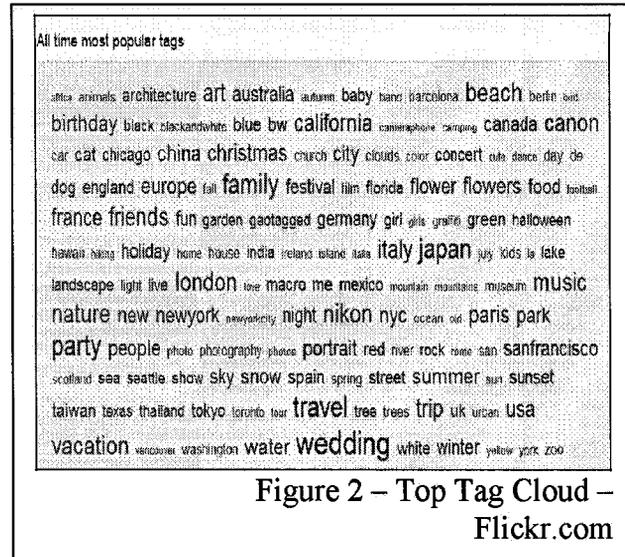


Figure 2 – Top Tag Cloud –
Flickr.com

In a tag cloud, the relative weight and popularity of the different tag terms can be expressed through several interpretive strategies. In some rare cases, the weight of the different tags – i.e. their respective levels of use – is represented in the form of color-coding in which various hues represent varying degrees of prevalence. In most cases, a tag's relative popularity is depicted by varying the size of the font in which a term is displayed (see Figure 1, for example). This strategy is used by del.icio.us, the site which popularized tagging and folksonomy, wherein a tag cloud is defined as “a list of tags where size reflects popularity” (<http://delicious.com/tag>). Weinberger (2007) provides a similar definition, calling tag clouds “an alphabetized paragraph, with the font size of each tag indicating in relative terms how many times the tag has been used” (p. 162). The strategy of indicating a tag's relative popularity by varying its font size is the approach used for the tag clouds encountered through Last.fm. As an introductory example, one of the tag clouds for a musical work selected arbitrarily from Last.fm's catalogue is shown below (Figure 3). The track is “Ares” by Bloc Party. Given that a tag cloud reflects a tag's popularity by varying the size of the font in which it is displayed, it is immediately obvious that in this example the phrase “play it loud” has been used most often as a tag, while phrases such as

“superior music” and “audioase” garnered less use, and that tags like “wow” and “hypnotic”, for example, have been used even less frequently in relation to this particular track.

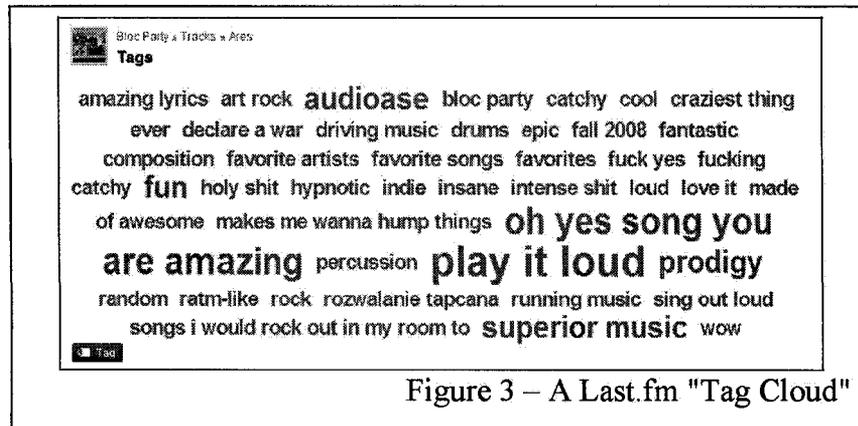


Figure 3 – A Last.fm "Tag Cloud"

Once again, because tags are allowed to relate to a work in an entirely non-exclusive way, their affiliation with the types of categorical headings now being cited as tags become infinitely more complicated and complex than such affiliations would have been in the contexts of a taxonomic organization in which a song was either clearly in or out of a set (Brown, 1979, p. 189; see also: Jacob, 2004). The relationship between musical works and the categorical headings of recognizable musical genres in the realm of folksonomy differs significantly from the way this same relationship was articulated in taxonomic contexts. In the realm of tagging, because works don't have to seek membership in a category, they often find themselves labeled with a number of different genres simultaneously. Songs that some consider to be *blues* music and therefore tag accordingly, others might think of and tag *classic rock*, while others still may tag as *reggae* or *country*. In fact, this is precisely the mix of genres which an assortment of Last.fm users have claimed should be associated with the song “I Shot the Sheriff” by Eric Clapton.

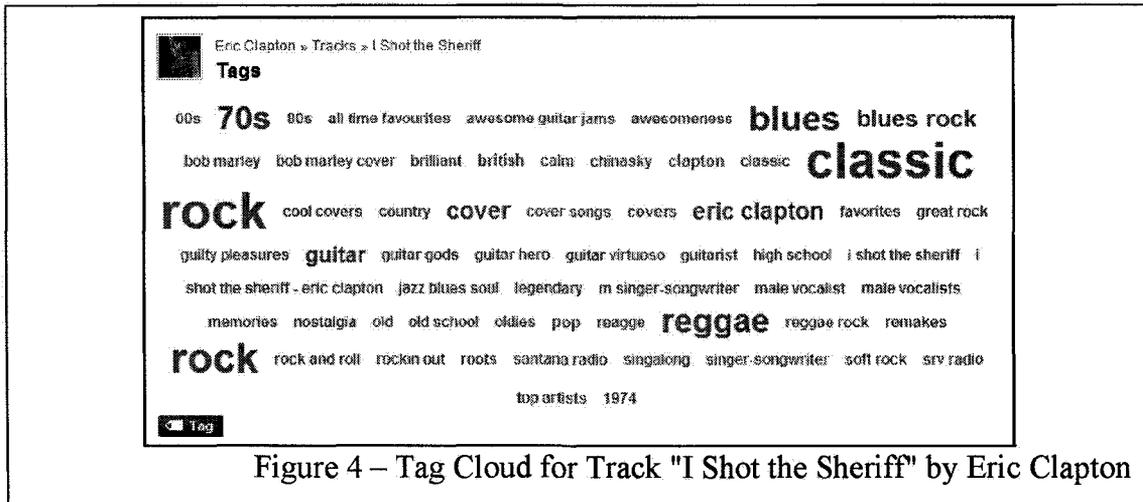


Figure 4 – Tag Cloud for Track "I Shot the Sheriff" by Eric Clapton

Likewise, the architecture of tagging and folksonomy allows music that has been tagged by some as *pop* or *ragtime*, to be tagged by someone else as *jazz*, by someone else as *swing*, by yet another individual with the label *big band*, and by others still as *easy listening* and *oldies*. This mix of labels describes the tagging activities surrounding the song “Come Fly with Me” by Frank Sinatra.



Figure 5 – Tag Cloud for Track "Come Fly With Me" by Frank Sinatra

In a very few rare cases, certain works of music show the strong dominance of one genre term, therefore essentially earning themselves the status of what one might consider a ‘prototype’ of the genre in question (Rosch, 1973; Rosch & Mervis, 1975). An example of this is the track “La

"Vie En Rose", performed by Louis Armstrong, which shows a disproportionately high use of one genre tag above all others – namely, *jazz*.

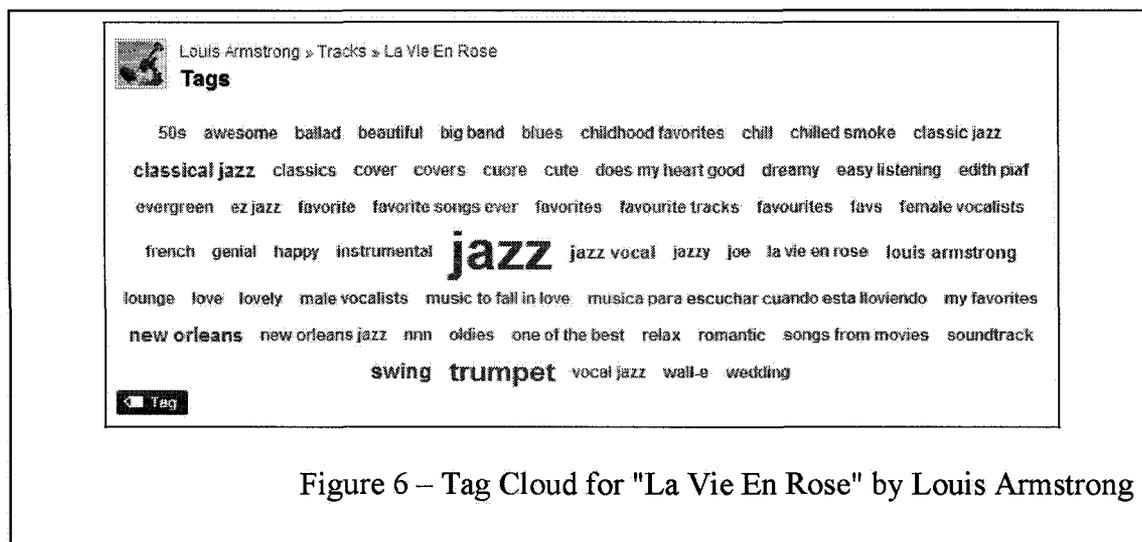


Figure 6 – Tag Cloud for "La Vie En Rose" by Louis Armstrong

The lack of mention of other genres suggests that this track is situated solidly within the genre of jazz and that very few individuals associated this music with any other genres. But one will notice that, even in this case, though jazz is certainly the most popular tag, it is nevertheless not the lone tag category with which this song has come to be associated. The tags *swing*, *big band*, and *easy listening*, along with dozens of others, make an appearance, though cited to a lesser extent. In general, when surveying the types of tag clouds encountered throughout Last.fm's folksonomy, one will notice that a tag cloud such as this one which shows a significant predominance of one lone tag term is the exception, and not the rule. The assortment of tag clouds shown below nicely illustrates this reality. Aside from each having been tagged with *rock*, among them, these tracks have also been tagged *metal*, *new wave*, *punk*, *indie*, and *Britpop*. In contrast to the manner in which genre has typically been articulated in prior organization schemes, in the realm of tagging suddenly we see the presentation of music as affiliated with a plurality of genres in varying degrees rather than situated within a genre in a matter of binary membership.

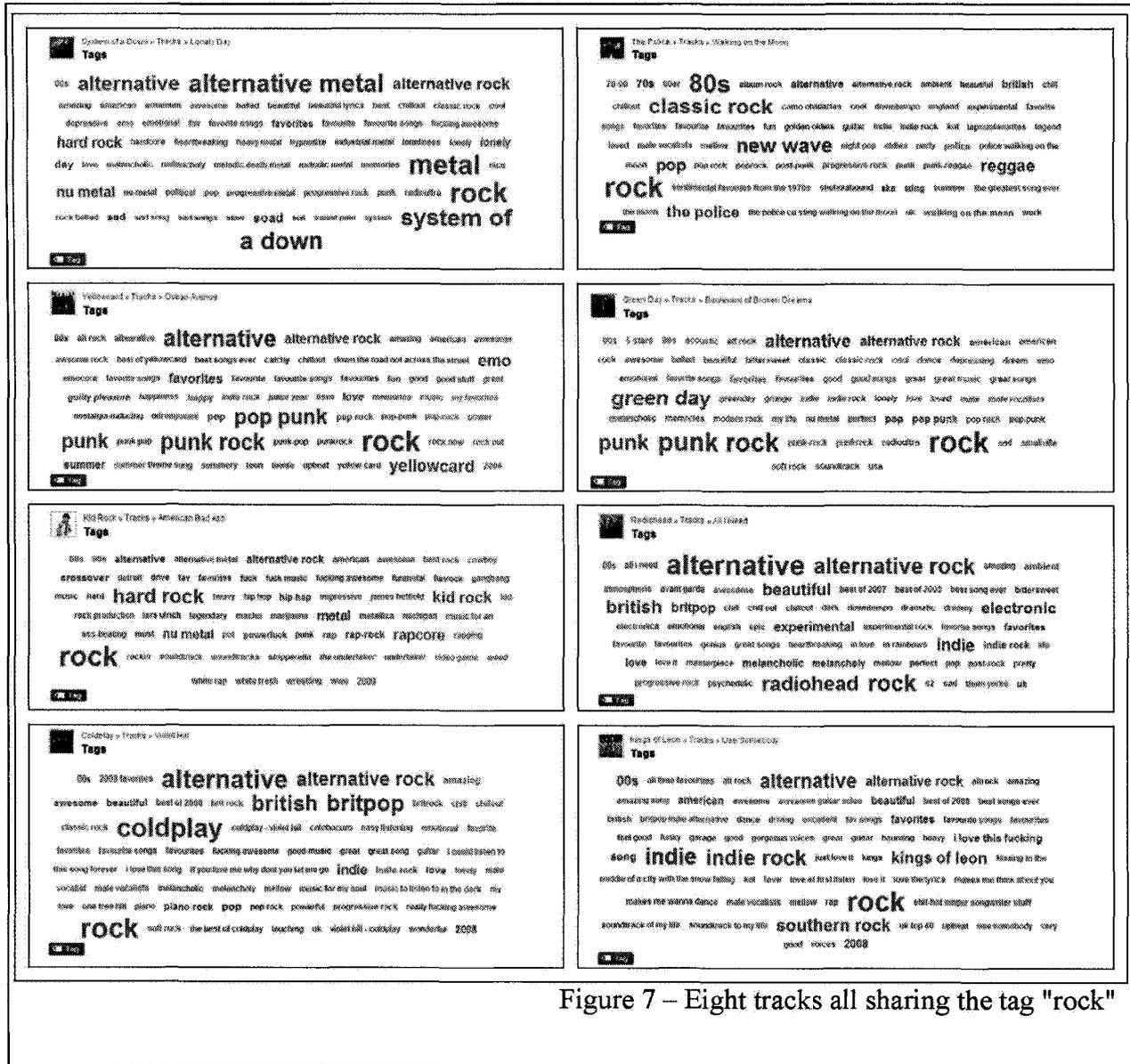


Figure 7 – Eight tracks all sharing the tag "rock"

belonged constitutes a noteworthy development and this facet of the characteristics of tag systems is indeed deserving of further examination if we are to better understand the full effects of tagging on the musical order. However, such considerations admittedly fall outside of the scope of this study. What this study does instead focus on to a much greater extent is the ways in which the invitation extended to users to tag music in any way they wish has allowed individuals to enlist less conventional terms when tagging content and has allowed taggers to label musical works with words or phrases that have not typically been part of music's widespread and

mainstream classification. In the end, the act of tagging an item is by no means analogous to the task of answering a multiple-choice question. What makes the architecture of tagging and folksonomy in the contexts of Last.fm incredibly significant is the extent to which users are not only realigning music with existing headings but are also beginning to cite new headings. Taggers are often putting old labels in new places, but they are also frequently giving content entirely new labels altogether.

Tagging and the Introduction of New Labels

In granting users the freedom to employ their own keyword terms in the labeling and indexation of content, tagging systems allow users to cite words drawn from a lexicon that extends well beyond an established list of already-recognized popular musical genres (Guy & Tonkin, 2006; Macgregor & McCulloch, 2006). One of the core tenets of the organizational philosophies underpinning the development of tagging technologies is that the range of terms taggers are allowed to cite in the act of assigning labels to music should remain fundamentally unconstrained. This aspect of tagging systems is highlighted by Walker and Morrow et al. (as cited in Auray, 2007) who describe tagging practices as “feral and uncontrolled”, as well as Hammond, Hannay, Lund, & Scott (2005) who describe folksonomies as “free- structured” (see also: Berners-Lee, T as cited in Kipp & Campbell, 2006). As a means of contrasting the organizational approaches of folksonomy to the controlled vocabularies of its taxonomic predecessors, Elaine Peterson writes that “folksonomies are unsystematic. One simply creates and applies tags on the fly” (Peterson, 2006, p. 3). Jacob (2004) likewise recognizes that tagging is “unsystematic” and “inherently creative” (p. 9). Finally, according to the description of tagging provided on the tagging homepage for the social bookmarking site Del.icio.us, “you

make up tags when you need them and you can use as many as you like” (<http://delicious.com>). Because tagging is unsystematic and because the range of terms that can be employed is unconstrained, users are in no way required to restrict their tagging activities to the ongoing citation of the same old headings. Taggers are quick to realize that when it all boils down to it, any word (or set of words) is eligible for use as a tag.

Users of Last.fm are indeed availing themselves of the opportunity to employ tags that go beyond the terminology under which music has hitherto been classified. Having been granted the freedom to create and apply tags on the fly and to do so in a manner that is unsystematic, feral, and uncontrolled (Walker and Morrow et al. as cited in Auray, 2007), Last.fm’s users have, over the course of the four years since the introduction of this folksonomy, come to cite an ever-growing range of terms and phrases when tagging music. For example, 31,457 different tags and tag phrases within Last.fm’s folksonomy contain the word “a.”² The word “I” is used in 35,808 different tag phrases,³ and over 36,000 different tag phrases contain the word “and”, not even counting the additional tags which feature the letters “a-n-d” in longer words such as *hand*, *Iceland*, or *dandy*. The word “the” is employed in a whopping 88,575 different tag phrases,⁴ without counting the additional tag phrases that include the terms *they* or *them*, or words like *theory*, *ethereal*, *weather*, etc. Last.fm’s users have also cited over 3,300 different unique phrases containing the word “happy” when tagging music, including the tags “happy hardcore”, “happy metal”, “happy music”, “happy feet” and “makes me happy.” Taggers have employed over 10,000 unique phrases containing the word “band” – including “big band”, “jam band” and “best band ever” - and over 36,000 tags containing the word “music”, including “world music”,

² <http://www.last.fm/music?q=a> *NOTE: This figure cites the number of tags featuring the letter on its own, as a word, and does not include any additional tags which have the letter “a” in them.

³ <http://www.last.fm/search?q=I&m=tags>

⁴ <http://www.last.fm/music?q=the&m=tags>

“anime music”, “game music”, and “morning music”⁵. 14,000 unique phrases used by those contributing to this folksonomy include the word “best”⁶, 1,600 include the term “mellow”⁷, and over 1,200 include the term “lovely.”⁸ When all is said and done, this massive unconstrained tag-lexicon contains hundreds of thousands of unique words and phrases/expressions that taggers have at some point associated with the various works found in Last.fm’s catalogue.

The sheer breadth of the vocabulary of tagging becomes incredibly important to the discussion at hand because the range of contexts to which tags refer is potentially as expansive as the number of terms themselves. Just as there are no rules with respect to the terms that are eligible to serve as tags, there are likewise no rules with respect to the qualities or characteristics pertaining to music to which a tag might refer, and no rules with respect to the priorities, purposes, or functions that a tag should serve (Golder & Huberman, 2006). If a user finds a particular term or phrase to be an appropriate label for a particular work of music, nothing stops them from using it to tag that content. Once again, it is useful to point out that tagging is by no means a multiple-choice question. There is no ‘list of options’ to which we must refer when tagging music. Simply put, anything goes. If a user wishes to tag a song with an existing popular genre heading such as rock, country, or hip-hop, they are free to do so, but they are equally at liberty to label music with any number of other non-genre terms that they find meaningful, relevant, or worth mentioning. It is indeed the case that, on the one hand, as users tag music by citing one a number of popular genres, the genres with which particular works end up being affiliated do not necessarily correspond with the genre with which said work may have been associated in a professionally-driven musical taxonomy. What is arguably even more significant

⁵ <http://www.last.fm/search?q=music&m=tags>

⁶ <http://www.last.fm/search?q=best&m=tags>

⁷ <http://www.last.fm/search?q=mellow&m=tags>

⁸ <http://www.last.fm/search?q=lovely&m=tags>

is that these new labelers are free to invoke new labels in the process of tagging music. In the chapters that follow, the empirical analysis centers on examining the way in which users have availed themselves of this freedom, and noting with greater precision how Last.fm's users have actually annotated music when tagging it so as to understand what is actually transpiring in this new arena.

The citation of new labels as tags in the classification of music in the contexts of Last.fm generally takes one of two overarching forms, the examination of which will take place in greater depth in each of the next two chapters. On the one hand, it will be noted that tagging often functions in the service of facilitating the labeling of music with terms that act to establish what one might reasonably consider a nascent musical genre category. Therein, the discussion will look at the extent to which emerging 'new genres' are often quickly catching on, resulting in music's visible and noticeable affiliation with previously inexistent or unrecognized genre headings. Chapter 2 will focus precisely on evaluating the extent to which Last.fm fosters the rapid proliferation of new genre headings as popular labels in the tagging of musical works. Tagging practices also allow for the labeling of music with terms that in no way purport to being genre categories. Having been given the freedom to tag music as they wish, users are also taking advantage of the fact that they are not required to cite only genre or genre-like labels in the tagging of music. It will be noted that when tagging music through Last.fm, users are frequently citing numerous terms that depart from the semantic space of musical genre and instead refer to non-genre contexts. In the act of citing non-genre labels, users are put in a position in which they are contributing in the creation of "untraditional categories" (Kroski, 2005, p. 3) through the act of collectively associating many musical works with the same less-than-typical labels. Chapter 3

will look in greater detail at the various types of non-genre terms that users are employing in the tagging of music.

Conclusion

This chapter has introduced tagging in principle and presented a summary description of some of the tenets and philosophies that have underpinned its implementation as an approach to the organization of music in the internet age. In this brief overview, it was noted that tagging transfers the responsibility of indexation and annotation more squarely onto the shoulders of users themselves. It is, as Leonhard (2008) explains, that “the power is starting to move to the edges of the network, rather than continuing to come from the middle” (p. 53). One of the immediately recognizable effects of this power shift is that users are given the freedom to reassign existing genre labels to content in configurations that professional cataloguers might not have articulated. Furthermore, the principles of non-exclusivity which underpin folksonomy give rise to a classificatory scenario in which music does not exhibit a discrete membership in a container but rather comes to be affiliated with various headings simultaneously and in varying degrees. Finally, and most significantly, tagging also allows users to move beyond the confines of the lexicon of existing genre headings. Tagging offers users tremendous freedom to label music as they wish and to classify content in whatever way they believe it should be labeled (E. Peterson, 2006). Having acknowledged this theoretical foundation, the logical next step in the analysis of tagging practices as observable processes is to look to better understand how exactly it is that users, in fact, believe content should be labeled. Weinberger (2007a) defines a folksonomy as “an ordered set of categories that emerges from the way people tag items” (p. 165). In order to have an accurate appreciation of Last.fm’s folksonomic organization of music,

we therefore need to more clearly examine the way people are actually tagging items within this online environment. While the discussion to this point has introduced tagging in principle, the chapters that follow look more closely at the case study itself as a means of examining tagging in practice.

Chapter 2 – Emerging Labels: New Genres

Genre classification is an intensely subjective process, compounded by continuously proliferating and evolving categories that are not well shaped in the first place.

(T. McCourt, and Patrick Burkart, 2006, p. 99)

Building Genres through Tagging

When we think about the creation of new genres, issues of labeling and classification are generally not the first to come to mind. The creation of new genres is typically a process thought to be taking place in the realm of musicianship and not on the side of the consumption of music. When we think of the emergence of a musical genre, it is generally as a synthesis of two or more musical styles or through innovation, pastiche, and creative or artistic experimentation (Shuker, 1994). The fluidity of musical creativity and the constant transgression of categories that occurs in the writing and production of music constitute a phenomenon that has long been observed and understood. Scholars studying the development and evolution of musical genres have repeatedly highlighted the extent to which the creation of musical works continues to be an ongoing process in which new forms of expression are continually coming to the fore. Walser (1993) has recognized that “musicians are ceaselessly creating new fusions and extensions of popular genres” (in F. Holt, 2007, p. 4). Likewise, Frith and Negus both loosely appropriate Howard Becker’s (1976) notion of “art worlds” when they talk about the facilitation and maintenance of “genre worlds” (Frith, 1996; Negus, 1998, 1999b), which Frith (1996) then describes as entailing “a complex interplay of musicians, listeners and mediating ideologues” (p. 88). What is often under-appreciated in the study of genres’ emergence is the ways in which genres can be appreciated not as musical or musicological entities, but also as nominological ones – as textual

headings existing in the systems through which music is ordered and organized and not necessarily as empirically discernable through an appraisal of the music itself. Tagging practices create a noteworthy situation in which the creation of a new genre can feasibly and frequently occur simply through the act of giving an aggregate of music a new title, without requiring that there be any observable or noticeable developments to the actual musical work being written, performed, and heard. What has generally been under-appreciated in the study and theorization of musical genre, a neglect that is now exacerbated in light of the inception of tagging practices, is that a new 'genre' can often come about simply through developments in how particular music is labeled by listeners and by way of changes to the terms that serve as the headings with which a set of musical works is associated. In other words, new genre categories can emerge even in cases where no underlying shift in the musical material has occurred. Oftentimes an artist will just continue doing what they are doing from a standpoint of songwriting and musicianship, and yet a new genre category will arise in relation to their work. A new genre stands to emerge in many cases simply on account of the fact that individuals begin to refer to certain subset of musical works by a certain name. It is the emergence of new genre categories in this sense – from the nominological point of view – that will be discussed in greater depth here in this chapter.

When one looks at the classification and labeling of music in mainstream real-world contexts, they will typically find that the recognition of new genres and their inclusion into existing structures of order has not happened very often, and certainly not very readily when it has. Prior to the introduction of tagging, the schemes in place have generally been resistant to the constant introduction of new musical subsets. Taxonomies, enlisting a scaffolding of categories established *a priori*, have generally been quite poorly suited to accommodate continuous

developments and new demarcations stemming from the rapid naming of new categories (Weinberger, 2007). Once the skeleton of a taxonomic tree has been established, it is rather tedious and cumbersome to continually modify its branches and leaves and to repeatedly introduce new categories and subcategories into the works. This is especially true in those cases in which a taxonomy has come to be translated in a tangible and practical manner into the layout of real-world environments (Anderson, 2006, pp. 158 - 160), the official regulatory framework for the formatting of broadcast radio channels (Frith, 1996, pp. 79 - 81), or the codified corporate practices underlying the organization of music throughout the journey of its commercial production and circulation (Negus, 1992, 1995, 1998, 1999b). In contrast to the inherent nature of taxonomies, folksonomies lack the rigid underlying skeleton upon which taxonomies are founded and are thus able to effectively accommodate the rapid emergence of new genres, allowing new headings to rapidly become reflected in a classificatory framework. As Jeff Howe (2008) writes, folksonomies are “incredibly responsive to a user’s needs and, best of all, infinitely scalable” (p. 240). Because they are so responsive and scalable, folksonomies are very effective in facilitating the publication of new musical genre categories - categories established simply by having been given a name and having been applied to a certain subset of musical works as tags. In a folksonomy the introduction of new genres does not require any revision or modification to the underlying organizational architecture of the system. New genres get included in the classification of music the moment that a group of users begins to tag a subset of music with the same term. When one looks at the tagging taking place through Last.fm, one will see that users are indeed availing themselves of the opportunity to tag music with new and nascent genre terms. Though many are still in their infancy, these new genres are becoming increasingly visible in the contexts of Last.fm as more and more taggers move beyond the limits

Even though they are no longer required to do so, it is evident that over the course of the brief existence of Last.fm, the collective of users that has been tagging content has continued to cite many of the same terms already typically encountered in the commercial organization and classification of music (i.e. “rock”, “alternative”, “pop”, “jazz”, “electronic”, “metal”). ‘Rock’ remains the term most frequently used as a tag in Last.fm’s folksonomy, having been employed 2,118,857 times at the time of this writing (January, 2009). Not far behind ‘rock’ are the tags Alternative, Indie, Electronic, and Pop, which have garnered 1,073,596 uses, 991,944 uses, 866,939 uses and 774,329 uses as tags, respectively. Other genres also exhibit relatively high levels of use as tags, as can be seen by examining the list of all of the top 250 tags in Last.fm’s folksonomy presented as Appendix B.

The presence and, indeed, prevalence of already-popular genre terms among the labels for music being utilized as tags in Last.fm’s folksonomy is rather expected. It is understandable that the terms and labels with which musical works and artists have been associated and according to which music would generally be encountered by the mainstream audiences (particularly in the contexts of format radio stations, musical publications, catalogues, commercial organization, and retail layouts) continue to hold a prominent position in the minds of the consumers and listeners tagging the music in Last.fm’s collection. Users are free to tag music as they see fit, but for the time being, it makes complete sense that many individuals still ‘see fit’ to classify music under the same headings they are used to seeing music placed under in mediated contexts in which it has been classified for them. It would be quite foolish to expect those individuals who have taken to the tagging of music to abandon the vocabulary with which they are already accustomed the moment new opportunities are afforded them. As cited above, Elaine Peterson (2006) has noted that tagging allows users to label content according to the way

they believe content should be labeled. Over the course of the history of music's commercial availability and circulation, particularly its circulation through mainstream radio broadcast and television, audiences of listeners have become primed by their experience and familiarity with a certain set of musical labels, and it is understandable that these are the labels with which many individuals intuitively believe content should be associated.

In the four years for which Last.fm's folksonomy has existed, already-popular genre terms like rock, pop, alternative, and metal have already been extensively cited in the tagging of music. However, a simple single snapshot of the tags currently most-often used in Last.fm only paints a static picture. In looking only at the tag cloud that shows the current levels of use among the top 250 tags, one can get a sense of the current state of this folksonomy, but this one tag cloud tells us next to nothing about its evolution and dynamism. It is a static glance at the tags currently used most extensively, but it fails to shed any light on the rates at which various tags are developing and, by extension, the general direction in which we might expect the folksonomy to grow. Rather than simply looking at what the most popular tags are right now, I argue that it is necessary and helpful to also examine the growth of the folksonomy with respect to the changing levels in the use and citation of particular tag terms over a period of time. In the sections that follow, data gathered through Last.fm's Application Programming Interface (API) framework will be evaluated more closely as a means of illuminating some of the noteworthy developments taking place as Last.fm's folksonomy continues to grow in size and scope. At present, there are numerous tags from among the top 250 most-popular tags that exhibit a lower frequency of tag use than terms such as "rock" or "alternative". However, what the analysis that follows will show is that there is a notable discrepancy between which tags are currently ranked highest in

terms of their overall use and which tags are ranked highest in terms of their growth over the past year.

Emerging Genres: Recent Developments in Tag Growth

When examining the tag cloud that shows the most frequently used tags in Last.fm's folksonomy, one will have likely noticed that conventional and familiar genre tags (such as "rock", "alternative", "electronic", "indie", and "pop") certainly find themselves near the top of the list (see Appendix B). However, this single snapshot does not provide any insight as to the rates at which various tags are growing in popularity. The top tags tag cloud captures the status of the folksonomy at a moment in time, but in order to more fully appreciate the ongoing evolution of this folksonomy, it is necessary to not only look at what is, but also to contrast 'that which *is*' against 'that which *was*' and to better understand how tag use is progressing by observing the pace at which particular labels are being cited in the ongoing tagging of music. One will note, for example, that the term "rock" still occupies the highest rank in terms of overall tag use in Last.fm's folksonomy, having been employed as a tag over 2,118,857 times (see Appendix B). However, over the course of 2008 (from January, 2008 to January, 2009), the number of tag-instances of "rock" increased only 19.97%, making "rock" the 189th fastest growing tag from among the top 250 tags (see Appendix A). Other popular genre terms such as *Jazz*, *Folk*, and *Rap* saw their use as tags increase by only 22.7%, 22.2% and 17.6% respectively over the course of 2008. Use of the term *hiphop* as a tag grew by only 12.4 %, making it only the 217th fastest growing tag of the 250 most-popular tags. *Metal* didn't fare all that much better. Its use as a tag increased by only 16.98% over the course of that same year placing it at a ranking of 223rd among the fastest growing of the top tags, with *Indie* experiencing comparable levels of

growth (16.97%, ranked 225th). To put all of these statistics in perspective, the average level of growth among the top 250 tags was just over 24%. In other words, when taken together, the tags in the list of the top 250 most popular tags in Last.fm's folksonomy saw the number of tag instances grow by an average of almost a quarter of what their use was at the beginning of 2008. The figures presented above clearly show that the rate of growth for most conventional genre tags was markedly lower than that.

In comparison, shown below is a table of the 20 fastest growing tags from among the 250 most popular tags in Last.fm's folksonomy – tags which have shown the highest rates of growth relative to their own initial tag-use levels over the course of 2008 (from January, 2008 to January, 2009) (For the entire list, see Appendix A).

TAG	Jan-08	Jan-09	Change	% Change
deathcore	26285	40095	13810	52.53947118
male vocalist	25817	37179	11362	44.00976101
blues rock	33651	47185	13534	40.21871564
epic	22733	31706	8973	39.47125324
contemporary classical	20717	28585	7868	37.97847179
romantic	31094	42739	11645	37.45095517
swing	26849	36857	10008	37.27513129
country	130800	178452	47652	36.43119266
atmospheric	35002	47750	12748	36.42077596
catchy	19692	26612	6920	35.14117408
post-hardcore	54517	73514	18997	34.84601134
ballad	27519	37014	9495	34.50343399
beautiful	89630	120424	30794	34.35680018
male vocalists	67236	90303	23067	34.30751383
guitar virtuoso	19837	26596	6759	34.07269244
loved	20019	26741	6722	33.5781008
melancholic	29583	39430	9847	33.28600886
dark electro	19800	26236	6436	32.50505051
00s	91708	121302	29594	32.26981288
alternative metal	43536	57522	13986	32.12513782

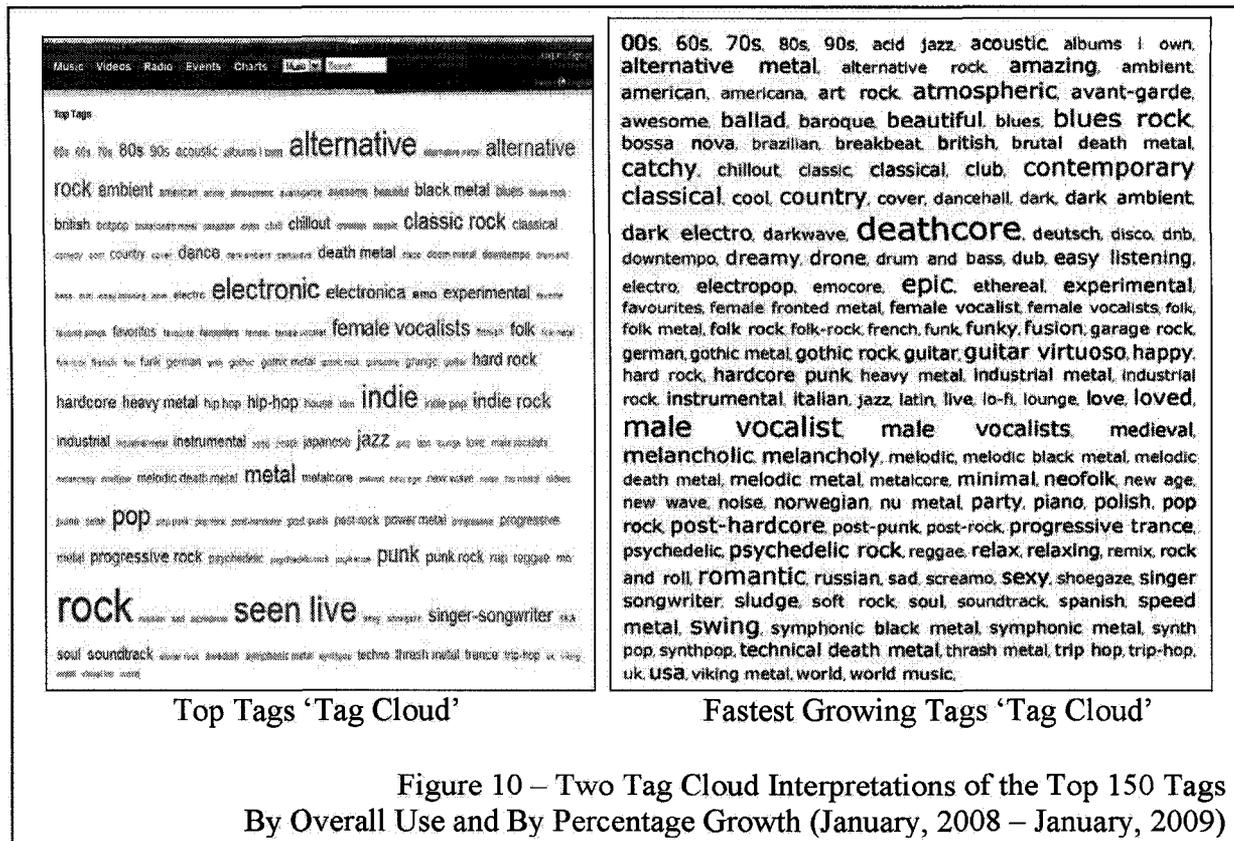
Figure 9 – 20 Fastest Growing Tags (by percentage growth)

At the top of the list of fastest growing tags over the course of the past year is the tag *deathcore* (see also: Appendix A). It is the only tag from among the Top 250 most-popular tags for which the number of additional tag uses garnered between January, 2008 and January, 2009 constituted more than half of the number of times that tag had been used to that point (an increase in 13,810 uses from an initial figure of 26,285 uses). Not far behind *deathcore* in terms of their relative increases in tag use are other new-genre tags such as *atmospheric*, *post-hardcore*, and *dark electro*, whose respective number of tag instances increased by 36.4%, 34.8% and 32.5% in that same period. This, again, places these tags well above the median growth rate of 24% experienced by the Top 250 most popular tags on average, even though the overall frequency of these tags' use is still relatively low. In some cases, a disproportional growth of what can be thought of as 'new genres' is noticeable even in terms of not only percentage growth relative to their own prior levels of use, but also in terms of the raw number of additional tag uses that they have garnered. For example, *reggae* garnered 32,058 additional tag uses throughout 2008 while the tag *experimental* garnered more than twice that number of additional tags over this period, seeing 71875 additional tag uses. Another nascent genre category, *chillout*, accumulated 53,984 additional tag instances, almost 22,000 more than *reggae*. The increases in tag use for both the terms *experimental* and *chillout* within Last.fm's folksonomy represent a growth of 28.9% and 25.2%, earning both of them a spot among the top 100 fastest growing tags. In comparison, *reggae* ranked 187th in terms of its relative growth since January, 2008, just two ahead of *rock* which, as already mentioned ranked 189th.

The disproportional levels of growth of new genres and their projected increase in popularity requires us to rethink what we consider to be the genres of music with which a work might come to be associated, and to revise our perception of musical categories to more fully

account for the new genre terms that have come to be established and recognized through tagging practices. New genre terms such as *deathcore*, *post-hardcore*, *dark electro*, and others, e.g. *neofolk* and *sludge* (each of which have shown over 30% growth in the past year), are well positioned to become more and more prevalent with time as labels demarcating ‘types of music’, at least in the contexts of Last.fm (See Appendix A). It is difficult to project with any accuracy which specific tags might show the greatest long-term growth. The current data only supports a very generic observation of change over a period of time and cannot confidently support any long-range forecast or outlook for the growth of any one term as a musical label. What this data does, however, seem to indicate rather clearly is that regardless of which specific tags grow fastest, it appears that unconventional labels, en masse, are growing faster than their conventional counterparts and traditional genre headings.

The discrepancy between the current usage figures and the figures pertaining to the growth of the top 150 tags has been visually represented in the two tag clouds shown below (Figure 10). The first tag cloud – already introduced earlier in this chapter – depicts the top 150 tags used in Last.fm’s folksonomy weighed according to their overall use. Pictured beside that is a tag cloud formulated from the statistical analysis conducted as part of the primary research here in this thesis. It weighs the various tags not based on their current use, but based on the level of percentage growth experienced by each tag term between January, 2008 and January, 2009 (This tag cloud is essentially a graphical representation of the top 150 entries found in Appendix A).



Top Tags 'Tag Cloud'

Fastest Growing Tags 'Tag Cloud'

Figure 10 – Two Tag Cloud Interpretations of the Top 150 Tags By Overall Use and By Percentage Growth (January, 2008 – January, 2009)

The differences between these two tag clouds are clear. The terms that are currently the most popular are nowhere to be found among the top 150 fastest growing tags. *Rock* ranks 189th, and is therefore absent from the second tag cloud. *Alternative* was shown to have the 186th ranked growth rate of the top tags in this folksonomy and therefore it too is absent from this tag cloud. As are the 4th and 5th highest ranked tags according to use – *indie* and *electronic* – which rank 225th and 152nd, respectively, when the top tags are listed according to growth rates. The tag cloud to the right shows that it is the currently less popular examples from among the top tags that exhibit higher levels of disproportional growth in the number of tag instances tags relative to the continued citation of conventional genre labels. Now, without question, popular genre categories will no doubt continue to play a role in the classification of music even in this new organizational paradigm of folksonomy. Furthermore, it should be noted that the tag-instances

these popular genre labels have already garnered are there for posterity and will not disappear from the Last.fm database now that they have been recorded. However, what needs to be appreciated more fully is that, despite the head-start that the already-familiar genres have gotten in establishing themselves as central players in this folksonomy, it is projected that as time goes by, new genres will become more broadly visible to users of Last.fm, thereby more likely to be encountered by users engaged with Last.fm. Given the nascent nature of tagging and folksonomy, we are called to appreciate the fact that many emergent genre tags are precisely that – emergent. In comparison to the extent to which the already-familiar genre labels are cited in this folksonomy, most new genres – though growing rather quickly in popularity and prevalence – still exhibit relatively low levels of use. It is questionable as to whether they will ever reach parity with the currently highest-ranking tags given the chasm that currently separates their respective levels of use. However, regardless of whether or not the currently-more-marginal genre designations ever rise up to match *rock* or *alternative* with respect to the number of citations as tags, it is reasonable to project that the nascent genre labels currently in their infancy in terms of tag use will certainly continue to become more and more visible and more frequently encountered by users of Last.fm as time goes by.

Conclusion

In this chapter, the analysis centered on starting to examine the ways in which granting Last.fm's users the freedom to label content as they wish has resulted in the citation of new labels in the tagging of music. It looked particularly at the extent to which users are observed taking advantage of the opportunity to tag music by affiliating works with the headings and titles of nascent new genres. It cannot be denied that the names of genre categories currently employed

in the mainstream commercial taxonomy of music still occupy many of the top ranking spots in Last.fm's folksonomy, but, with time, users are gradually realizing the full extent of the freedom which they have been given, and, as we look to the future, we can foresee an outlook in which the popular genre categories that we have thus far understood as the only eligible 'types of music' to this point will increasingly find themselves in the company of numerous new counterparts.

Chapter 3 – Emerging Labels: Non-Genre Contexts

Many people feel that genre boundaries create artificial divisions between things they love.

*Fabian Holt
(F. Holt, 2007, p. 4)*

In the previous chapter, the analysis illuminated the extent to which taggers have begun to introduce a growing number of new genre designations into Last.fm's tag folksonomy. However, one will recall that (both in the introduction to this writing, as well as in the closing sections of Chapter 1) it was noted that the labeling of music with new genre headings is only one of two noteworthy outcomes that tagging facilitates in allowing users to cite and record new labels and to publically establish unconventional annotations for the music found in Last.fm's catalogue. Beyond facilitating the creation and implementation of new genre labels, tagging also allows for the citation of terms that do not purport to be a musical genre title. This chapter provides a survey of the extent to which Last.fm users are tagging music with terms which refer to non-genre contexts and evaluates the overall development and growth of such non-genre tags as labels in Last.fm's folksonomy.

In many respects the most significant trait of tag systems and of their underlying design principles is that tag systems, in almost all instances in which they are implemented, not only allow users to decide which of a number of already-recognized labels an item or piece of content should be associated with, but also grant users the freedom to cite any words or phrases they wish to cite when engaging in acts of tagging. As cited earlier, this principle of openness in tag systems has been highlighted particularly in the work of Walker and Morrow et al. (as cited in Auray, 2007) where the authors talk about tagging practices as "feral and uncontrolled", as well

as in the writings of Hammond, Hannay, Lund, & Scott (2005) where folksonomies are described as “free-structured.” Furthermore, Elaine Peterson (2006) explains that the creation of tags is a process that is “unsystematic” (p. 3), echoing Jacob (2004) who also declares that tagging is “unsystematic” and further describes tagging activities as being “inherently creative” as well (p. 9). In the case of Last.fm and the tagging of the music found in its collection, the only real limitation placed upon tags is that a tag has to be at least a one character long (i.e. it cannot simply be a blank space) and a tag must contain a string of text that is no longer than a maximum length as established by the administrators of the system. Beyond these few basic logistical software-prescribed limitations, a folksonomic framework is wholly indifferent to the semantic content of the term or phrase being applied as a tag. As far as the system is concerned, a tag is just a sequential series of characters. Since tags are nothing more than stored strings of text, this means that any word or series of words are eligible for use. The tagging system does not in any way know what trait, characteristics, or quality a particular tag refers to. Nor does it care. Tag environments generally make no demands of their taggers in terms of the types of labels taggers should be using when annotating content, and, in this sense, Last.fm is no exception.

In their work entitled *Representing Musical Genre*, Aucouturier and Pachet (2003) write that, in addition to genre, there are many other attributes according to which music might reasonably be classified (p. 84), and although these authors were not writing on the subject of tag systems and folksonomies in particular, the postulates they put forth come at almost the perfect time, coinciding with the earliest inception of tagging technologies online and, in many ways, resonating with the notable considerations that subsequent services employing tags in the organization of music have since brought to light. Golder and Huberman (2006), largely dealing with the same themes as Aucouturier and Pachet but grounding their discussion squarely in the

topic of folksonomy, likewise make a point of highlighting the fact that the range of classificatory purposes that tags might be used to fulfill is in no way limited to the demarcation or identification of a music's associated genre. Fidel (1994), in writing on the topic of indexation years before the first mainstream application of tagging, observed that one of the key and core considerations that must always be taken into account by professional cataloguers in processes of indexing content is the question of what attributes, characteristics, or qualities of an item might warrant being treated as "indexable matter" (p. 574). If one is to address this same consideration today and in relation to tagging, they will find that the answer to that question of what attributes might qualify as 'indexable matter' in processes of tagging is, to put it bluntly, any and all of them. Anything about a piece of music is eligible to be used as a tag, and although the residual and instinctual deference to genre understandably still looms in the minds of many, as time goes by taggers are availing themselves of the freedom to more frequently and more readily label music with terms and phrases that "resonate with their own semantic associations" (Hotho, Jaschke, Schmitz, & Stumme, 2006; Steels, 2006, p. 289). This chapter examines the ways in which taggers labeling music through the tagging features that Last.fm has provided them are indeed observed citing terms that reference a unique assortment of connotations. It also provides an admittedly cursory overview of the ever-growing range of non-genre contexts which taggers are observed invoking as they go about labeling the music in Last.fm's catalogue in whatever manner they see fit.

Non-Genre Contexts in Last.fm's Folksonomy

In many instances, when tagging music with non-genre terms, users often highlight a particular characteristic or trait of the music itself. One of the ways in which they do this is

through employing a term or phrase that refers to a work's instrumentation. By tagging music with a term that cites the name of an instrument present in the musical arrangement, users provide valuable (and in many cases previously unrecorded and unavailable) metadata about the instruments present in a particular musical execution. While certain formal and objectively-discernable metadata (such as a song or album title, the artists name, or the record label producing the work) have generally always found a place in a database and could thereby be recalled when necessary, the instrumentation of a work is not typically registered in the formal cataloguing and commercial indexation of music. In the contexts of Last.fm's folksonomy however, it is evident that many users recognize the importance of including instrumentation as a layer of context and meaning, and the rates at which users cite instruments or instrumentation when tagging content suggests that many of them indeed feel that this information is worth recording and is quite relevant.

For example, the term "guitar" is used extensively as a tag, both as a term on its own and as part of longer tag phrases. Tag phrases that include the word "guitar" cite variants of both the instrument itself, such as "classical guitar" and "electric guitar", as well as variants as to the manner in which a guitar might be played, i.e. "slide guitar" (see Figure 31). The tag "guitar" has exhibited a 28.13% growth from January 2008 to January 2009 making it the 46th fastest growing tag among the top 250 tags and one of the fastest growing instrumentally-related tag, second only to the phrase "guitar virtuoso". At this point in time, "guitar" is the 85th most popular tag in the entire folksonomy having been used close to 98,000 times in relation to different works.

The screenshot shows the Last.fm website interface. At the top, there are navigation links for Music, Videos, Radio, Events, Charts, and Music. Below the navigation, there are filters for All Music, Label, and Tag. A search bar contains the word 'guitar' and a 'Search tags' button. The results section shows 'Results 1 - 20 of 6,608 for guitar'. The results are organized into two columns. The left column lists various guitar-related tags with their top artists: 'guitar' (Jimi Hendrix, Eric Clapton, Santana), 'guitar virtuoso' (Joe Satriani, Buckethead, Steve Vai), 'classical guitar' (Andrés Segovia, Julian Bream, Paco de Lucía), 'Guitar Gods' (Paul Gilbert, Jason Becker, B.B. King, Eric Clapton), 'acoustic guitar' (Kiki King, Tommy Emmanuel, Leo Kottke), 'jazz guitar' (Django Reinhardt, Pat Metheny, Wes Montgomery), and 'guitar rock' (The Beatles, Radiohead, Nirvana). The right column lists more specific guitar styles: 'Guitar Hero' (Joe Satriani, Steve Vai, Eric Johnson), 'Guitar Solo' (Andra and the Backdoor, Silkswarm, Van Halen), 'guitar god' (Andy Timmons, Led Zeppelin, Pink Floyd), 'guitar pop' (The Pale Fountains, Shock, Brainpool), 'electric guitar' (Charlie Christian, 150 Greatest Guitar Solos, The Beatles), 'slide guitar' (Bob Erzinon, Sonny Landreth, Tampa Red), 'blues guitar' (Big Joe Williams, Big Bill Broonzy, Lonnie Johnson), 'spanish guitar' (Paco de Lucía, Gipsy Kings, Ottmar Liebert), 'instrumental guitar' (Blues Saranoma, Andy McKee, Victor Smolki), 'solo guitar' (Tommy Emmanuel, Christopher Parkening, Eliot Fisk), and 'great guitar' (Led Zeppelin, Rainer, Hatalica).

Figure 11 – Results for Tag Search: "Guitar"

The use of the term “piano” as a tag has also ballooned significantly as it has gone from being cited as a tag 89,945 times in January, 2008 to over 115,000 times as of January, 2009⁹, which translates into a growth of 28.12%. “Piano” is currently the 78th most extensively used tag in Last.fm’s folksonomy and over the course of the past year it was the 47th fastest growing tag. Another tag related to instrumentation, “acoustic”, showed only a slightly lower level of growth than “piano”, garnering a 28.07% increase in tag use, but it itself is the 49th most frequently cited tag in the folksonomy. Tags relating to other commonly-employed instruments such as “trumpet”, “saxophone”, and “violin” currently fall just outside of the top 250 overall tags in terms of their ranking, but nevertheless have been used 15,628, 20,168, and 14,187 times as tags, respectively. Even the term “harp” has garnered 3,593 instances of tag use.

Taggers have also begun to cite situations or contexts in which they have personally experienced (or in which they feel one might likely experience) the performance of certain works or artists. One might also place tags citing the nature or structure of the performance into this

⁹ <http://www.last.fm/tag/piano>

category of annotation. If one recognizes performance formats as comparable to performance contexts, then a slew of tags can be said to fall into this category, including “unplugged” (used approximately 2,200 times¹⁰) and “orchestral” (used 3,768 times¹¹). Taggers are also coming to use tags that cite the location or setting in which music has been heard. In some cases, this designation is very general (i.e. “festival”, “seen in concert”) but in others it often may involve a reference to a specific concert or concert series (such as “Woodstock”¹² or “Warped Tour” (see Figure 12)).

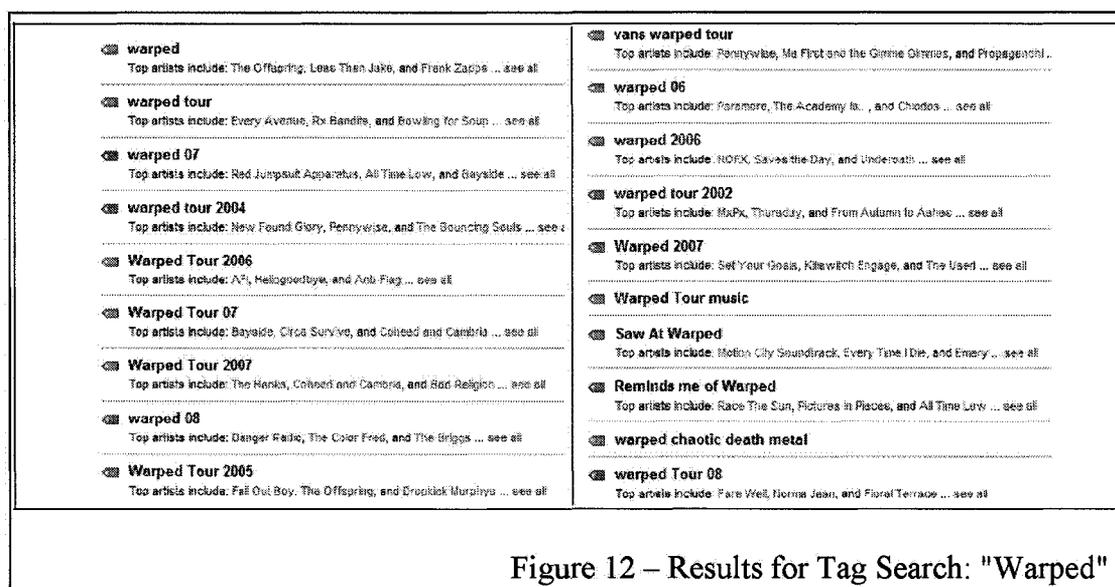


Figure 12 – Results for Tag Search: "Warped"

By far, the most popular tag that refers to what one might consider ‘performance contexts’ is the tag “seen live” – used 1,222,494 times by over 75,000 different users.¹³ It is, in fact, the second most often cited tag in the entire Last.fm folksonomy, second only to the tag “rock”. The music to which the tag “seen live” has come to apply ostensibly shares in the fact that someone, at some point, saw this particular music performed live and found this fact important enough to warrant tagging this artist or song “seen live.” While, in a purely objective sense, any band that

¹⁰ <http://www.last.fm/tag/unplugged>

¹¹ <http://www.last.fm/tag/orchestra>

¹² <http://www.last.fm/tag/woodstock>

¹³ <http://www.last.fm/tag/seen%20live> – Sept, 2008

has performed a concert in front of an attending audience warrants being given the label “seen live”, because the tagging of music is left entirely up to the users themselves, an annotation that would otherwise be considered a question of fact instead becomes a question of significance and meaning.

Many users tagging music through Last.fm are also citing geographical contexts among the keywords they employ. These practices combine the act of recognizing and registering an objective geographical fact with the function of capturing a geographical affiliation that users feel is not only accurate but also relevant and important to record in relation to a given work. “Polish” is the fastest growing geographically-oriented tag, having exhibited 29.89% growth in number of tag instances over the course of the last year. The tags “Italian”, “American”, “British”, “Russian”, and “Norwegian” have also experienced above-average levels of growth, earning them the ranking of 52nd, 54th, 55th, 56th, and 57th fastest growing tags, respectively. Looking further into the tagging of music with reference to geography it is important to recognize that taggers are not only using tags to label music according to its country of origin (as is often accounted-for in most taxonomies) but are also taking advantage of a freedom to label music in a range of spatial scales, from tags as general as “Africa”¹⁴ or “Asian”¹⁵ to tags as specific as “Chicago” or “Manchester” (each used well over 7,000 times).¹⁶ Certain localities (such as London, for example) are even cited in additional tag phrases constructed in combination with directional prefixes such as “North...”, “South...”, “East...”, and “West...”, which then contribute to the identification and denotation of the truly local nature of certain musical material.¹⁷ Some taggers have even gone so far as to cite particular performance venues

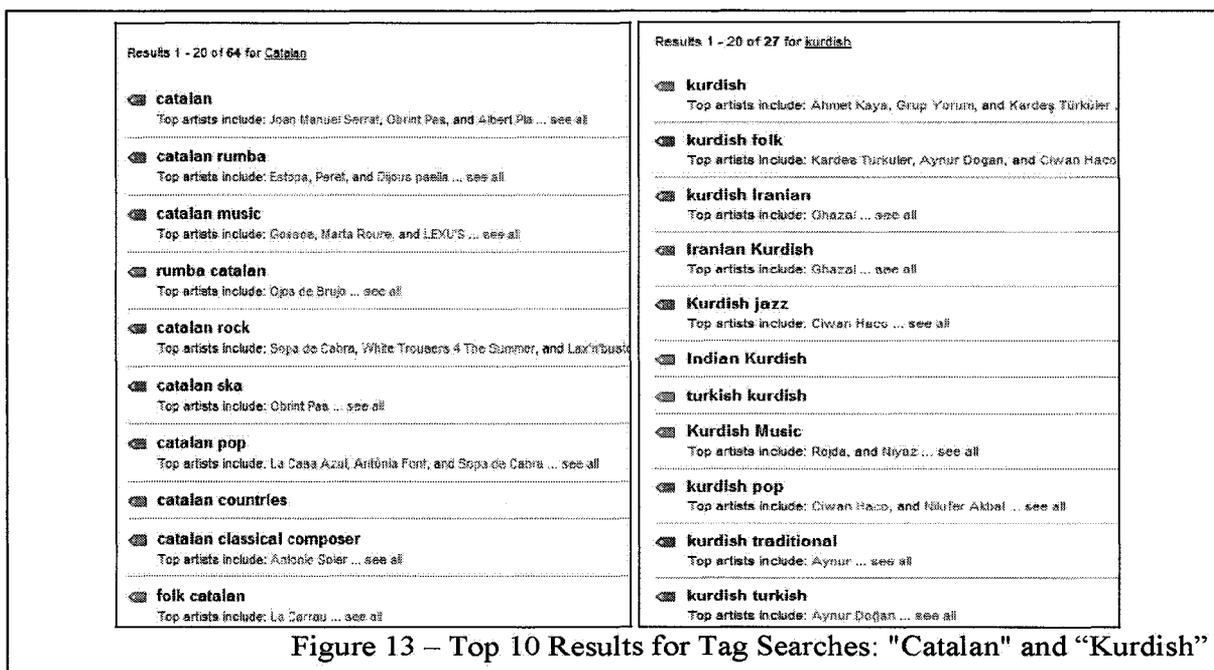
¹⁴ <http://www.last.fm/tag/africa>

¹⁵ <http://www.last.fm/tag/asian>

¹⁶ <http://www.last.fm/tag/manchester>

¹⁷ <http://www.last.fm/music?q=London&m=tags>

when labeling music (e.g. “Apollo” or “Madison Square Gardens”¹⁸), examples which fall somewhere between contexts of geography and performance. Finally, with respect to geography, tagging has also proven to be an incredibly powerful strategy in that it allows for the association of music with geographical regions not currently or formally recognized as nation-states, in other words, regions that are unlikely to have been given their own category in a formal taxonomy of world music (Figure 13)¹⁹. The manner in which users articulate the geographical attributes and affiliations of particular music is, in and of itself, a rich arena in which a great deal of future research can and should be conducted. I suspect that many insights can be gathered with respect to issues of national identity, citizenship, ethnicity, and globalization (as well as localism) by looking more closely at the manner in which taggers reference geography when labeling music in the way they see fit.



¹⁸ <http://www.last.fm/tag/apollo>, <http://www.last.fm/tag/madison%20square%20gardens>

¹⁹ <http://www.last.fm/tag/kurdish>, <http://www.last.fm/tag/galician>

In yet another vein, tags frequently serve as a record of a tagger's views of the gendered qualities and characteristics of particular works of music. In some cases, the task of citing an affiliation with gender – much like citing instrumentation and geography – could, in theory, be carried out as an objective process and treated as a matter of factual recognition. However, I assert that the citation of gendered aspects of music is not simply a question of objective fact, but rather a question of (inter)subjective meaning. To that end, even those tag phrases which some might say do nothing but simply identify the sex of the performer, such as “female vocalists” and “male vocalists”, are actually significant in that they represent a listener's subjective semantic association of particular music with these particular labels. Not every female that sings is automatically perceived as a “female vocalist” and therefore is not automatically deserving of that label. Beyond identifying the sex of a performer where warranted, taggers have also extensively referred to gender in a more politicized way in numerous cases throughout Last.fm's folksonomy. Tags such as “girly” and its variant forms, as well as the terms “queer” and “gay” (Figure 14) are all loaded with highly-charged meanings that will hold different connotations for various groups of individuals. Though discussing this consideration any further and in any greater depth falls outside the scope of this thesis, studying the ways in which the politics of gender play out in folksonomies through the use of tags such as “girls with guitars”, “girly rock”, “queer country”, or “gay anthems” can lead to the emergence of a rich area of inquiry in which further research should certainly take place.

Results 1 - 20 of 172 for girly	Results 1 - 20 of 194 for queer	Results 1 - 20 of 2,178 for gay
girly Top artists include: The Pussycat Dolls, Tori Amos, and Evanescence	queer Top artists include: Melissa Etheridge, Boy George, and The Middle Class	gay Top artists include: Pet Shop Boys, Scissor Sisters, and Mika
girly rock Top artists include: Madonna, Björk, and Sade	queer as folk Top artists include: Heather Small, Kristina W., and Temperance	Gay Metal Top artists include: Buffalo, Kaledon, and Alex Urbog
girly pop Top artists include: Madonna, Britney Spears, and Avril Lavigne	queer punk Top artists include: David Bowie, Wayne County & The Electric Chairs	gay gay gay Top artists include: Lady Gaga feat. Colby O'Dona, Justin Bieber
girly goth Top artists include: HIM, Screaming Banshee Aircraft, and Nightwish	queer rock Top artists include: P!nk, Miley Cyrus, and Scissor Sisters	gay disco Top artists include: Divine, After Dark, and Bob Dylan
girly music Top artists include: D'Neen, Madonna, and The Cure	queer music Top artists include: The Dillies, Team Break, and The Organ	Gay Icon Top artists include: Tyler Adam, Cher, and Céline Dion
girly rocknroll Top artists include: Sarge, pandora, and The Phantoms	queer pop Top artists include: Rufus Wainwright, Soft Cell, and Aaron L. Savoy	gay pop Top artists include: La Froy, Jay-Z, and Rebecca
girly voice Top artists include: P!nk, Miley, and The Unicorns	Queer artists Top artists include: Hayden, Retna Prizomyk, and Beth Orton	gay music Top artists include: Madonna, D'Neen, and Singa
girly swirly poppy Top artists include: The Gits, pandora, and Françoise Hardy	queer friendly Top artists include: Sade, Rina Sawayama, and Madonna	gay rock Top artists include: Queen, Creep, and P!nk
girly goodness Top artists include: Kira, Tori Amos, and Alanis Morissette	queer core Top artists include: Psychosis, La Tigra, and Pussy Division	gay pride Top artists include: Margaret Cho, Thomas Bece, and Pet Shop
girly stuff Top artists include: Holly Brook, Razorblade Kisses, and Garbage	queer country Top artists include: Michelle Malone, Melissa Etheridge, and CORDA-V	gay icons Top artists include: Chico & Chica, Madonna, and David Bowie
girly punk Top artists include: The Dillies, Avril Lavigne, and Ashlee Simpson	queer folk Top artists include: Antony and the Johnsons, Neutral Milk Hotel, and The	totally gay Top artists include: Linkin Park, Elton John, and Barbra Streisand
girly power Top artists include: New Kids on the Block, Mandy Moore, and A	Queer love songs Top artists include: The Magnetic Fields, Miran, and Slowdive	gay shit Top artists include: KoRn, Empty Trash, and Danny Pearl
Girly Chick Music Phase Top artists include: A. Candace Stary, Britney Spears, and D	queer icon Top artists include: Jeffrey Star, Peaches, and Tyler Adam	gay bar Top artists include: Electric Six, Queen, and Riky Rick
my girly shit	queer ninja Top artists include: Dopefiend.co.uk	gay house Top artists include: Alan Braken, m.a.n.d.y., vs broke shade, an
chill - girly Top artists include: Minko Strinehoff, Monica, and Ashlyn	that is so queer Top artists include: Anna Oxi, Pevio Turci, and Madonna	not gay Top artists include: Alan Braken, 楊采妮, and Eminem
girly song Top artists include: The Expelled, Oasis, and Michelle Branch	queer cinema Top artists include: Stephen Trask, Gary Baswick, and Girls Against B	fucking gay Top artists include: The Beatles, Cher & Ryan, and Backstreet
girly tunes Top artists include: Rumi Kudo, Lucie Silvas, and Jean Knight	in queer we trust Top artists include: P!nk, Fat Slop Boys, and Miley	gay RAC Top artists include: Brock Chisholm, Impact, and Clockwork Times
girly vocal Top artists include: 伊勢美智子, Amy Winehouse, and Caroline	queer musicians Top artists include: Si-Soy-Metru, The Gits, and Pussy Division	kinda gay Top artists include: Sofija Stojanovic, David Hernandez, and bat
girly jams Top artists include: Mariah Carey, Kylie Minogue, and Danyel Kar	queer metal Top artists include: Vader, Orange Fanny, and School 110-112	gay anthems Top artists include: Marc Almond, The Magnetic Fields, and J
girly boy Top artists include: System of a Down, J K Rowling, and Madon	So Queer - So gay Top artists include: Tom Jones, Tom Jones & Starobphonics, and Madon	very gay Top artists include: Juanita Terrence, w-bud, and The Rocky

Figure 14 – Top 20 Results for Tag Searches: “Girly”, “Queer”, and “Gay”

Tags within Last.fm’s folksonomy also often serve to reference specific listening activities to which certain works of music or the works of certain artists might be thought to apply. The range of tags that cite listening activities is as broad as the range of listening activities that music might accompany. Some of the most notable tags in this area include “cooking”²⁰ (for related tags, see Figure 15), bathing related tags such as “bath”, “bath time”, “bath music”, “bubble bath music”²¹, as well as a slew of travel and transit related tags – including “driving” and “road trip” (Figure 16).²² In terms of the growth of tags relating to listening activities over

²⁰ <http://www.last.fm/tag/cooking>

²¹ <http://www.last.fm/search?q=bath&m=tags>

²² <http://www.last.fm/tag/road%20trip>

the past year, “party” has shown the highest rate of growth ballooning 29.46% to the point where it has now garnered over 36,000 tag uses (see Appendix A). There are even tags associated with the listening act of sleeping, including “sleeping” itself, as well as “sleeping music” and “sleeping songs.” In less sedentary contexts, the term “workout” has also been used extensively in the tagging of music, as one might expect, both on its own and as part of thousands of more elaborate workout-related tag phrases, the most popular of which are shown below (Figure 17).²³

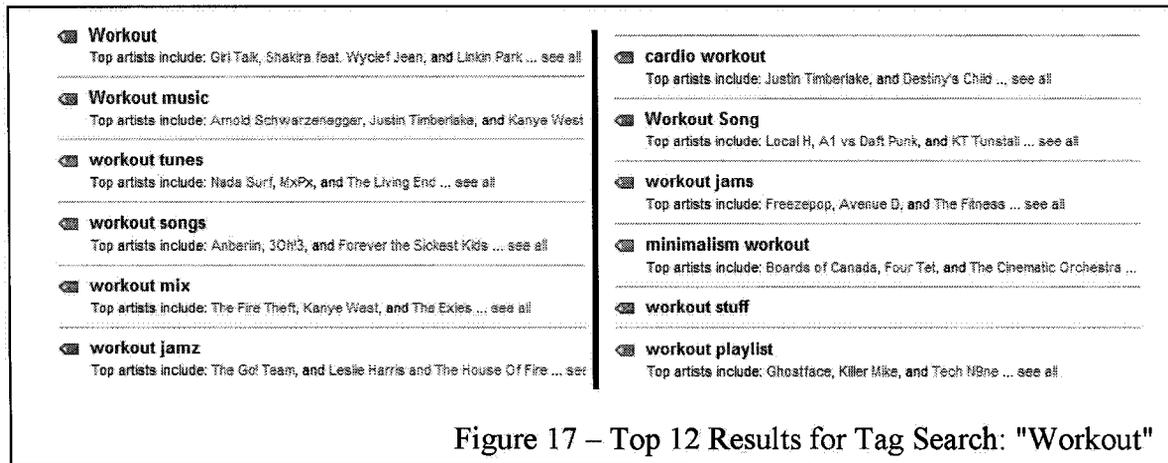
<ul style="list-style-type: none"> 🔍 cooking Top artists include: ON Networks, Caribou, and The Corrs ... see all 	<ul style="list-style-type: none"> 🔍 music for cooking to Top artists include: SmallGoxesAnonymous, The Kooks, and Marilyn Manson ... see all
<ul style="list-style-type: none"> 🔍 cooking music Top artists include: Pearl Jam, Nine Inch Nails, and Billie Holiday ... see all 	<ul style="list-style-type: none"> 🔍 g love hot cooking Top artists include: G. Love ... see all
<ul style="list-style-type: none"> 🔍 Cooking Vinyl Top artists include: Clem Snide, The Wedding Present, and Ani DiFranco ... see all 	<ul style="list-style-type: none"> 🔍 downhome cooking Top artists include: Wasis Dip, Massive Attack, and Manu Chao ... see all
<ul style="list-style-type: none"> 🔍 Home Cooking Top artists include: Tony Allen, and Broken Toy ... see all 	<ul style="list-style-type: none"> 🔍 cooking ingredients Top artists include: Heeverphonic, Bergman Rock, and The Locksmiths ... see all
<ul style="list-style-type: none"> 🔍 used in cooking Top artists include: Red Hot Chili Peppers, The Smashing Pumpkins, and Black Eyed Peas ... see all 	<ul style="list-style-type: none"> 🔍 cooking dinner Top artists include: Awol One & Daddy Kev, Ben Harper, and Evermore ... see all
<ul style="list-style-type: none"> 🔍 cooking time 	<ul style="list-style-type: none"> 🔍 cooking dogs

Figure 15 – Top 12 Results for Tag Search: “Cooking”

<ul style="list-style-type: none"> 🔍 road trip Top artists include: The Beatles, Bob Dylan, and Gaby ... see all 	<ul style="list-style-type: none"> 🔍 Road Trip songs Top artists include: C.A.R., The Alaris, and Eddie From Ohio ... see all
<ul style="list-style-type: none"> 🔍 road trip music Top artists include: AllTime Low, Coconut Records, and Rooney ... see all 	<ul style="list-style-type: none"> 🔍 trip rock Top artists include: The Gathering, Agua de Arribo, and Paatos ... see all
<ul style="list-style-type: none"> 🔍 trip hop Top artists include: Massive Attack, Portishead, and Tricky ... see all 	<ul style="list-style-type: none"> 🔍 sunset road trip Top artists include: The Core, Semisonic, and Turnt Erakes ... see all
<ul style="list-style-type: none"> 🔍 trip Top artists include: Magnolia, Radiohead, and Opium Jukebox ... see all 	<ul style="list-style-type: none"> 🔍 road music Top artists include: Wilco, Don DiLego, and Ryan Adams & The Cardinals ... see all
<ul style="list-style-type: none"> 🔍 road Top artists include: CJOT, Bob Dylan, and Neil Young ... see all 	<ul style="list-style-type: none"> 🔍 on the road Top artists include: Nilsson, Herman Blake, and Conor Gaerst ... see all
<ul style="list-style-type: none"> 🔍 road trip soundtrack Top artists include: The Most Serene Republic, Broken Social Scene, and Interpol ... see all 	<ul style="list-style-type: none"> 🔍 road trip tunes Top artists include: Limbeck, Ryan Adams, and Wilco ... see all

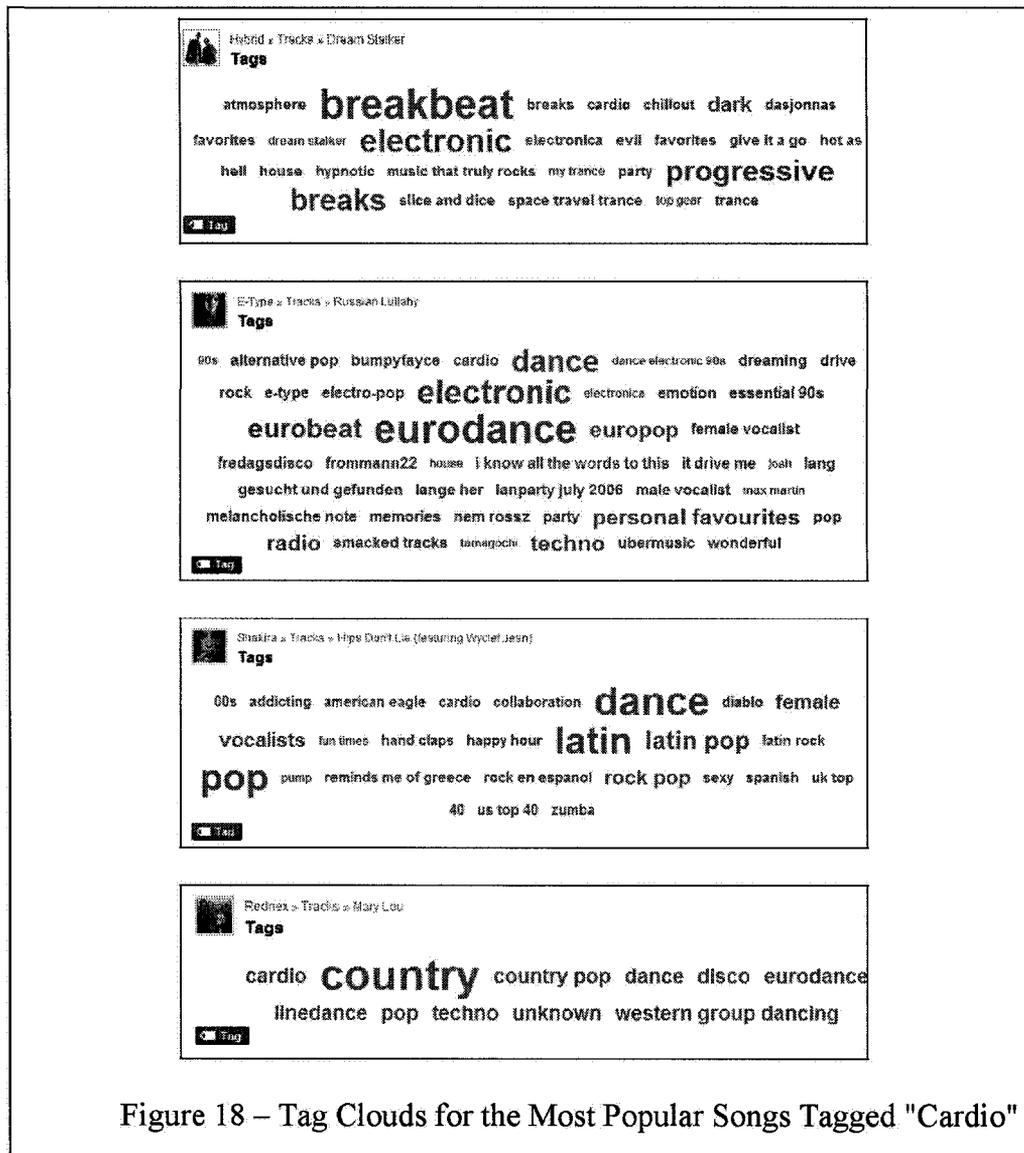
Figure 16 – Top 12 Results for Tag Search: "Road Trip"

²³ <http://www.last.fm/tag/workout>



Taggers have even come to label and tag music with terms that relate to more specific exercise routines. Each of these more specific subsets of physical exercise is affiliated with a different mix of music. For example, the tag “cardio” has been extensively used in tagging tracks by the artists Hybrid, E-Type, Shakira, and Rednex (Figure 18) while the tag “weight loss” has been linked to tracks from Renee Stephens and Plump DJs²⁴, and the tag “training music” has been ascribed most often to music by the artists Immortal Technique, The Game, and Brother Ali.

²⁴ [http://www.last.fm/tag/weight loss](http://www.last.fm/tag/weight%20loss)



Finally, tagging allows for the recording of a declared relationship between music and particular sentiments and emotions. The terms cited in these contexts range from the simplest emotional responses to more detailed descriptions of music's related sentiments and connotations. The terms "happy" and "sad" understandably show a relatively high level of use within Last.fm's folksonomy, garnering 41,477 uses and 53,632 uses as tags, respectively (January, 2009). "Happy" is the 36th fastest growing tag among the top 250 tags, and "Sad" ranks 86th. Other tags in the same vein, such as "angry" (9,565 uses) or "cheerful" (3,484 uses) or

There are also numerous comparable examples of tag terms and phrases found throughout Last.fm that, while they do not cite an emotion per se, cite a descriptor referring to a sentiment or connotation which listeners and taggers evidently associate with that music. In fact, tags of this nature are some of the fastest growing tags. As mentioned earlier, the median rate of growth between January 2008 and January 2009 for all of the tags ranked in the Top 250 in terms of overall tag use was 24.015%. Over the course of this period, use of the tag “epic” has ballooned from 22733 uses to 31706 tag instances, an increase of 39.4%, making it the second fastest growing tag among the top tags in Last.fm’s folksonomy. The tag “Romantic” ballooned 37% from having been used 31094 times to being used 42739 times in Last.fm’s folksonomy, making it the 6th fastest growing tag over the course of 2008. Other tags citing unconventional musical categories that show particularly high levels of growth over this same period include “Catchy” (35% increase), “Beautiful” (34.3% increase), “Loved” (33.5%) and “Melancholic” (33.2%). “Melancholy” exhibited 31.7% growth in that same period. Each of these sentiment-related tags ranks 23rd or higher in terms of the percentage growth experienced during 2008. Connotations and sentiments, such as those referenced above, arguably correspond with the layer of music’s meaning that is least likely to be employed in the formal organization of music in commercial taxonomic contexts. However, in the contexts of folksonomy these tags are not only present but are also flourishing as labels, being cited more and more frequently now that users have been granted control over processes of music’s annotation (see Appendix B).

Earlier in this thesis, when the discussion began to shift away from the introduction of tagging and folksonomy to the empirical analysis of tagging practices taking place in the realm of Last.fm, it was stated that the primary goal of examining numerical and statistical API data pertaining to tag use was to move the discussion past the stage of simply ruminating over what

tagging and folksonomy as technologies *could* allow users to do, and to progress to a more firmly grounded analysis and observation of what users are *actually doing*. In the previous chapter, this involved looking at the extent to which users were taking advantage of their newfound opportunity to implement and popularize terms that can be considered new musical genre headings. In this chapter, we looked at the various ways in which taggers have progressed beyond the lexicon of musical genre altogether and have begun to cite non-genre contexts when tagging music. In these chapters, the discussion built off of the theoretical appreciation of what taggers are free to do, and led into a closer evaluation of the tagging acts that individuals are, in fact, carrying out. In Chapter 1 tagging was presented as a significant practice in that it transfers the responsibility for labeling music away from professional cataloguers and gives it to a collective of individual users who are then put in a position of being music's new labelers. What the subsequent analysis and discussion in Chapters 2 and 3 has shown is that, as time goes by, these users and labelers, empowered with greater influence in matters of music's annotation, are introducing new terms and phrases – both in the form of new genres and in the form of non-genre contexts – into Last.fm's folksonomy. As this discussion progresses from here, it slowly shifts towards building upon the evaluation of music's new labels and examining the ways in which these labels are being translated from mere annotations and labels into viable and conveniently 'listenable' musical aggregates in the context of a new set of mediating technologies.

Looking Ahead: Learning to Appreciate Tags as More than Just Labels

Over the course of the previous chapters, this study has examined the extent to which tagging provides users with an outlet for labeling musical content with terms they choose

themselves. In Chapter 1, tagging and folksonomy were introduced as two facets of an organizational framework which allows users to draw from an unconstrained vocabulary of terms and phrases when labeling music. This chapter, as well as the one that preceded it, has presented evidence that the freedom that tagging affords its users is indeed being exercised. To this point, however, the discussion has looked only at tagging practices. The analysis has centered strictly on examining the construction of the folksonomy of music in Last.fm's online environment through tagging. On the one hand, the study of the types of tags being cited by users can and does provide incredible insights into the semantic priorities to which users of Last.fm ascribe. The evaluation of the tags that comprise this folksonomy of music opens up the door to further research into the nature of individuals' interpretations of music, provides insights into the types of categories and labels they hold to be important in music's classification, and sheds light on the nature of the lexicon through which contemporary audiences make sense of the music they encounter around them. Additional research can certainly be carried out with the goal of further evaluating the types of labels that users privilege in the acts of tagging content. However, if one thinks back to the introduction of this thesis, they will recall that it was noted therein that this study does not focus on the deeper questions of how individuals interpret music, but rather focuses more squarely on examining the role that tagging systems and folksonomies play in shaping the way contemporary audiences come to aggregate, encounter, and consume music. These considerations cannot be addressed solely through an evaluation of tagging as a record of individuals' personal opinions. The analysis has to go one step further. Tagging has, up to this point, been presented and treated as a process of user input, but the discussion has done little to illuminate the way in which the framework of folksonomy stands to have a significant effect on patterns of musical listening. In order to more fully address this facet of the study, the discussion

must shift from an evaluation of the building of Last.fm's folksonomy to the uses of Last.fm's folksonomy in the construction of listening acts.

Over the course of the next chapter, the discussion moves to more fully address the fact that Last.fm provides its users with access to a mediating framework in which the types of tags cited in the discussion to this point begin to serve not only as mere records of user-generated declarations but also as criteria informing acts of discovery and musical experience. The next chapter introduces the tag-based music-listening framework encountered in Last.fm's environment – the framework of *tag radio*. Over the course of the discussion of tag radio as an intermediary force, tags will be presented as contributing extensively in the aggregation of music and the articulation of new 'types of music' to which individuals are now listening. Where the past two chapters have looked at how users are tagging the music they have already encountered, the chapter that follows looks at the ways in which audiences are able to use tags as gateways to encountering, discovering, and experiencing unique assortments of new musical works that they might never have otherwise been made aware of. In short, we have seen how users contribute to the culture of tagging. We will now examine how tags contribute to the culture of listening.

Chapter 4 – Tag Radio

We live in the physical world, and until recently, most of our entertainment media did, too. That world puts dramatic limitations on our entertainment.

*Chris Anderson
(Anderson, 2006, p. 17)*

Revolutionary methods of acquiring music also provide unmatched ways to discover music

*Chris Anderson
(Anderson, 2006, pp. 34 - 35)*

In the previous chapters, some examples of the various terms being used in the tagging of music through Last.fm were presented and discussed. Therein, it was noted that users of Last.fm are not only citing new genres in the tagging of music, but are also citing entirely non-genre-related contexts and connotations, labeling music by referencing and recording the various meanings with which they associate the songs, artists, and works being tagged. In particular, in Chapter 3, the discussion centered on a survey of the non-genre contexts to which tags are shown to be referring – including, but by no means limited to, instrumentation, performance contexts, geography, gender, listening activities, emotions, and sentiments. However, if one approaches and evaluates a folksonomy merely from the point of view of its function as a repository or database record, and if Last.fm is treated merely as a venue for the declaration of keywords and the archiving of user-generated metadata, then this evaluation ends up overlooking a very core part of the broader social and cultural role that this tag-based organizational system in fact plays. Yes, in a very basic sense, the act of tagging a work of music is an act of declaration, and tag systems function as a forum in which individuals are invited to come forward and record, for posterity, the terms and phrases with which they associate particular works of music. In the words of Elaine Peterson (2006), whose work in the theorization of folksonomy was already

cited in previous chapters, tagging provides users with an outlet in which to express how it is that they, rather than those on the side of the production or distribution of a work of music, believe that this content should be labeled. Without a doubt, one of the fundamental significances of tag systems is that they become a valuable record of the sum total of these individual beliefs.

However, insofar as we might think of tag systems only in their capacity to function as records of users' opinions – as just a way for users to record their personal affiliations with music – we need to be cognizant of the fact that behavior analogous to 'tagging' has been taking place throughout the history of musical listening and experience; since long before the development of Last.fm and other online folksonomies in the first decade of the twenty-first century. Last.fm provides a powerful tool with which to store the associations between music and various connotations, but in many respects, the process of associating musical works and material with the types of terms and phrases that have been mentioned in previous chapters, and to which acts of tagging now commonly relate, has actually been taking place in other capacities throughout history.

Before Last.fm was introduced as an online service, and before the inclusion of tagging features to this service two years after its initial debut, music listeners have already been associating works of music with various personal designations and private labels. For one, a process loosely analogous to tagging continually takes place in the head of a listener as a natural consequence of the neural processes of the human mind. Cognitive psychologists and neurologists broadly assert that as a listener becomes aware of a musical work for the first time, they will, in all likelihood, generate a set of private cognitive categories with which to associate it (Minsky, 1981, 1986; Rosch, 1975, 1978; Rosch & Mervis, 1975). Studies have shown that individuals have an inherent cognitive desire to make sense of their surroundings through the

formation of categories, and the maintenance of reference points and mental landmarks. Rosch (1976) has postulated that there is a tremendous cognitive benefit to the act of labeling and keyword-assignment as this enables us to “reduce the infinite differences among stimuli to behaviorally and cognitively usable proportions” (Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976, p. 384). Fabian Holt (2007) similarly states that “even the simplest cognitive functions depend on categories” (p. 2), the sum of which constitutes what has elsewhere been called a “cognitive scaffold” (Murray, 2007). Cognitive categories are also useful in facilitating the organization of meaning, and ensuring that a cultural text does not dissolve into incomprehensibility ([Gledhill, 1985, p. 63] as cited in Chandler, 1997). It can therefore be postulated that individual listeners have continually been engaged in a process of essentially tagging music in their own heads whether they have been conscious of this process or not. Furthermore, in the act of sorting one’s own music collection, individuals could build upon these private cognitive associations when deciding how to arrange the various records and albums existing in their own home collections, thereby implicating private labels in the real-world organization of the music they own. When arranging a collection of records or CDs, individuals have always had the liberty to situate different music in different locations throughout their inhabited living space according to whatever contexts they felt were most relevant. For example, one might elect to keep all of the albums they consider to be “cooking music” in the kitchen, keep “studying music” next to their desk, and have music for a “soothing bath” next to the tub. Or, they might have kept their musical possessions all in the same general location but arranged them on a shelf according to whatever classifications they felt were most meaningful. Finally, with the help of computers, the task of recording and recalling these labels and associations has been made even more convenient and easy. Computers, in tandem with the metadata layer linked

to digital music files, have allowed for the quick retrieval of music according to these personal categories if one adds the relevant metadata to the songs in their local folder or music library. Many of the most popular media players and management programs currently in use on a majority of personal computers today – iTunes, Windows Media Player, WinAmp, etc, have features that allow users to add keywords to the associated metadata layer of their music files. A metadata layer is built into the MP3 audio format itself, and the information users wish to associate with given MP3 tracks can be stored together with the file in the form of ID3 tags. Initially, the inaugural ID3 standard for MP3 metadata (ID3v1) employed a genre index in which one byte of the 128 byte metadata layer was used as a reference to one of a list of 255 pre-selected genres. This meant that, at first, the genre tag could only be one of a number of prescribed categories. However, the extended version of the ID3v1 standard now offers users with a 30 byte free-text “genre” field. In this new version, genre metadata for the MP3 format finds itself in an open text field, and listeners can now use this portion of a song’s ID3 metadata layer to label a song in whatever way they choose. They can continue to refer to conventional genre headings, as they would have had to do with the initial ID3v1 metadata standard, but if they wish, the ID3v1 extended standard allows users to cite a nascent genre designation in this field – for example “electroclash” or “melodic death metal” (See Appendices A and B) – or, if they wish, they can even cite a non-genre context of their choosing.

Whether it is in one’s own head, in the sorting of one’s own record or CD collection, or through the use of metadata tags in association with the music files in one’s own desktop digital media library, individuals have already engaged in practices comparable to tagging years before folksonomies emerged in online environments. Just as users now do through tagging music in the contexts of Last.fm’s online environment, individuals have long been assigning and employing

personal categories and keywords they find to be meaningful and significant in making sense of the music around them. In cases where someone listened to a song and tucked it away into memory along with thinking “oh, this is such a *sad* song”, they were essentially mentally ‘tagging’ it with the keyword, “sad”. In those cases in which someone picked out a stack of CD’s to keep in their car as “music for the commute to work”, they essentially tagged it: “commute music”. In cases when an individual took the time to change a field in the ID3 metadata of an MP3 file they had recently downloaded from its initial default label of, for example, “adult contemporary” to the more personally meaningful label of “dinner party” this individual was, again, essentially tagging the song. These scenarios each serve as compelling evidence of the fact that, to a large extent, the practice of annotating and somehow associating musical material with personal and often unconventional labels certainly predates the debut of Last.fm’s folksonomy in 2005. In fact one could even argue that the act of associating personally meaningful keywords with music is as old as the act of musical listening itself. But there is one rather significant consideration that must be kept in mind. In each of the examples cited above in which music was being tagged and associated with any number of uniquely meaningful keywords, the content being tagged must have already been encountered somehow by the individual. In order for a work of music to have been ‘tagged’ by an individual in any of the aforementioned situations, that work must have already been known to the tagger. Each of the examples discussed above illuminate a case in which a listener would have been engaged in processes of what I wish to call “tagging known music”. Whether it is in the ID3 labels of the digital music files stored on one’s local hard drive, whether it is in the manner in which a listener sorts their CDs in their den or throughout their living space, or whether it is in the way in which an individual mentally associates certain works of music with particular connotations in their own head, the tagging acts

that consumers have been able to carry out in these capacities have generally provided them with a way to sort and sift through music already in their possession or music which they have been made aware of and have previously been exposed to. Many of the labels with which listeners have already privately been associating music through these ‘pseudo-tagging’ practices would generally not have functioned as criteria informing the aggregation of music in the mediated listening experiences through which new music was most often being discovered and heard for the first time (Crawford, 2006).

Though the examples above indicate the extent to which music’s listeners have long been tagging the music they know, what has been noticeably absent in the past is the opportunity for these listeners to expand their horizons along the lines of the same labels with which they tended to associate music they were already aware of – in other words, an opportunity to “know tagged music”. What makes the online architecture of Last.fm’s web-based folksonomy incredibly significant, therefore, is not that it provides a forum for listeners to share and declare their private associations in a much more public light, but that it further provides users with a new range of navigational and mediating processes through which they can discover new content based upon the ways in which others have already tagged it.

Up to this point, the discussion here in this thesis has not yet adequately highlighted the fact that the case study presented here, Last.fm, is not merely a repository for user-generated annotations. Last.fm is more than just an online environment in which formerly private sentiments can be recorded in a catalogue for posterity’s sake. Last.fm serves as much more than simply a database that holds a record of the various tags that users might assign to music. It also plays a role as an intermediary framework – as a transmission vehicle through which tags get

implicated in processes of aggregating musical works together and presenting these aggregates as offerings in which listeners can then conveniently partake.

The remainder of this chapter looks more closely at Last.fm as an intermediary, treating Last.fm's folksonomy not as the outcome of tagging practices but rather as itself a starting point for contemporary listening practices, and therefore as a contributing factor to a set of rapidly emerging consumptive outcomes. This chapter examines the feature of Last.fm that provides its users with a means of drawing from the folksonomy in the formulation of listening acts, thereby establishing tags as the criteria according to which many listeners are encountering new musical works today. This chapter looks at the ways in which users, availing themselves of the tag radio feature of Last.fm's suite of services, are engaging in practices in which they are coming to "know tagged music."

In order to fully appreciate the significance of tag radio as a mediating strategy, it is useful, at this point in the writing, to reflect back upon the various other channels through which listeners have come to know new music in the past, and to recognize the extent to which the intermediaries through which music has typically been listened to and consumed have been influential in regulating and informing the mixes of music to which a majority of individuals have generally listened. The sections that follow look more closely at the extent to which the structure of audiences' experience of music in the contexts of earlier mediating technologies has fostered the pattern of musical preferences and listening habits we have since seen take shape. The discussion then moves to illuminate how, and to what extent, the technology of tag radio is fostering a nuanced and revised set of contemporary listening habits.

Mediating Musical Listening

Though one might not always be fully appreciative of this fact, listening habits have always been, are, and always will be continually regulated and regimented in some way by certain external intermediary forces and sources of influence. In the contemporary climate of cultural consumption, in the absence of any truly explicit or outright restrictions dictating which music individuals are or are not allowed to consume, it has become somewhat of a presumption that the music which consumers are listening to is the music they like – plain and simple. But, in the end, the relationship between one's preferences and one's listening behavior is by no means pure or unadulterated. As cited earlier, Phillip Russell (1997), in speaking about the relationship between musical tastes and observable consumptive behaviors, explained that an individual's taste in music can be discerned by observing and noting the types of music he or she chooses to listen to. However, if one looks more critically at this definition, it becomes incredibly important to recognize that any such choices (which Russell claims are a reflection of one's musical preferences) are, in fact, often heavily influenced by the mediating frameworks through which music is made available to consumers and, at the same time, by the nature of the communications technologies through which listeners most often discover, encounter, and experience content. As Joseph Heath (2001) has written, the patterns of consumption that are present within any culture are a byproduct of the industrial, social, and technological environment which have fostered said patterns. Similarly, DiMaggio (1987) has written that patterns of taste are a corollary of the nature and type of the intermediary structures through which such tastes get formulated and maintained (see also: DiMaggio in Ollivier & Fridman, 2001). In order to fully acknowledge the extent to which acts of musical listening and declarations of musical tastes are the epiphenomena of the social and cultural structures that produce them, it is important to more fully appreciate the

role that technologies play in dictating what types of consumptive patterns can feasibly and reasonably be articulated.

In looking at the relationship between preference and consumption, as well as engaging more critically with the definition of musical taste which describes taste as discernable by way of observing the types of music an individual chooses to listen to, it is necessary to recognize that as particular aggregates of music are most often presented to audiences, these mixes understandably stand to become the ‘types of music’ to which listeners are generally expected to listen, and furthermore, declare a preference for. Even while we readily acknowledge that listeners are free to pick from among any number of ‘types’ or categories of content when listening to music, the ‘types’ to which an individual is likely to listen will tend to be one of the ‘types’ that are made listenable in the contexts of the most accessible and popular mediating channels. In other words, the range of terms an individual is expected to identify with when declaring their musical preferences is arguably limited to the headings of the aggregate clusters or flows of music which listeners can feasibly partake in on a regular basis. With this consideration in mind, in setting out to examine the patterns of musical listening as they relate to the organizational structures through which they take form, I would argue that greater focus should be placed on evaluating the intermediary frameworks through which music is heard.

“Feasibility Spaces”

Discussing technology and its effects on the ways people go about their lives can become a slippery slope if one is not careful in the way in which they approach and treat the relationship between tools and the outcomes to which they contribute. In particular, if taken at face value, the privileging of the effects of mediating systems and their respective technological architecture in

a discussion of cultural and behavioral outcomes appears to constitute a stance of technological determinism. However, I argue, as numerous other scholars do as well, that recognizing and appreciating the role of technology as a contributing factor in real-world outcomes need not be deterministic. In contrast to a deterministic approach, which generally argues the inevitability of certain social and cultural results based on the influences of a particular technology or technological system, scholars looking to better understand this process of influence might do well to look at the issue from the opposite perspective; to focus instead on the *negation* or *prohibition* of a certain set of potentials based on the fact that there are simply certain practices that a given technology cannot reasonably accommodate, let alone facilitate. Grant (1976) famously insisted that a technology “does not impose on us the way it should be used” (p. 131), but one can nevertheless argue, from the contrary position, that a technology does, in fact, impose on us the way it *can't* be used. This is the perspective which I adopt here in this study in examining the influence of mediating technologies on patterns of musical listening and on consumptive habits. Rather than focusing on the outcomes that particular technologies make possible, the discussion in this chapter centers on recognizing the articulations of musical listening that mediating technologies have hitherto implicitly prohibited. It will be noted that any and every technology, having limited features and thereby being able to carry out only a limited number of functions, can only enable a certain finite range of practices as dictated by the range of operations that this technology can successfully perform. Yochai Benkler (2006) explains:

Different technologies make different kinds of human action and interaction easier or harder to perform. All other things being equal, things that are easier to do are more likely to be done, and things that are harder to do are less likely to be done. [...] Neither deterministic nor wholly malleable, technology sets some parameters of individual and social action. (Benkler, 2006, pp. 17 - 18)

In the same writing, Benkler goes on to summarize his position, challenging and contravening the tenets of a crude technological determinism, and suggesting instead that “technology creates feasibility spaces for social practice” (Benkler, 2006, p. 31). In looking to apply this conceptual stance to the subjects engaged with here in this thesis, it is important to briefly outline how the notion of “feasibility spaces” might help us to better understand the relationship between the mediating frameworks informing the organization, publication, and presentation of music on the one hand and the resulting acts of musical listening on the other. It will be shown that although patterns of musical listening are not *determined* by the nature of the technologies present and available at any given time, they are nevertheless end up predominantly reflecting the articulations of listening activity that the dominant mainstream mediating technologies render feasible. Each technology employed over the course of history in acts of musical listening has acted to make some listening habits easier to carry out and others harder. By the same token, when it comes to evaluating the range of answers that listeners might give in response to the question “what types of music do you listen to?” we should be prepared to recognize that as a result of the manner in which music has been organized for audiences, some responses to this question have become much more likely than others. Over the course of the next sections of this chapter, the notion of technological feasibility spaces is applied to a closer look at some of the technologies that have mediated musical consumption up to this point in the hopes of promoting a fuller appreciation of the fact that when listeners partake in one of a number of available ‘types of music’ they do so within the confines of a particular set of limits.

Evolving Feasibility Spaces for Musical Listening

Throughout much of the twentieth century, the mainstream media environment was closely tied to a broad and overarching industrial development in many regions of the world. For much of this period, mediating practices extensively employed mass-production processes in the creation of cultural commodities, and utilized broadcast technologies in their dissemination and circulation. Benkler (2006) writes:

The technical architecture was a one-way, hub-and-spoke structure, with unidirectional links to its ends, running from the center to the periphery. A very small number of production facilities produced large amounts of identical copies of statements or communications, which could then be efficiently sent in identical form to very large numbers of recipients. (Benkler, 2006, pp. 178 - 179)

This technical architecture is generally referred to as “the mass media.” Author Seth Godin has deemed it the “TV-Industrial Complex” (Godin, 2003), while, in a more classic articulation, this period is often identified under the oft-heard label of “the culture industry” (Adorno & Horkheimer, 1944). The era of the so-called ‘culture industry’ (or, more accurately, culture industries) constituted a period in which a particular set of material conditions informed the practices and processes of “symbolic production” (Schiller, 1989, p. 30). The dissemination of cultural goods in this era generally took place through the application of many of the same tools and techniques utilized in more general industrial tasks to the creation and circulation of creative content (Adorno, 1945, 1991; Adorno & Horkheimer, 1944; Adorno et al., 2002; Van Reijen, 1992; Witkin, 1998). On the whole, the production of cultural symbols and texts during this period was characterized by tendencies towards increased refinement of mechanization, the rational organization of the processes employed in the circulation of commodities, and the explosion of broadcast media channels (Paddison, 1996, p. 27). The experience of popular culture throughout this era centered chiefly on a scenario in which content was made available to

consumers predominantly through “the filters of Hollywood and the recording industry” (Benkler, 2006, p. 275). In the contexts of the distribution and performance of recorded music, the developments of this period in history centered primarily on the rise of terrestrial broadcast radio technology and its related set of channels, technical frameworks, and formats (Frith, 2003).

Insofar as the experience of music and acts of its initial discovery have occurred through traditional filters of the culture industry and by way of terrestrial media channels which have operated as gatekeepers between consumers and the content produced by these industries, it is suggested that music listeners encountering music in mainstream formats throughout much of the twentieth century encountered a relatively limited feasibility space for consumptive practice when compared to the feasibility space that has since been realized following recent technological developments. In order to frame this contrast effectively, it is useful to begin by briefly examining the influences of conventional broadcast radio on music listening, as it is radio channels that have played perhaps the greatest role as mediators through which music has been experienced and, more importantly, through which music has often been encountered for the first time by listeners.

Terrestrial radio, a broadcast technology, indeed has allowed only for the creation of “large amounts of identical copies of statements or communications, which could then be efficiently sent in identical form to very large numbers of recipients” (Benkler, 2006, pp. 178 - 179). Every individual tuned-in to a particular station at a particular time would hear the same material, and since there are always only a limited number of frequency slots allocated to radio stations in any given spectrum, the number of musical “flows” (Williams, 1974) – aggregate offerings of musical content – available at any given time in any given market has been limited. In terms of the feasibility spaces associated with the related technologies of radio, even

something as seemingly insignificant as the features and design of the radio receivers and tuners that a majority of consumers would have utilized in listening to music will have, to some extent, affected the manner in which music was experienced by audiences. For example, the act of repeatedly tuning from station to station using an analogue dial in a process of custom-tailoring one's exposure to content was a less-than-convenient venture, to say the least. Though they did not necessarily dictate the articulation of patterns of musical listening, the technologies of radio and the radio receiver in many ways contributed to the creation of a particular feasibility space in which a listener was implicitly guided into the experience and consumption of one of a number of pre-selected aggregates of music. Listeners formulating their consumptive habits during this era were, of course, free to keep changing stations in search for the perfect personalized musical listening experience, but the tools employed in this process did not effectively accommodate, let alone encourage, this type of consumptive behavior.

Since the heyday of broadcast radio in which radio-play functioned as one of the primary mediating forces in the circulation and promotion of music, menus of musical material presented to audiences through broadcast channels have come to constitute an "hourly diet spooned out to whichever public happens to be engaged" (Schiller, 1989, p. 33). One can therefore argue that listeners during this era generally identified with one of the offerings on the menu when understanding their own taste in music, given that they had little in the way of tools with which to modify the offerings on the menu to ideally match their true preferences. This argument, which postulates that audiences continually adapt the sense of their own preferences to coincide with the cultural offerings available to them, is found in the writings of Peterson and Berger (R. Peterson & Berger, 1990 [1975]) who dismiss "the conventional idea that in a market, consumers get what they want" (p. 156) and propose, instead, that in many respects consumers come to

develop preferences that reflect and coincide with consumptive behaviors that can plausibly be satisfied through the use of available media technologies (see also: DeNora, 2003, pp. 24 - 25). Numerous other scholars (Frith, 1992, 1996; Hennion, 1989; Negus, 1995, 1998) also make a point of calling attention to the fact that the patterns of consumption which we observe today are, to a certain extent, shaped by deliberate systems of organization. Considering the nature of the feasibility spaces associated with the mediation of music through broadcast channels and radio play, listening audiences in most mainstream contexts have been implicitly led to align their habits of musical listening to correspond with one of a limited number of aggregate musical meals. Admittedly, it would be a gross oversimplification to suggest that radio listening had a ubiquitous and universal effect on all listeners and on all audiences. This claim would deny the fact that there have always been certain complexities to the manner in which music was consumed. However, it is not a stretch to argue that radio has, without a doubt, had a disproportionally high level of influence over listening habits, particularly prior to the emergence of music television in the mid-1980's and the emergence of the internet a decade later. Insofar as the technologies surrounding radio-play and its reception by audiences have played a noteworthy role in the framing of audiences' musical listening habits, these technologies have been largely incapable of accommodating, let alone nurturing, anything other than a limited number of answers to the question "what types of music do you listen to?" However, while terrestrial broadcast radio has served as one of the primary sites for musical discovery in mainstream contexts throughout the latter half of the twentieth century, the level of its influence over the listening habits exhibited by today's public is dwindling (*IFPI:07 Digital Music Report, 2007*; *Nielsen Music 2007 Year End Music Industry Report For Canada, 2008*; Ross, 2008; Spendlove, 2005). Reports from the United States, Canada, and the UK all indicate that levels of radio

listening are plummeting (Digital Entertainment Survey 2008; Ross, 2008; "Statistics Canada Radio Listening," 2007). In the United States, radio listenership in 2005 was observed to be at the lowest level it has ever been at since 1978 (Anderson, 2006, p. 35) and it has continued to decline appreciably. It indeed appears, as Leonhard and Kusek (2005) have written, that "radio is no longer the primary way that people discover new music" (p. 26).

As the level of influence that terrestrial radio-play holds over individuals' exposure to, discovery of, and ongoing experience of music continues to decline, radio's role as mediator and as a venue for discovery is being taken up by a set of emerging online services through which more and more music is being apprehended by today's web-savvy audiences and online listenership. The exodus from radio-listening translates into a parallel influx of consumers into new arenas for musical listening that are filling the position once occupied by radio. Listeners that are no longer encountering music through broadcast channels have certainly not stopped encountering music entirely. Rather, many are now engaging in acts of musical listening in new online channels and in new technological contexts. As Leonhard and Kusek (2005) go on to say, "people are turning 'off' of the radio as we know it, and 'on' to the Internet" (p. 27). This statement is echoed in the 2007 Statistics Canada Radio Listening report, where the following is written:

[Individuals] devoted less time listening to their radios as a form of entertainment, especially teenagers and young adults, many of whom appear to be switching to digital music players and online music services. ("Statistics Canada Radio Listening," 2007)

Leonhard describes this general shift as a transition from "Radio 1.0" to an era of "Radio 2.0" – a media era in which more people are listening to music through the internet and through unique new services offered to listeners via the web (Leonhard, 2008, p. 61). As a new generation of youth "grows up digital" (Tapscott, 1999) and as tomorrow's consumers continue to spend more

and more of their time online, the current trend – which shows listeners migrating away from conventional broadcast media towards the experience of music through web-based mediating services – will, without a doubt, continue to accelerate.

As individuals extract themselves from the processes of discovering music through conventional radio play, migrating extensively to new online services, one of the services which many of listeners are turning to is the one that has been chosen to serve as the case study in this thesis, Last.fm. To tie the discussion of mediating technologies and feasibility spaces back to the primary case around which this study revolves, the sections that follow focus on highlighting the fact that, in listening to music online through Last.fm, listeners are encountering a new media environment in which the range of ‘types of music’ to which one might feasibly listen is made significantly broader.

Tag Radio

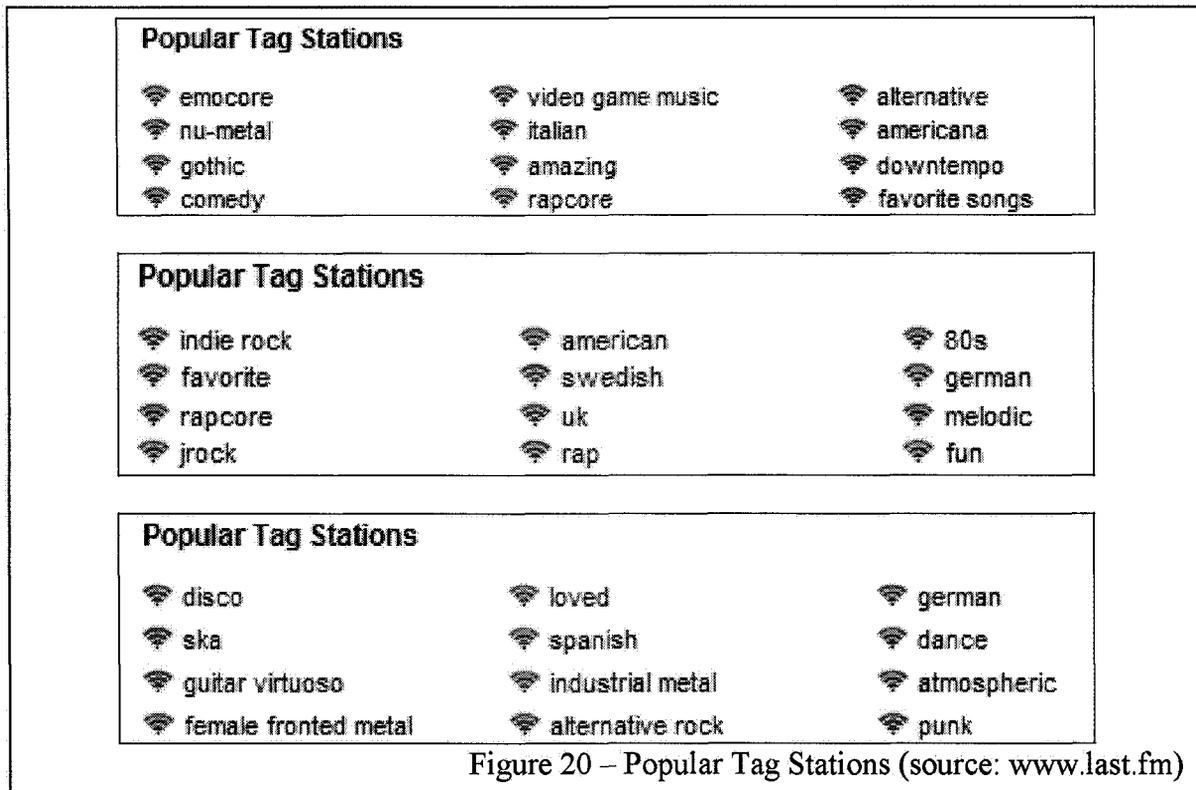
As part of its suite of services, Last.fm offers its users an opportunity to listen to a streaming flow of music populated with a set of songs that have all been affiliated or associated with a particular keyword or phrase – i.e. with a particular tag. This technology, which enables the presentation of a tag-based aggregate of music to individuals who engage with it, is referred to as “tag radio.” When a listener sets out to listen to tag radio, they start by specifying a tag of their choice as a criterion for the aggregation of content. The listener is then presented with an automatically-generated sequential stream of songs brought together based on the fact that they share a common link to a common tag. In brief, the tag radio system allows the types of terms and phrases used as labels in the tagging of music (see Chapters 2 and 3, this volume) to play the role of portals through which a growing number of consumers are journeying in the act of

expanding their awareness of, and appreciation of, bodies of musical works. In performing the functions it does, tag radio positions itself as a notable contemporary example of a service that exists within the shift away from traditional broadcast formats to the tools and technologies which Leonhard (2008) refers to as “Radio 2.0.”

With respect to the end-user’s experience, the practice of listening to tag radio in many ways resembles the sensation of listening to conventional broadcast formats. Users of this feature end up hearing a steady flow of music presented to them in a serial fashion, much as they would when listening to terrestrial radio. In this respect, tag radio echoes the same type of mediated “flows” that radio programs have provided for decades, translating them into a web-based equivalent (Kompare, 2002; Sandvig, 2007; M. White, 2001; Williams, 1974). While the listenable product of both tag radio and conventional broadcast have much in common, in terms of the manner in which the flows are populated with individual works of music, the mixes of music encountered in many tag radio streams often differ significantly from those that would typically have been assembled given the ways in which terrestrial radio formats have typically been managed (Frith, 1996, pp. 80 - 81; F. Holt, 2007, pp. 54, 68; Shuker, 1994, pp. 76 - 79). In the contexts of tag radio, the aggregation of music into playlists is carried out on a case-by-case basis by a server-side program that dynamically generates a musical set by bringing together content from the Last.fm catalogue as merited by a weighing of its appropriateness for inclusion based on the ways in which the content has been tagged. What is incredibly significant about this process is that tag radio offerings are formulated around a tag term without prejudice as to that particular tag term’s meaning or semantic content. At its core, the software system through which tag radio is able to function is wholly indifferent to the nature of the terms being cited in the aggregation of music. As a consequence of this indifference on the part of the tag radio

architecture, streams of music can be founded upon any number of terms or phrases, including emergent and nascent new genres (such as those discussed in Chapter 2) and, just as readily, any number of additional contexts, connotations, qualities, or musical characteristics that go beyond what one might consider to be a generic designation (some examples of which were introduced in Chapter 3). As a growing population of consumers begins to engage with music by listening to tag radio, they are increasingly partaking in the consumption and enjoyment of mixes of music being built for them around criteria of instrumentation, performance contexts, geography, gender, listening activities, and emotions and sentiments – to name but a few of the categories of meaning to which tags frequently relate. In the end, Last.fm’s tag radio feature is in no way aware of, or concerned with, what a given tag refers to. The genres into which content would typically have been classified in the past are in no way differentiated from, let alone privileged over, other less-conventional labels. The tag radio system does not understand, nor does it care, which tags are ‘genres’ and which ones are not ‘genres’, to the extent that we, as culturally-aware individuals, might formulate, recognize, and maintain this distinction. The tag radio software simply knows that the user is interested in a particular string of characters, and it works to return a mix of music that has been tagged accordingly. As far as the tag radio system is concerned, “blues” and “goosey” are both just five-letter words, indistinguishable in semantic content. This means that any term is equally eligible to become the central criterion underlying one’s listening experience. Tag radio therefore represents a significant development in that it serves to expand the feasibility space for listening practices and grants individuals an opportunity to partake in aggregates of music that would have been much more difficult to assemble in the past, and to engage in listening habits which, given the limitations of conventional radio and broadcast technologies, would have been next to impossible to articulate in a convenient manner.

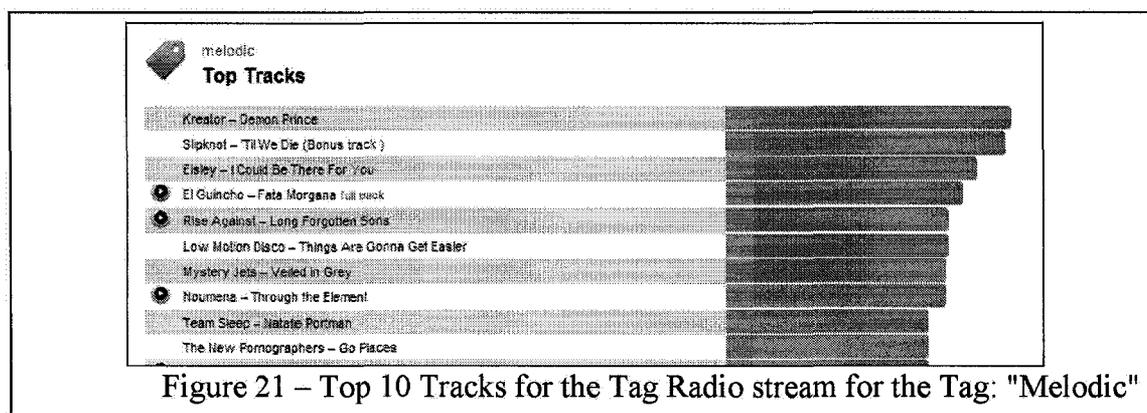
The figures below depict an assortment of the tag radio stations promoted over recent months as “Popular Tag Stations” appearing on the homepage for Last.fm’s tag radio site (Figure 20)²⁷.



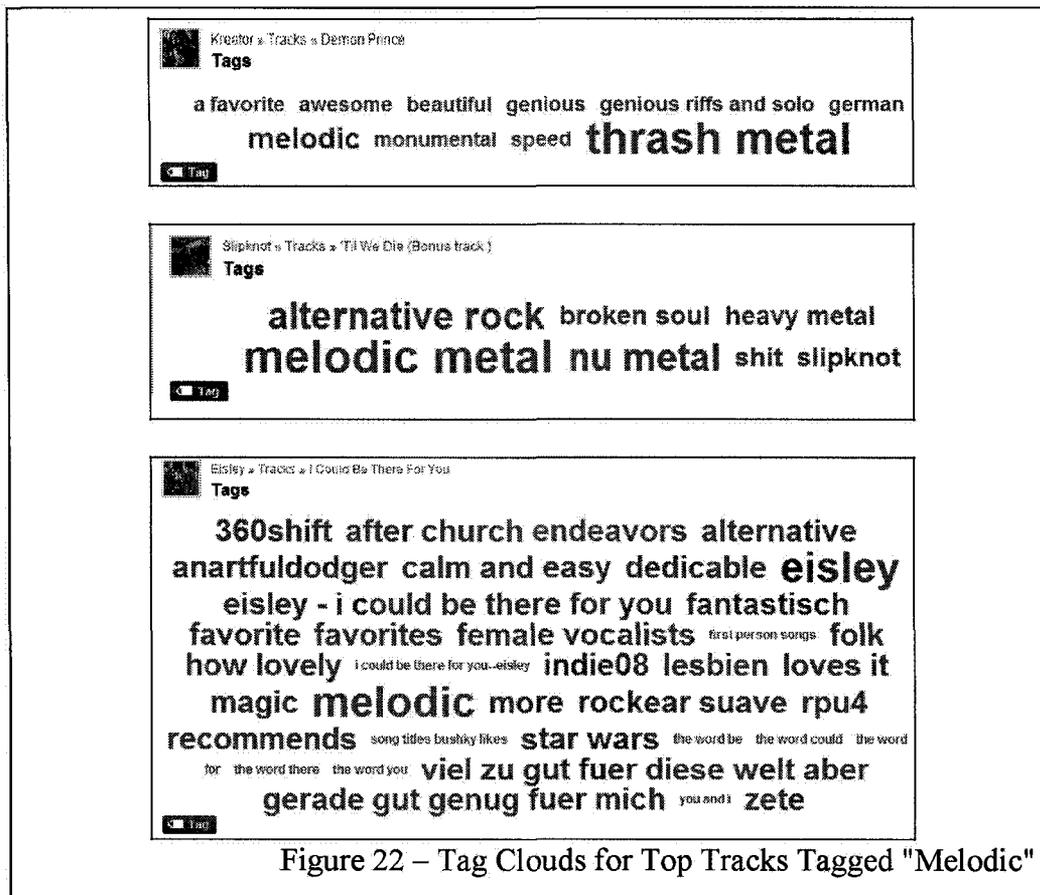
Each of these lists includes a sample of the types of terms and phrases that users enlisting tag radio in their musical listening have recently been employing as the categorical headings acting to frame their musical menus as they explore and encounter music through Last.fm. In listening to these and comparable tag radio streams, users of Last.fm are frequently experiencing aggregated ‘types of music’ that, prior to the emergence of tagging technologies and folksonomies, would not have been as readily assembled for listeners, and, in some cases, would never have been assembled at all. Consider, for example, the music associated with the tag “melodic”, shown in the second graphic included in Figure 20, above. What makes the tag

²⁷ These info-graphics were noted in December, 2008, January, 2009 and February 2009.

“melodic” a particularly interesting tag to consider when contemplating the effects of tag radio in complicating our understanding of the ‘types of music’ to which listening acts adhere is that the term “melodic” is affiliated with works of music hailing from a diversity of genres. The top 10 songs to which the tag “melodic” has been applied are shown in the figure below (Figure 21).



The top three tracks in this list are “Demon Prince” by Kreator, “Til We Die” by Slipknot, and “I Could Be There for You” by Eisley. Their respective tag clouds are shown below. One can see that there are indeed significant differences among the additional tags with which these tracks have been annotated, and yet, despite these differences, these three tracks are related to one another through the listenable aggregate of music that has been labeled “melodic.” Each of these tracks has a chance of being heard by a user who is engaged with the tag radio stream for the term “melodic”, and, as we can gather from the presence of the term “melodic” among the most popular tag radio streams, the term is indeed becoming a viable ‘type’ of music that a significant number of listeners are turning to in regulating the content that they wish to encounter.



Tag Radio and the Changing “Types of Music” to which People Listen

As discussed earlier in this writing, long before Last.fm and online tagging systems allowed individuals to record their personal associations with particular musical works, many listeners would have, for example, already been engaged in the process of thinking of some music as “melodic”, identifying some guitarists as “guitar virtuosos”, and even recognizing some songs more than others as “fun” or “downtempo” or “video game music.” This act of associating personal labels with music constitutes the foundation of tagging practices. But, for the most part, in these cases listeners would have been engaged merely in the act of tagging known music. When experiencing content through mainstream broadcast channels, listeners would rarely have been expanding their horizons by way of encountering new music based on many of the labels

with which they would later come to associate music in their own minds or in the organization of their own collections. What is therefore incredibly important to note when examining the impacts of Last.fm on contemporary musical listening is that although users would always have been free to maintain unique associations between musical works and unconventional keywords in their own heads, such associations generally have not been widely reflected in the manner in which music has been organized for consumers and, by extension, the categories with which many listeners have extensively identified when expressing and declaring their tastes in music. Yes, many of the associations now being recorded as tags in Last.fm's folksonomy would have historically been present, but they would have been present primarily as personal categories existing in one's own mind or in the metadata linked to the content in one's own existing music files. Before one can associate music with a 'tag', one must first come to apprehend and become aware of it. Individuals have long had the ability to maintain a personal mental inventory of songs relating to particular meanings, connotations, sentiments, and interpretations, and could, of course, organize and sort their music collections according to these stipulations. But prior to the rise of tagging and folksonomy, and prior to the introduction of the mediating framework of tag radio and tag-based aggregation processes, consumers would generally not have been afforded the opportunity to conveniently discover music along such lines. In brief, the key contribution of tag radio as a mediating framework is that it provides individuals with a chance to listen to mixes of music that differ from the 'types' that would have most often been presented to them through conventional radio formats and through retail settings. This development stands to have a notable effect with respect to the categories along which listening habits align, and the scope of the headings which one could expect might serve as the most accurate descriptor (or descriptors) for the 'types of music' individuals listen to and the 'types of music' they have a taste for.

Since the introduction of tag-based listening features in 2005, the continued growth in the number of individuals making use of Last.fm's services has resulted in what is now a relatively large population of music lovers engaged with content through the mediating framework of tag radio, and many of these users are beginning to develop an affinity for music associated with particular tags. Where individuals have generally been able to express their tastes by referencing the genre that corresponds most closely with their consumptive habits, listeners experiencing and enjoying music through Last.fm's tag radio streams are often hearing mixes that span several genre categories and include only a particular selection of songs from these genres. This development forces us to call into question the validity of conventional genre as a categorical framework used in the mapping listening habits, as well as in the examination of audience dynamics, cultural groups, and music's markets. While genre has typically served scholars as a useful construct through which to examine matters of taste, I am confident in arguing that much of the success of this framework and its usefulness stems from the underlying fact that music has extensively been organized for consumers according to those same categories. As audiences begin to sort content according to the ways in which this content has been tagged, and as listeners are given the opportunity to conveniently hear content in new clusters, this development begins to pose a significant challenge to the approaches through which academics have generally studied both the articulation of musical culture and patterns of listenership throughout much of the latter half of the twentieth century.

Under the mediating framework of terrestrial format radio, one would generally not encounter a radio station priding itself on being "All 'Melodic', all the time!" or playing "Only today's 'downtempo' hits, and yesterday's 'downtempo' classics!" But now that listeners can partake in content assembled into precisely these types of classifications through tag radio, the

list of answers that one might expect to hear to the question “what type of music do you listen to?” stands to more frequently and reasonably include such expressions. When examining Last.fm and the effects of tagging technologies and folksonomy, it is important to recognize that this new organizational paradigm has not only resulted in a situation in which any term imaginable can be cited and recorded as a label, but a situation in which any label imaginable can subsequently serve as the foundation from which a new listenable ‘type’ of music is built.

In the past, the use of genre in the classification of music in most commercial, industrial, and mediating contexts has generally been so pervasive that asking someone what kind of music they listen to has, for the most part, implicitly been equivalent to asking them what *genre* of music they listen to. Genres have functioned as the predominant category-set in the popular mainstream typology of music, and insofar as music has been delivered to listeners according to this typology, one can appreciate why declarations of listening habits, and, subsequently, declarations of musical taste, have often cited the title of a genre. But it is beginning to appear that while genre once served to inform the aggregates of music that individuals consumed, this one categorical framework alone is becoming much less effective today in explaining the aggregates of musical content that individuals are encountering and enjoying. A much broader range of unconventional labels are now playing a role as viable categories of musical listening and, by extension, equally viable categories to which individuals’ declarations of musical taste can sensibly refer. What once might have been laughable or dishonest declarations are being made not only plausible, but popular. As listeners come to develop a loyalty to a particular tag that does the best job of exposing them to specifically the mix of music they most enjoy, and as listeners employ these tags in the construction of listening experiences through tag radio, a slew of terms that would previously have been thought of as inane are now frequently acting as the

headings for the types of music to which a growing number of expressions of musical preference relate. As an example of this, note the assortment of tag terms and phrases mentioned by several Last.fm users in the comments below (Figure 23). Among the tags mentioned by these users in a discussion of their preferences and affinities for tag radio streams are the phrases “under two minutes”, “songs with more than 5 words with a q in them”, “first word is a number”, “life in a postmodern world”, and “verbless titles” (see Figure 23). If someone had asked an individual what type of music they listen to as recently as a decade ago, it is unlikely that the response given would have been something to the effect of “songs that mention South American cities” or “life in a postmodern world.” One would have expected to hear one of a number of much more realistic responses: I listen to punk. I listen to soul. I listen to country. Had an individual said that they listen to “melodic” music (see Figure 20), or expressed an affinity for songs that are “under two minutes” (see Figure 23), not only would we have questioned their honesty, we might have questioned their sanity. Until recently, listening to music according to these types of aggregates would have been quite unfeasible, but now that users have been given the tools with which to use the system of tagging and folksonomy to build new clusters of content and to conveniently listen to content in this way on a regular basis, tags are becoming viable headings for accurate expressions of musical preference and the list of commercially-recognized musical genres is quickly becoming woefully inadequate in explaining the assemblages of content to which musical tastes can now reasonably and realistically refer.

<p>Niquaidus said...</p>  <p>Subscriber</p>	<p style="text-align: right;">17 Dec 2005, 16:45</p> <p>My new favorite tag: under two minutes. For those of you who like your songs short and sweet. Or maybe you just want to boost your song count quickly. Then under two minutes is for you. I've tried to avoid tracks that are 'interlude' type things or that are parts of a larger whole. Or interview tracks. I've pretty much stopped tagging unstreamable tracks, since there are plenty of tracks under two minutes. Expect lots of Minutemen, Dead Kennedys, and some Ramones. But not just.</p>
<p>danhm said...</p> 	<p style="text-align: right;">20 Aug 2005, 23:23</p> <p>"Songs with more than 5 words with a Q in them" "Songs that mention South American cities" "First word is a number"</p>
<p>Deebster said...</p>  <p>Subscriber</p>	<p style="text-align: right;">9 Jan 2006, 11:36</p> <p>Re: answerphone sampling</p> <p>Quoth _thoreaubred_: Oh, one more silly one maybe some of you can help with: answering machine tracks. I know I've heard several bands with tracks on their albums taken from message left on answering machines. Unfortunately I can't remember most of them. I bet a lot of people can think of some of these.</p>
<p>xslf said...</p> 	<p style="text-align: right;">18 Dec 2006, 23:03</p> <p>I tag based on my mood and my own private associations... For example, I have a "life in a postmodern world" tag (which now can finally stream. whoo! anyone feel like tagging more tracks with this tag?)</p>
<p>danhm said...</p> 	<p style="text-align: right;">17 Aug 2005, 22:06</p> <p>Last night I started tagging all of my songs with no verbs in the title as "verbless titles".</p>

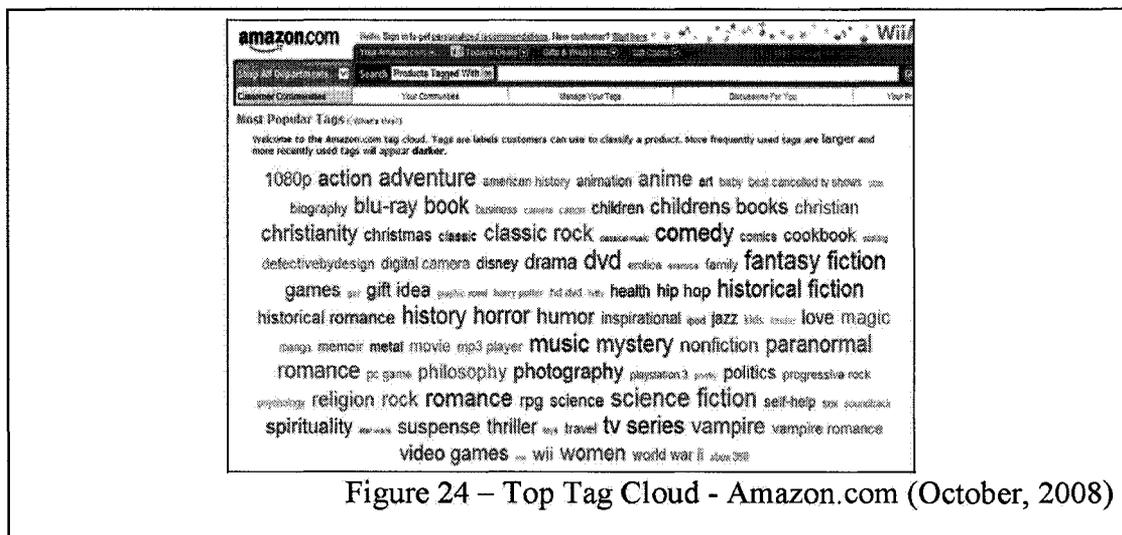
Figure 23 – User posts citing various unconventional tag phrases

As a growing number of tags citing an unconstrained vocabulary of meanings, connotations, and contexts play a more central role in informing a growing number of individuals' musical experiences, this development necessitates a significant re-evaluation of the current scaffolding of categories and classification of types onto which we have generally mapped patterns of musical taste.

Further Thoughts: Tagging and the 'Types of Other Things' People Consume

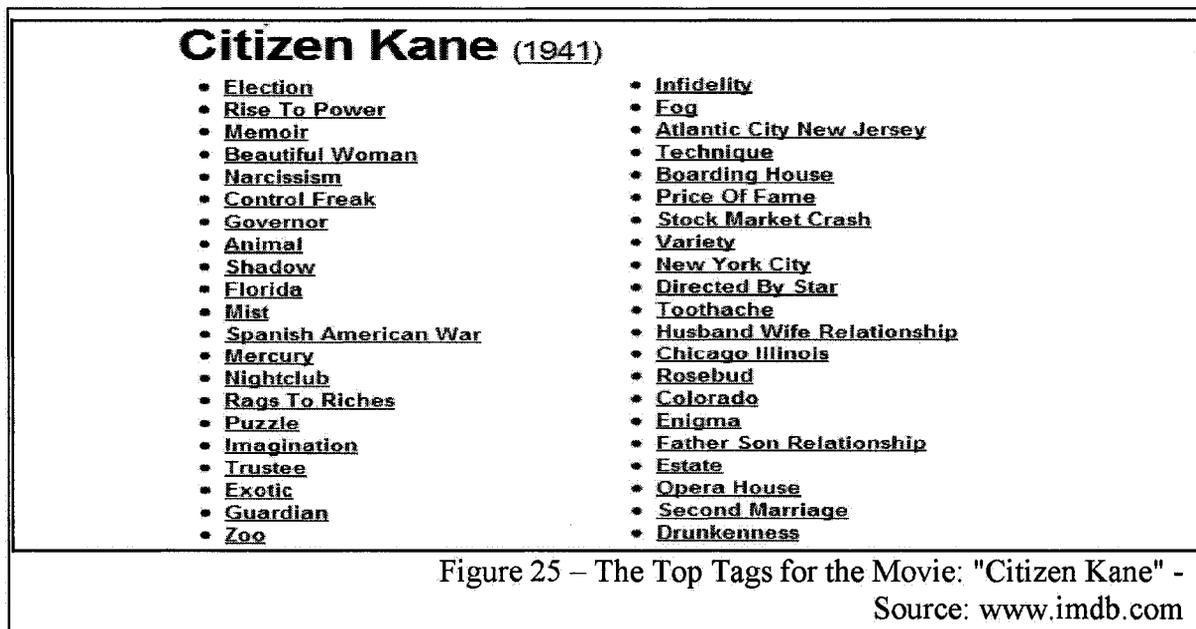
At this point, I feel it is useful to point out, if it hasn't already become apparent to the reader, that the considerations discussed throughout this thesis and the conclusions formulated above in the analysis of tag radio and its impacts are by no means strictly limited to the realm of musical listening. If the scope of this thesis were broadened, the study could easily be expanded to address the effects of tagging and folksonomy on the consumption of cultural goods in general, as currently taking place in a number of different online venues and through their respective folksonomies. Though this thesis centered specifically on one case study (that of Last.fm) it must be understood that, as an organizational approach, tagging is not a phenomenon that is exclusive to Last.fm, nor do processes and practices of tagging apply any more to music than they do to any other form of content. As mentioned in Chapter 1 of this thesis, tag systems are currently being used in the organization of a broad range of content found online. They are used in the organization of blogs in the case of, for example, Technorati.com. Tags serve in the aggregation of video as found in the examples of, most notably, YouTube (www.youtube.com), Google Video (video.google.com), and Hulu (www.hulu.com). Tags also inform the classification of photographs in the realm of the popular online photo repository, Flickr (www.flickr.com). Amazon (www.amazon.com) has also recently adopted tagging as a means of providing its users with a way of navigating its catalogue and as an alternative to browsing through its taxonomic architecture and nested trees of categories. Likewise, the Internet Movie Database (www.imdb.com) has introduced keyword tags to the classification records of the films contained within its database. Each of these examples is part of a growing list of popular sites and services that are employing tagging features, allowing their users to follow these tags in the discovery and acquisition of content. The effects that tag-based aggregation will have on the

patterns of the consumption of the various types of content available through each of these services will arguably be comparable to the effects that tagging and folksonomy are already having on practices of music listening in the case of Last.fm. Much as Last.fm's users are beginning to regulate which musical material they encounter by way of filtering through music based on which tags have been ascribed to it, book lovers using Amazon.com can avail themselves of its folksonomy; browsing, consuming, and enjoying literature and other content that Amazon.com has on offer according to tags that this content has been given (as an example, terms such as "eerie", "surreal", "vampire" or "sentimental", each of which is present as a term in the tag cloud for the most popular terms and phrases cited by Amazon's users, as shown below (Figure 24)).



Similarly, in the contexts of film, just as Last.fm gives its users an opportunity to discover music based on the way it has been tagged and just as Amazon gives its customers the chance to browse content according to its tags, so too does the Internet Movie Database (www.imdb.com) a popular website resource for information pertaining to films and television shows, allow its users to not only contribute in tagging the content they know but also discover new content based on the way in which it has been labeled and annotated by other – i.e. to not only tag known movies,

but to come to know tagged movies. Just as those individuals listening to tag radio via Last.fm stand to discover music they were not previously aware of through this new mediating framework, so too can those engaged with IMDb as a venue for the exploration of one's preferences in movies and films expand their horizons and awareness according to keyword terms and threads of signification that could not previously have been followed as conveniently as they now can be.



For example, users of IMDb can browse the collection by aggregating together all those films that previous visitors have tagged with the keywords “infidelity”, “Narcissism”, “Colorado” or “Drunkenness” – all terms with which the film *Citizen Kane* has been tagged (Figure 25). Now that tagging and folksonomy have been introduced to the popular organization of films through IMDb, the same changes that stand to be observed in the manner in which listeners answer the question “what types of music do you listen to?” will likely be paralleled by changes to the manner in which moviegoers and fans of film answer the question “what types of movies do you watch?” For much of the latter half of the twentieth-century, movies, much like music, have been

organized primarily according to genre taxonomies. It is therefore understandable that many have tended to identify their cinematic preferences by citing one or more of the headings according to which films would have been organized for them and presented to them, much as music tastes have typically related to musical genres. Before the introduction of folksonomy in the online organization of content, it would have been quite common, and indeed expected, for a fan of film to have declared their cinematic preferences by way of declarations such as “I enjoy comedies” or “I love horror films.” The ‘types of movies’ to which these declarations related reflected the ‘types’ into which store spaces, promotional material, and retail catalogues have been divided. Yes, individuals have always had the freedom to associate movies with other private categories and labels (i.e. to mentally ‘tag known films’) but, just as listeners had little in the way of means through which to come to know music based on how it has been tagged, so too has there been an absence of feasible mediating structures through which fans of film might have come to encounter movies and to know new films based on their less-conventional annotations. For example, an individual could watch a film and consider it to be a film about rebellion. They could then locate this film on their shelf next to other films in their collection which they deemed to be about rebellion. This same individual might even store the DVD-rip of the movie in a folder on their hard drive which they have given the name “movies about rebellion.” But there has generally not been any feasibility space in which consumers could aggregate all of the content that shares the theme of rebellion from a broader and still-unfamiliar catalogue of content. Today, with the help of the tagging features now being implemented through IMDb, a user with such an inclination is never more than a few clicks away from conveniently obtaining a list of all of the movies that share the term “rebellion” as a tag – a list which, by the by, includes

the movies “Star Wars”, “Fight Club”, “Doctor Who”, “Hornblower: Retribution” and “The Animals of Farthing Wood”, among others (Figure 26).

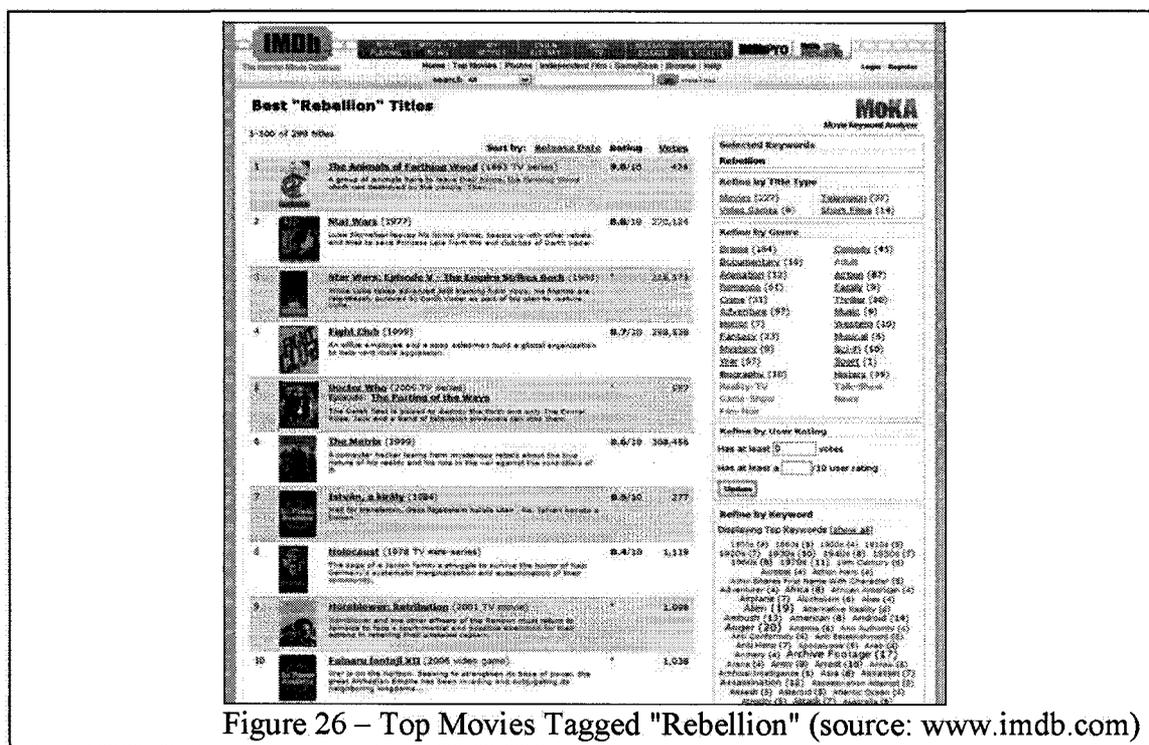


Figure 26 – Top Movies Tagged "Rebellion" (source: www.imdb.com)

Ten years ago, if someone had answered the question “what types of movies do you listen to?” with the declaration “rebellion” we would have been hesitant to take them at their word. It certainly would have been unlikely that an individual would have had the means with which to reasonably maintain such a preference, and satisfy it in practice. Given the way in which films have typically been sorted in the past, the feasibility space surrounding their organization would have made it incredibly difficult for audiences to aggregate movies in this way, thereby making expressions of preference for such aggregates highly impractical to adhere to in reality. But today, these aggregations are easily achieved, having been made not only possible but incredibly simple to articulate.

Tag-based technologies have without question made a certain set of actions that would previously have been deemed impossible now incredibly easy. The limitations of the

technologically mediated feasibility spaces informing the organization of cultural goods are being lifted and new patterns of consumption are emerging on the heels of recent technological and organizational developments. While this thesis study has looked particularly at the effects of folksonomic approaches on resulting outcomes in the realm of musical listening and experience, in the end, the findings of this research apply much more generally to a broad range of contexts, and arguably to the changing structure of culture on the whole – not just habits of musical listening.

Chapter 5 – Conclusion

As we progress further into the twenty-first century, ongoing changes in the media environment and developments to the technological systems through which audiences encounter and obtain content will undoubtedly continue to challenge many of the assumptions and conclusions that scholars have formulated to this point in studying the structure of cultural patterns and consumptive behavior. This study was conducted in an effort to more closely examine the emerging contemporary architecture of tagging and folksonomy and to recognize its influence as one of the key technological environments in which the musical experiences of today's audiences are being mediated. The research carried out in relation to this study highlights a rather important consideration; that while taxonomies have typically played a major role in structuring the musical landscape and helping consumers make sense of the sea of content available to them to this point, folksonomies and the tags they contain are beginning to play a comparable contemporary role as the filters regulating consumers' encounters with new material and guiding them in the acquisition of content.

As listeners begin to navigate the realm of music by enlisting the help of folksonomic tools, rather than taxonomic categories, these listeners stand to frequently experience music in aggregates that do not coincide with the classifications that scholars and researchers have tended to employ when mapping patterns of musical taste. When engaging with mixes of music through Last.fm's tag radio feature, a growing population of users is now enlisting "untraditional categories" (Kroski, 2005) in grouping songs together into the offerings they then consume. As a result of this development, the genres to which musical listening habits have predominantly adhered in the past are no longer the sole labels being used and implicated in the aggregation of

content into the musical ‘types’ that are then being enjoyed. Where a majority of listeners might once have declared an affinity for one of a number of formally recognized and commercially utilized genres, in the contexts of online tag-based environments like Last.fm, listeners are beginning to develop comparable loyalties to a variety of new-genre and non-genre tags when shaping their musical consumption habits. Under this new set of circumstances, not only does the number of different ‘types of music’ for which an individual might feasibly declare an affinity go up dramatically, but the scope of the meanings, connotations, and headings serving as the criteria around which musical listening habits can now plausibly be based broadens significantly as well.

As tagging and folksonomy take root in online arenas in which contemporary audiences more and more frequently both engage with and navigate through content, this new approach to classification and aggregation in the digital age will, without question, be deserving of further scholarly attention and will prove itself deserving of being the subject of additional research. In this thesis study, the discussion and analysis have centered on examining the conceptual link between the architecture of tagging and folksonomy on the one hand and matters of preference on the other. The research that has been presented here brings to the fore several noteworthy considerations relating to the impact that new tag-based mediating frameworks, such as tag radio, are having on the theoretical models that have thus far informed the study and evaluation of listening habits, as well as musical taste. The study has highlighted the challenges that folksonomic approaches to organization and aggregation pose to prior assumptions concerning the structure of cultural experiences, particularly as they stand to be shaped in relation to mainstream patterns surrounding the discovery and consumption of creative content. This development, without question, serves to problematize a great deal of our current understanding of the structure of taste and, as this study has shown, the still-nascent practices surrounding tag-

based listening are already beginning to complicate the processes through which individuals engage with and obtain the mixes of content many subsequently come to enjoy. However, the intersection of tagging and taste constitutes only one area in which scholarship interrogating the consequences of folksonomy can (and indeed should) be situated. I would argue that there are, in fact, numerous thematic perspectives – beyond those relating to matters of taste, as addressed here in this study – from which scholars could continue to observe the effects of these new technologies. For one, on account of the fact that they foster a highly democratized process of annotation and indexation, tagging systems will certainly have broad political implications that need to be more fully appreciated, particularly in relation to matters of the public sphere, and in relation to the ongoing questions surrounding the nature of grassroots participation and collective processes in online contexts. Secondly, with respect to questions of authority over acts of classification, folksonomies provide scholars with a compelling lens through which to more closely examine issues relating to professionalism and hierarchies of credibility, themes which in turn gesture towards philosophical discussions related to the relativism and lack of centrality that remain central characteristics of contemporary online practices in the age of Web2.0. Also, in the vein of studying folksonomy as the product of the collective efforts of users, there is much insight to be gained from further examining the economics of folksonomy, particularly issues of commodification as they relate to the harnessing and potential corporate exploitation of the free labor of taggers' contributions. On a related note, when and if tag systems such as Last.fm and its counterparts become monetized, it will be important to address how, and to what extent, such developments impact upon tagging activities and levels of user participation. Finally, prolonged research in relation to the heightened levels of consumption through tag-based channels, such as

tag radio, will likely be able to provide additional insight into the effect that folksonomies are having on matters of identity construction, socialization, and group dynamics.

Given the breadth of additional research that can be carried out on the heels of the analysis presented here, it is to be understood that this thesis study is by no means a conclusive report on the topic at hand, but rather this thesis purports to contribute to the laying of the groundwork onto which subsequent inquiries can then be built. This writing has addressed a series of core questions relating to the manner in which music is being aggregated and consumed today, provided insight into the current state of tagging and folksonomy as supported by hard data, made a set of generalized projections in terms of the outlook for the development of folksonomies looking forward, and also gestured to a series of additional considerations, such as those just discussed, for which this study potentially serves as a foundation. The analysis and discussion presented here in this writing have aimed to more firmly establish tagging and tag-based mediation as a valuable area of inquiry for scholars in the fields of communications research, semiotics, media studies, and sociology, to name but a few of the academic fields for which tagging will inevitably prove to be of tremendous interest. Beyond the set of conclusions drawn from the research here in this one study, there is still a lot left unexplored.

This study has illuminated a few of the central issues that have come to the fore following the introduction of tagging practices into the realm of contemporary culture, highlighting the core consequences that are likely to arise as a result of these new strategies, in particular, consequences relating to theories of taste and the utility of genres as analytical categories in this vein of study. But there is still a lot that is yet to be thoroughly understood about tags, the people who are doing the tagging, and those partaking in tag-based aggregate offerings. This thesis study was formulated with a particular set of research questions in mind, and it employed a

methodology and interpretive framework in the task of fulfilling its specific goals and addressing the questions from which the work took its inspiration and guidance. That being said, in the interest of directing and suggesting future thought on the topics and themes discussed here in this study, it is useful to, at this point, briefly review what it is that this study has been able to accomplish, how I have approached the goal of accomplishing these outcomes, and where future scholarship looking into tagging and folksonomy might want to situate itself (both conceptually and methodologically) so as to best address the rich areas of inquiry that this study subsequently gestures towards.

The methodologies employed in conducting the research and analysis here in this thesis serve a very particular set of intents, and thereby only allow certain types of conclusions and inferences to be drawn from the study with any degree of confidence. Subsequent study will likely require a diversity of methodological approaches in order to fill in some gaps and to push the scholarly treatment of tagging and folksonomy beyond the limits of the scope of this one thesis. The primary research conducted over the course of this study has centered on the quantitative analysis of tagging patterns; an analysis that has been facilitated by data gathered through Last.fm's Application Programming Interface (API). This approach has proven itself effective in the task of plotting the overarching developments of Last.fm's folksonomy and better understanding the dynamism and growth of this new online semantic space. As evident from the discussion of statistical findings presented in Chapters 2 and 3 of this thesis, API data becomes indispensable in supporting many of the arguments put forth in this writing, specifically those pertaining to the question of how users are tagging content and to what extent the potential for users to employ terms of their own choosing in the labeling of music is truly being recognized in practice. The data gathered from the API contributes in buttressing certain claims relating to the

state and status of the tagging acts currently being carried out by Last.fm's users. If and when other online arenas which employ folksonomic approaches release their own API data, a methodology comparable to the one employed here in this study could be used in order to examine whether the observations presented in this study of one example of a user-driven classification scheme (in the case of Last.fm) come to be paralleled in the contexts of other online arenas and other folksonomies.

However, merely using API data in the examination of tagging and folksonomy does leave something to be desired. There are, of course, additional considerations lying outside the scope of this study that a methodology employing a close reading of API figures will be ineffective in addressing. For example, although the data that has been presented in this writing is an incredibly powerful tool to use in presenting a discussion of the development of tags and tag-systems as a product of user practices, the API data alone cannot adequately support an argument relating to the purpose or intent with which users approach the act of tagging content. There are two notable considerations in this respect that this study leaves unaddressed. Both relate to this idea of purpose or intent. The first relates loosely to questions regarding the intent with which users are tagging content, while the second relates more to the question of the purposes or reasons for users' engagement with tag radio and the individual rationale for the consumption of the aggregates of music that tag radio offers its listeners. In terms of the question of the intent with which music is being tagged, there is much that is yet to be understood about the underlying function that particular users intend the tags they create to serve. Here I feel that perhaps the most important inquiry that must be made is one that examines whether taggers do, in fact, see their tagging acts as contributions to a public and collective semantic space or whether they approach them as processes engaged-in for their own personal purposes. Although

it needs to be noted that the subsequent publicity, visibility, and general accessibility of tag metadata is not contingent upon the motivation or intent with which a tag is generated, having a clearer sense of why it is that people are tagging content would help to establish a clearer understanding of the relationship between individual and collective and to accurately recognize the attitudes with which users approach this new classificatory framework. Second, additional research needs to be conducted to better understand the reasons for particular users' engagement with tag radio offerings. In Chapter 4, the reader was presented with numerous examples of tag radio stations that have recently garnered popularity and widespread listenership; examples which included a mix of unique tags ranging from the ordinary to the entirely unconventional (see in particular the section entitled '*Tag Radio and the Changing 'Types of Music' to which people listen*' in Chapter 4). In building upon this research which looks at which tag radio streams listeners are listening to, subsequent study is needed to illuminate why it is that users are choosing to engage with these aggregates of music and how (in terms of the level and nature of their attention) they are listening to music through these channels. In the introduction to this writing, it was repeatedly emphasized that this study, although it deals extensively with matters of preference and taste, does not address matters of motivation, dealing instead strictly with questions of aggregation. However, now that this study has presented tagging and folksonomy as playing a key role in the current state of musical aggregation and listening, reintroducing the question of motivation might lead to further insight into the nature of contemporary listening and the attitudes exhibited by consumers themselves. Again, such considerations cannot be addressed through an analysis of API data alone, and therefore, to compliment the conclusions that have been made in this writing and have been supported by the specific research methods I have employed, additional strategies – perhaps strategies relating more closely to ethnography and

reception studies – could prove useful in pursuing additional answers to the questions that might be explored in prolonging and intensifying this research program. The scope of this study has focused specifically on examining recent developments in the emergence of tag systems and discussing the notable tensions felt in the relationship between these new mediating contexts and existing theoretical and analytical models. In taking an empirical look at Last.fm and its related API data, this study has highlighted what is happening, where it is happening, and how the developments that are transpiring stand to challenge several assumptions about the articulation of musical taste and the function of musical genre in contemporary online environments. Additional research is needed to provide insights regarding who is tagging content and why they are tagging it. Such studies will no doubt need to enlist approaches that differ from the one adopted here in their own academic treatment of tagging, folksonomy, and tag-based mediating frameworks. This study has explored the current state of affairs with respect to the cataloguing and classification of music online, and has gestured to several of the core conceptual areas (namely those relating to matters of genre and taste) in which adjustments to our way of thinking will need to be made on account of recent developments. Future research will hopefully continue to shed more light on both the reasons for, as well as consequences of, these developments. At present, it is my hope that this study has instilled in the reader the recognition of the fact that the emergence of tagging and folksonomy poses a significant challenge to the analytical approaches currently employed in the ongoing study of both musical listening and musical preference. As tags and folksonomies take on a more prominent position in processes of mediation in a growing range of online environments, the set of categories that have been employed to this point in understanding the organization of content will become increasingly impotent as descriptors for the aggregate ‘types’ to which contemporary acts of consumption relate.

In the past, musical taste (as defined in its subjective sense as a matter of individuals' personal preferences that come to be reflected in their consumptive choices) has generally been studied and mapped according to a familiar set of analytical categories. Experiments have been designed, and research carried out, in such a way that the empirical study of taste has typically become a matter of matching audience demographics with one of a small number of recognized musical genres. As discussed earlier in this writing, for much of the latter half of the twentieth century this approach of studying taste through the lens of musical genre categories has served a useful purpose. However, this approach will, in all likelihood, prove to be woefully inadequate given the recent developments in the way individuals are experiencing music, and the ways in which music is being lumped together on the way to the ears of listeners. That being said, it should be noted that this development in processes of aggregation might not necessarily represent an underlying change in the nature of listener preference. In fact, it may well have been the case that listeners would have always appreciated the 'types of music' now being conveniently delivered through tag-based channels, but in the absence of the means with which to plausibly navigate the realm of music according to those desires, it is understandable that observed declarations of taste have often tended to align with the categories of content listeners *could* identify with as the object of their musical preference. As noted in Chapter 4 of this writing, many of the mediating broadcast technologies of the past, most notably terrestrial radio, have facilitated a relatively narrow "feasibility space" through which music could be consumed, thereby implicitly promoting an observable relationship between mainstream listening habits and a small number of commercially-implicated genres (Benkler, 2006). Today, following the introduction and growing popularity of tag radio, the range of criteria around which a 'type of music' might feasibly be constructed has noticeably broadened, and the range of expressions one

might plausibly encounter among individuals' declarations of musical taste stands to broaden with it. This development will undoubtedly have profound impacts on the nature and structure of culture and call into question countless models that have hitherto been employed in an effort to make sense of its consumption.

In the end, the case of Last.fm is just one lens through which one can observe and evaluate what is quickly becoming a broad contemporary phenomenon. Although arguments have been put forth in this study that pertain specifically to the influence of tagging practices and user-generated classification in the contexts of one folksonomic system in particular (Last.fm) and on the consumption of one particular type of content (Music), the considerations discussed throughout the study and the conclusions drawn with respect to the effects of tagging on patterns of consumption are by no means limited to Last.fm; nor are they limited purely to the realm of musical listening. If the scope of this thesis was broadened, the research could be expanded to address the effects of tagging and folksonomy on the consumption of cultural goods in a growing variety of online venues. As noted earlier, both in the introduction to this writing as well as in Chapters 1 and 4, tag systems and folksonomies are currently finding use in many different online arenas, applied to the organization of various different types of content. The research carried out in this study looked only at one online venue, Last.fm, in which it is the process of music's aggregation, in particular, that is being reformulated through the technologies of tagging and through the classification of music through folksonomy. But while this has been a study of musical listening, it has not been a study about music. This thesis has addressed music and musical listening as its core subjects, but it has done so purely as a means of manageably examining themes that are, in fact, far more broadly applicable than the specificity and narrowness of the case study might otherwise suggest. The effects that the rise of folksonomy

stands to have on the consumption of various other types of media content will arguably parallel the effects that tagging, in the contexts of Last.fm, is having on practices of musical listening.

In conclusion, I firmly assert that the contemporary theorization of cultural structures needs to take into account the role that folksonomies are playing as organizational architectures, and needs to recognize the consequences of both tagging practices and tag-based consumptive practices on the future articulations of taste in a number of different spheres. Slowly but surely, tag systems such as Last.fm are establishing themselves as powerful forces in the contemporary media landscape. We are already seeing the first signs of the effects of these developments. As the practice of experiencing online content through the framework of folksonomy (rather than through the framework of taxonomy) becomes further entrenched into individuals' ongoing consumptive routines, the effects of these new schemes on the structure of culture will undoubtedly continue to be further amplified. It is my hope that the research that has been presented here might become a tool in framing future thinking pertaining to the topics of taste, consumption, and cultural experience in light of the recent developments to the mediating technologies through which audiences are engaging with content. In carrying out this study, I have sought to contribute in further positioning tagging as a topic that is deserving of greater attention and focus in communications and media theory, particularly as the influence of tag-based classification continues to permeate more fully into twenty-first century life. This study will hopefully contribute to the process of building towards the treatment of tagging and folksonomy as not merely a passing trend but as a rather pervasive phenomenon that is fostering very real and very significant outcomes with respect to the structure and shape of contemporary culture.

**Appendix A – Top 250 Tags
Ranked by Growth (in %)
(January 2008 – January 2009)**

		Jan-08	Jan-09	Change	% Change
1.	deathcore	26285	40095	13810	52.53947118
2.	male vocalist	25817	37179	11362	44.00976101
3.	blues rock	33651	47185	13534	40.21871564
4.	epic	22733	31706	8973	39.47125324
5.	contemporary classical	20717	28585	7868	37.97847179
6.	romantic	31094	42739	11645	37.45095517
7.	swing	26849	36857	10008	37.27513129
8.	country	130800	178452	47652	36.43119266
9.	atmospheric	35002	47750	12748	36.42077596
10.	catchy	19692	26612	6920	35.14117408
11.	post-hardcore	54517	73514	18997	34.84601134
12.	ballad	27519	37014	9495	34.50343399
13.	beautiful	89630	120424	30794	34.35680018
14.	male vocalists	67236	90303	23067	34.30751383
15.	guitar virtuoso	19837	26596	6759	34.07269244
16.	loved	20019	26741	6722	33.5781008
17.	melancholic	29583	39430	9847	33.28600886
18.	dark electro	19800	26236	6436	32.50505051
19.	00s	91708	121302	29594	32.26981288
20.	alternative metal	43536	57522	13986	32.12513782
21.	psychedelic rock	43359	57267	13908	32.07638553
22.	sexy	45419	59854	14435	31.78185341
23.	melancholy	38675	50961	12286	31.76729153
24.	usa	23802	31191	7389	31.04360978
25.	amazing	33442	43805	10363	30.98797919
26.	fusion	32303	42167	9864	30.53586354
27.	neofolk	21981	28616	6635	30.18515991
28.	sludge	24953	32414	7461	29.9002124
29.	polish	61733	80185	18452	29.89001021
30.	party	27902	36123	8221	29.46383772
31.	progressive trance	21906	28297	6391	29.17465535
32.	70s	92157	119042	26885	29.17304166
33.	drone	19661	25390	5729	29.13890443
34.	minimal	54855	70792	15937	29.0529578
35.	experimental	247938	319813	71875	28.98910211
36.	happy	32165	41477	9312	28.95072284
37.	relax	33552	43223	9671	28.82391512
38.	easy listening	42944	55321	12377	28.82125559
39.	avant-garde	47224	60828	13604	28.80738607
40.	speed metal	23613	30396	6783	28.72570194
41.	dreamy	19501	25088	5587	28.64981283
42.	club	24511	31504	6993	28.53004773
43.	cool	43886	56404	12518	28.52390284
44.	hardcore punk	30637	39331	8694	28.3774521
45.	baroque	22889	29376	6487	28.34112456
46.	guitar	76468	97982	21514	28.13464456
47.	piano	89945	115239	25294	28.12162988
48.	dark ambient	50648	64868	14220	28.07613331
49.	acoustic	132697	169951	37254	28.07448548
50.	instrumental	193366	247643	54277	28.06956756

51.	singer songwriter	20536	26288	5752	28.00934944
52.	italian	28780	36838	8058	27.99861015
53.	bossa nova	21409	27373	5964	27.85744313
54.	american	95913	122533	26620	27.75431902
55.	british	192775	246211	53436	27.71936195
56.	russian	49876	63657	13781	27.6305237
57.	norwegian	31340	39977	8637	27.55902999
58.	relaxing	32864	41878	9014	27.4281889
59.	technical death metal	25773	32835	7062	27.40076825
60.	melodic metal	28630	36443	7813	27.28955641
61.	awesome	77271	98333	21062	27.25731516
62.	art rock	21207	26943	5736	27.04767294
63.	electropop	21647	27494	5847	27.01067122
64.	60s	88369	112228	23859	26.99928708
65.	medieval	19304	24513	5209	26.98404476
66.	pop rock	56445	71648	15203	26.93418372
67.	gothic rock	46883	59496	12613	26.90314186
68.	love	105310	133634	28324	26.89583136
69.	classical	155463	197091	41628	26.77678933
70.	funky	24046	30440	6394	26.59070116
71.	symphonic metal	73820	93321	19501	26.41696017
72.	breakbeat	20730	26163	5433	26.20839363
73.	darkwave	56374	71140	14766	26.19292582
74.	noise	53570	67554	13984	26.10416278
75.	folk rock	40795	51432	10637	26.07427381
76.	soft rock	27102	34143	7041	25.9796325
77.	world music	19824	24973	5149	25.97356739
78.	nu metal	73342	92341	18999	25.90466581
79.	female vocalist	69492	87461	17969	25.85765268
80.	ethereal	31175	39210	8035	25.77385726
81.	ambient	264880	332989	68109	25.71315313
82.	melodic	19085	23984	4899	25.66937385
83.	industrial metal	52604	66081	13477	25.61972474
84.	psychedelic	125299	157350	32051	25.57961356
85.	post-punk	95379	119713	24334	25.51295359
86.	sad	42745	53632	10887	25.46964557
87.	chillout	213732	267716	53984	25.25779949
88.	spanish	32731	40975	8244	25.18713147
89.	brutal death metal	49579	62053	12474	25.1598459
90.	soul	168556	210893	42337	25.11746838
91.	deutsch	34620	43308	8688	25.09532062
92.	world	63892	79922	16030	25.08921305
93.	dub	46786	58471	11685	24.97542
94.	rock and roll	22427	28019	5592	24.93423106
95.	90s	156538	195526	38988	24.9064125
96.	blues	158765	198059	39294	24.74978742
97.	symphonic black metal	19239	23998	4759	24.7362129
98.	trip hop	25138	31341	6203	24.67578964
99.	live	33028	41172	8144	24.65786605
100.	garage rock	32751	40779	8028	24.51222863
101.	cover	58409	72685	14276	24.44143882
102.	dark	33188	41278	8090	24.37628058
103.	disco	44626	55482	10856	24.32662573
104.	melodic black metal	19305	23994	4689	24.28904429
105.	shoegaze	42526	52855	10329	24.28867046
106.	female vocalists	422522	525080	102558	24.27281893
107.	folk metal	69255	86015	16760	24.20041874

108.	acid jazz	33214	41237	8023	24.15547661
109.	french	81743	101457	19714	24.11704978
110.	electro	121469	150659	29190	24.03082268
111.	industrial rock	23186	28705	5519	23.80315708
112.	trip-hop	127192	157327	30135	23.69252783
113.	new age	55852	69072	13220	23.66969849
114.	lounge	67836	83887	16051	23.66147768
115.	classic	44661	55226	10565	23.65598621
116.	alternative rock	400803	495568	94765	23.6437851
117.	emocore	32059	39626	7567	23.60335631
118.	dnb	22116	27325	5209	23.55308374
119.	female fronted metal	35945	44388	8443	23.48866324
120.	albums i own	104906	129517	24611	23.46004995
121.	brazilian	27497	33934	6437	23.40982653
122.	80s	246512	304206	57694	23.40413448
123.	post-rock	125510	154862	29352	23.38618437
124.	soundtrack	195243	240885	45642	23.37702248
125.	thrash metal	156999	193671	36672	23.35811056
126.	viking metal	38525	47492	8967	23.27579494
127.	reggae	137959	170017	32058	23.23733863
128.	melodic death metal	132476	163249	30773	23.2291132
129.	new wave	125664	154836	29172	23.21428571
130.	downtempo	96866	119327	22461	23.1877026
131.	lo-fi	34828	42882	8054	23.12507178
132.	metalcore	153537	189027	35490	23.11494949
133.	hard rock	266455	328036	61581	23.11121953
134.	favourites	75059	92368	17309	23.06052572
135.	americana	31223	38406	7183	23.00547673
136.	latin	56606	69587	12981	22.932198
137.	funk	125074	153673	28599	22.86566353
138.	folk-rock	19564	24014	4450	22.74585974
139.	jazz	385180	472753	87573	22.73560413
140.	german	114790	140873	26083	22.72236258
141.	dancehall	22547	27664	5117	22.69481527
142.	gothic metal	106334	130437	24103	22.667256
143.	remix	25921	31792	5871	22.64958914
144.	heavy metal	221138	270885	49747	22.49590753
145.	synth pop	30447	37295	6848	22.49154268
146.	drum and bass	63705	77961	14256	22.37814928
147.	screamo	94374	115454	21080	22.33666052
148.	uk	38768	47401	8633	22.26836566
149.	synthpop	64556	78927	14371	22.26129252
150.	folk	292093	357002	64909	22.22203202
151.	house	119004	145385	26381	22.16816241
152.	electronic	709945	866939	156994	22.11354401
153.	pop	634597	774329	139732	22.01901364
154.	trance	153020	186681	33661	21.99777807
155.	electroclash	24224	29547	5323	21.9740753
156.	nu-metal	26406	32200	5794	21.94198288
157.	pop punk	59632	72716	13084	21.9412396
158.	doom metal	89781	109461	19680	21.92000535
159.	techno	121719	148364	26645	21.89058405
160.	female vocals	28653	34925	6272	21.88950546
161.	stoner rock	42743	52034	9291	21.73689259
162.	dance	261330	318086	56756	21.71813416
163.	progressive	72515	88109	15594	21.50451631
164.	mb	101683	123504	21821	21.45983104

165.	rock n roll	28705	34822	6117	21.30987633
166.	ebm	66416	80509	14093	21.21928451
167.	gothic	99087	120112	21025	21.21872698
168.	chill	94732	114831	20099	21.21669552
169.	grindcore	72046	87309	15263	21.1850762
170.	swedish	79140	95829	16689	21.08794541
171.	political	30540	36978	6438	21.0805501
172.	irish	36000	43564	7564	21.01111111
173.	glam rock	31592	38226	6634	20.99898709
174.	english	20384	24657	4273	20.96251962
175.	oldies	74079	89593	15514	20.94250732
176.	rhythm and blues	23251	28116	4865	20.92383123
177.	hardcore	243350	294136	50786	20.86952948
178.	industrial	209616	253201	43585	20.79278299
179.	singer-songwriter	284282	343099	58817	20.6896673
180.	favourite songs	30827	37191	6364	20.64424044
181.	visual kei	38028	45878	7850	20.64268434
182.	idm	81144	97800	16656	20.52647146
183.	progressive rock	236290	284774	48484	20.51885395
184.	grunge	104766	126215	21449	20.47324514
185.	vocal	27855	33545	5690	20.42721235
186.	alternative	891758	1073596	181838	20.39095809
187.	black metal	248016	298318	50302	20.28175602
188.	celtic	47475	56958	9483	19.97472354
189.	rock	1766104	2118857	352753	19.97351232
190.	power metal	142115	170491	28376	19.96692819
191.	mellow	98386	117965	19579	19.90018905
192.	favorites	169156	202753	33597	19.86154792
193.	christian	45776	54845	9069	19.81169172
194.	progressive metal	145823	174687	28864	19.79385968
195.	punk rock	209469	250632	41163	19.65111783
196.	classic rock	410118	489738	79620	19.41392477
197.	post rock	30257	36131	5874	19.41368939
198.	favourite	51574	61559	9985	19.3605305
199.	death metal	245131	292244	47113	19.21951936
200.	fun	45248	53941	8693	19.21189887
201.	christian rock	20104	23952	3848	19.14046956
202.	australian	30825	36696	5871	19.04622871
203.	psytrance	44220	52527	8307	18.78561737
204.	j-rock	85517	101504	15987	18.69452857
205.	covers	37440	44420	6980	18.64316239
206.	finnish	81961	97227	15266	18.62593185
207.	psychobilly	23400	27747	4347	18.57692308
208.	canadian	71855	85159	13304	18.51506506
209.	avantgarde	20229	23935	3706	18.32023333
210.	britpop	115727	136895	21168	18.29132355
211.	seen live	1033470	1222494	189024	18.29022613
212.	drum n bass	23620	27905	4285	18.14140559
213.	electronica	305844	360425	54581	17.84602608
214.	ska	105239	123973	18734	17.80138542
215.	favorite songs	41279	48606	7327	17.74994549
216.	rap	167338	196925	29587	17.68098101
217.	hip-hop	278609	327684	49075	17.614291
218.	favorite	66079	77683	11604	17.56079844
219.	alt-country	38264	44898	6634	17.33744512
220.	j-pop	74229	87094	12865	17.33150117
221.	comedy	45349	53194	7845	17.29916867

222.	indie rock	368170	431513	63343	17.20482386
223.	metal	535564	626505	90941	16.98041691
224.	hip hop	141814	165883	24069	16.97223123
225.	indie	848029	991944	143915	16.97052813
226.	indie pop	137441	160350	22909	16.6682431
227.	ska punk	22117	25788	3671	16.59809197
228.	japanese	165690	192998	27308	16.48138089
229.	rockabilly	34916	40558	5642	16.15878107
230.	punk	413915	478922	65007	15.70539845
231.	favorite albums	22349	25848	3499	15.65618148
232.	thrash	24565	28407	3842	15.64013841
233.	goth	39170	45267	6097	15.56548379
234.	favorite artists	21398	24709	3311	15.47340873
235.	jrock	33247	38363	5116	15.38785454
236.	female	66773	77042	10269	15.37897054
237.	video game music	22345	25773	3428	15.34123965
238.	good	35811	40597	4786	13.36460864
239.	emo	202179	227602	25423	12.57450081
240.	hiphop	34044	38271	4227	12.41628481
241.	anime	55844	62687	6843	12.25377838
242.	jpop	50354	56423	6069	12.05266712
243.	christmas	42916	44829	1913	4.457544972
244.	alternative punk	20204	20204	0	0
245.	soundtracks	19960	19960	0	0
246.	pop-rock	19502	19502	0	0
247.	calm	19220	19220	0	0
248.	dream pop	19133	19133	0	0
249.	funny	19082	19082	0	0

**Appendix B – Top 250 Tags
Ranked by Tag Use as of January 2009**

		Jan-08	Jan-09	Change	% Change
1.	rock	1766104	2118857	352753	19.97351232
2.	seen live	1033470	1222494	189024	18.29022613
3.	alternative	891758	1073596	181838	20.39095809
4.	indie	848029	991944	143915	16.97052813
5.	electronic	709945	866939	156994	22.11354401
6.	pop	634597	774329	139732	22.01901364
7.	metal	535564	626505	90941	16.98041691
8.	female vocalists	422522	525080	102558	24.27281893
9.	alternative rock	400803	495568	94765	23.6437851
10.	classic rock	410118	489738	79620	19.41392477
11.	punk	413915	478922	65007	15.70539845
12.	jazz	385180	472753	87573	22.73560413
13.	indie rock	368170	431513	63343	17.20482386
14.	electronica	305844	360425	54581	17.84602608
15.	folk	292093	357002	64909	22.22203202
16.	singer-songwriter	284282	343099	58817	20.6896673
17.	ambient	264880	332989	68109	25.71315313
18.	hard rock	266455	328036	61581	23.11121953
19.	hip-hop	278609	327684	49075	17.614291
20.	experimental	247938	319813	71875	28.98910211
21.	dance	261330	318086	56756	21.71813416
22.	80s	246512	304206	57694	23.40413448
23.	black metal	248016	298318	50302	20.28175602
24.	hardcore	243350	294136	50786	20.86952948
25.	death metal	245131	292244	47113	19.21951936
26.	progressive rock	236290	284774	48484	20.51885395
27.	heavy metal	221138	270885	49747	22.49590753
28.	chillout	213732	267716	53984	25.25779949
29.	industrial	209616	253201	43585	20.79278299
30.	punk rock	209469	250632	41163	19.65111783
31.	instrumental	193366	247643	54277	28.06956756
32.	british	192775	246211	53436	27.71936195
33.	soundtrack	195243	240885	45642	23.37702248
34.	emo	202179	227602	25423	12.57450081
35.	soul	168556	210893	42337	25.11746838
36.	favorites	169156	202753	33597	19.86154792
37.	blues	158765	198059	39294	24.74978742
38.	classical	155463	197091	41628	26.77678933
39.	rap	167338	196925	29587	17.68098101
40.	90s	156538	195526	38988	24.9064125
41.	thrash metal	156999	193671	36672	23.35811056
42.	japanese	165690	192998	27308	16.48138089
43.	metalcore	153537	189027	35490	23.11494949
44.	trance	153020	186681	33661	21.99777807
45.	country	130800	178452	47652	36.43119266
46.	progressive metal	145823	174687	28864	19.79385968
47.	power metal	142115	170491	28376	19.96692819
48.	reggae	137959	170017	32058	23.23733863
49.	acoustic	132697	169951	37254	28.07448548
50.	hip hop	141814	165883	24069	16.97223123
51.	melodic death metal	132476	163249	30773	23.2291132
52.	indie pop	137441	160350	22909	16.6682431

53.	psychedelic	125299	157350	32051	25.57961356
54.	trip-hop	127192	157327	30135	23.69252783
55.	post-rock	125510	154862	29352	23.38618437
56.	new wave	125664	154836	29172	23.21428571
57.	funk	125074	153673	28599	22.86566353
58.	electro	121469	150659	29190	24.03082268
59.	techno	121719	148364	26645	21.89058405
60.	house	119004	145385	26381	22.16816241
61.	german	114790	140873	26083	22.72236258
62.	britpop	115727	136895	21168	18.29132355
63.	love	105310	133634	28324	26.89583136
64.	gothic metal	106334	130437	24103	22.667256
65.	albums i own	104906	129517	24611	23.46004995
66.	grunge	104766	126215	21449	20.47324514
67.	ska	105239	123973	18734	17.80138542
68.	rb	101683	123504	21821	21.45983104
69.	american	95913	122533	26620	27.75431902
70.	00s	91708	121302	29594	32.26981288
71.	beautiful	89630	120424	30794	34.35680018
72.	gothic	99087	120112	21025	21.21872698
73.	post-punk	95379	119713	24334	25.51295359
74.	downtempo	96866	119327	22461	23.1877026
75.	70s	92157	119042	26885	29.17304166
76.	mellow	98386	117965	19579	19.90018905
77.	screamo	94374	115454	21080	22.33666052
78.	piano	89945	115239	25294	28.12162988
79.	chill	94732	114831	20099	21.21669552
80.	60s	88369	112228	23859	26.99928708
81.	doom metal	89781	109461	19680	21.92000535
82.	j-rock	85517	101504	15987	18.69452857
83.	french	81743	101457	19714	24.11704978
84.	awesome	77271	98333	21062	27.25731516
85.	guitar	76468	97982	21514	28.13464456
86.	idm	81144	97800	16656	20.52647146
87.	finnish	81961	97227	15266	18.62593185
88.	swedish	79140	95829	16689	21.08794541
89.	symphonic metal	73820	93321	19501	26.41696017
90.	favourites	75059	92368	17309	23.06052572
91.	nu metal	73342	92341	18999	25.90466581
92.	male vocalists	67236	90303	23067	34.30751383
93.	oldies	74079	89593	15514	20.94250732
94.	progressive	72515	88109	15594	21.50451631
95.	female vocalist	69492	87461	17969	25.85765268
96.	grindcore	72046	87309	15263	21.1850762
97.	j-pop	74229	87094	12865	17.33150117
98.	folk metal	69255	86015	16760	24.20041874
99.	canadian	71855	85159	13304	18.51506506
100.	lounge	67836	83887	16051	23.66147768
101.	ebm	66416	80509	14093	21.21928451
102.	polish	61733	80185	18452	29.89001021
103.	world	63892	79922	16030	25.08921305
104.	synthpop	64556	78927	14371	22.26129252
105.	drum and bass	63705	77961	14256	22.37814928
106.	favorite	66079	77683	11604	17.56079844
107.	female	66773	77042	10269	15.37897054
108.	post-hardcore	54517	73514	18997	34.84601134
109.	pop punk	59632	72716	13084	21.9412396

110.	cover	58409	72685	14276	24.44143882
111.	pop rock	56445	71648	15203	26.93418372
112.	darkwave	56374	71140	14766	26.19292582
113.	minimal	54855	70792	15937	29.0529578
114.	latin	56606	69587	12981	22.932198
115.	new age	55852	69072	13220	23.66969849
116.	noise	53570	67554	13984	26.10416278
117.	industrial metal	52604	66081	13477	25.61972474
118.	dark ambient	50648	64868	14220	28.07613331
119.	russian	49876	63657	13781	27.6305237
120.	anime	55844	62687	6843	12.25377838
121.	brutal death metal	49579	62053	12474	25.1598459
122.	favourite	51574	61559	9985	19.3605305
123.	avant-garde	47224	60828	13604	28.80738607
124.	sexy	45419	59854	14435	31.78185341
125.	gothic rock	46883	59496	12613	26.90314186
126.	dub	46786	58471	11685	24.97542
127.	alternative metal	43536	57522	13986	32.12513782
128.	psychedelic rock	43359	57267	13908	32.07638553
129.	celtic	47475	56958	9483	19.97472354
130.	jpop	50354	56423	6069	12.05266712
131.	cool	43886	56404	12518	28.52390284
132.	disco	44626	55482	10856	24.32662573
133.	easy listening	42944	55321	12377	28.82125559
134.	classic	44661	55226	10565	23.65598621
135.	christian	45776	54845	9069	19.81169172
136.	fun	45248	53941	8693	19.21189887
137.	sad	42745	53632	10887	25.46964557
138.	comedy	45349	53194	7845	17.29916867
139.	shoegaze	42526	52855	10329	24.28867046
140.	psytrance	44220	52527	8307	18.78561737
141.	stoner rock	42743	52034	9291	21.73689259
142.	folk rock	40795	51432	10637	26.07427381
143.	melancholy	38675	50961	12286	31.76729153
144.	favorite songs	41279	48606	7327	17.74994549
145.	atmospheric	35002	47750	12748	36.42077596
146.	viking metal	38525	47492	8967	23.27579494
147.	uk	38768	47401	8633	22.26836566
148.	blues rock	33651	47185	13534	40.21871564
149.	visual kei	38028	45878	7850	20.64268434
150.	goth	39170	45267	6097	15.56548379
151.	alt-country	38264	44898	6634	17.33744512
152.	christmas	42916	44829	1913	4.457544972
153.	covers	37440	44420	6980	18.64316239
154.	female fronted metal	35945	44388	8443	23.48866324
155.	amazing	33442	43805	10363	30.98797919
156.	irish	36000	43564	7564	21.01111111
157.	deutsch	34620	43308	8688	25.09532062
158.	relax	33552	43223	9671	28.82391512
159.	lo-fi	34828	42882	8054	23.12507178
160.	romantic	31094	42739	11645	37.45095517
161.	fusion	32303	42167	9864	30.53586354
162.	relaxing	32864	41878	9014	27.4281889
163.	happy	32165	41477	9312	28.95072284
164.	dark	33188	41278	8090	24.37628058
165.	acid jazz	33214	41237	8023	24.15547661
166.	live	33028	41172	8144	24.65786605

167.	spanish	32731	40975	8244	25.18713147
168.	garage rock	32751	40779	8028	24.51222863
169.	good	35811	40597	4786	13.36460864
170.	rockabilly	34916	40558	5642	16.15878107
171.	deathcore	26285	40095	13810	52.53947118
172.	norwegian	31340	39977	8637	27.55902999
173.	emocore	32059	39626	7567	23.60335631
174.	melancholic	29583	39430	9847	33.28600886
175.	hardcore punk	30637	39331	8694	28.3774521
176.	ethereal	31175	39210	8035	25.77385726
177.	americana	31223	38406	7183	23.00547673
178.	jrock	33247	38363	5116	15.38785454
179.	hiphop	34044	38271	4227	12.41628481
180.	glam rock	31592	38226	6634	20.99898709
181.	synth pop	30447	37295	6848	22.49154268
182.	favourite songs	30827	37191	6364	20.64424044
183.	male vocalist	25817	37179	11362	44.00976101
184.	ballad	27519	37014	9495	34.50343399
185.	political	30540	36978	6438	21.0805501
186.	swing	26849	36857	10008	37.27513129
187.	italian	28780	36838	8058	27.99861015
188.	australian	30825	36696	5871	19.04622871
189.	melodic metal	28630	36443	7813	27.28955641
190.	post rock	30257	36131	5874	19.41368939
191.	party	27902	36123	8221	29.46383772
192.	female vocals	28653	34925	6272	21.88950546
193.	rock n roll	28705	34822	6117	21.30987633
194.	soft rock	27102	34143	7041	25.9796325
195.	brazilian	27497	33934	6437	23.40982653
196.	vocal	27855	33545	5690	20.42721235
197.	technical death metal	25773	32835	7062	27.40076825
198.	sludge	24953	32414	7461	29.9002124
199.	nu-metal	26406	32200	5794	21.94198288
200.	remix	25921	31792	5871	22.64958914
201.	epic	22733	31706	8973	39.47125324
202.	club	24511	31504	6993	28.53004773
203.	trip hop	25138	31341	6203	24.67578964
204.	usa	23802	31191	7389	31.04360978
205.	funky	24046	30440	6394	26.59070116
206.	speed metal	23613	30396	6783	28.72570194
207.	electroclash	24224	29547	5323	21.9740753
208.	baroque	22889	29376	6487	28.34112456
209.	industrial rock	23186	28705	5519	23.80315708
210.	neofolk	21981	28616	6635	30.18515991
211.	contemporary classical	20717	28585	7868	37.97847179
212.	thrash	24565	28407	3842	15.64013841
213.	progressive trance	21906	28297	6391	29.17465535
214.	rhythm and blues	23251	28116	4865	20.92383123
215.	rock and roll	22427	28019	5592	24.93423106
216.	drum n bass	23620	27905	4285	18.14140559
217.	psychobilly	23400	27747	4347	18.57692308
218.	dancehall	22547	27664	5117	22.69481527
219.	electropop	21647	27494	5847	27.01067122
220.	bossa nova	21409	27373	5964	27.85744313
221.	dnb	22116	27325	5209	23.55308374
222.	art rock	21207	26943	5736	27.04767294
223.	loved	20019	26741	6722	33.5781008

224.	catchy	19692	26612	6920	35.14117408
225.	guitar virtuoso	19837	26596	6759	34.07269244
226.	singer songwriter	20536	26288	5752	28.00934944
227.	dark electro	19800	26236	6436	32.50505051
228.	breakbeat	20730	26163	5433	26.20839363
229.	favorite albums	22349	25848	3499	15.65618148
230.	ska punk	22117	25788	3671	16.59809197
231.	video game music	22345	25773	3428	15.34123965
232.	drone	19661	25390	5729	29.13890443
233.	dreamy	19501	25088	5587	28.64981283
234.	world music	19824	24973	5149	25.97356739
235.	favorite artists	21398	24709	3311	15.47340873
236.	english	20384	24657	4273	20.96251962
237.	medieval	19304	24513	5209	26.98404476
238.	folk-rock	19564	24014	4450	22.74585974
239.	symphonic black metal	19239	23998	4759	24.7362129
240.	melodic black metal	19305	23994	4689	24.28904429
241.	melodic	19085	23984	4899	25.66937385
242.	christian rock	20104	23952	3848	19.14046956
243.	avantgarde	20229	23935	3706	18.32023333
244.	alternative punk	20204	20204	0	0
245.	soundtracks	19960	19960	0	0
246.	pop-rock	19502	19502	0	0
247.	calm	19220	19220	0	0
248.	dream pop	19133	19133	0	0
249.	funny	19082	19082	0	0

References

- Adorno, T. (1941). On Popular Music. In A. Easthope & K. McGowan (Eds.), *A Critical and Cultural Theory Reader*. Toronto: University of Toronto Press.
- Adorno, T. (1945). On Popular Music. *Studies in Philosophy and Social Sciences*, 9, 17-48.
- Adorno, T. (1973). *Philosophy of modern music*. New York,: Seabury Press.
- Adorno, T. (1991). *The Culture Industry, Selected Essays on Mass Culture*. London: Routledge.
- Adorno, T., & Horkheimer, M. (1944). *The Dialectic of Enlightenment*. New York: Herder and Herder.
- Adorno, T., Leppert, R., & Gillespie, S. (2002). *Essays on music*. Berkeley, Calif.: University of California Press.
- Anderson, C. (2006). *The Long Tail: Why the Future of Business Is Selling Less of More* Hyperion Publishers.
- Aucouturier, J.-J., & Pachet, F. (2003). Representing Musical Genre: A State of the Art. *Journal of New Music Research*, 32(1), 83 - 93.
- Auray, N. (2007). Folksonomy: the New Way to Serendipity. *Communications & Strategies*, 65(1), 67-89.
- Becker, H. (1976). Art Worlds and Social Types. In R. Peterson (Ed.), *The Production of Culture* (pp. 41 - 56). London: Sage.
- Benedictus, L. (2006, November 4). Last.fm, Martin Stiksel. *Weekend Comment & Features* Retrieved March, 2008, from <http://www.guardian.co.uk/technology/2006/nov/04/news.weekendmagazine4>
- Benkler, Y. (2006). *The Wealth of Networks: How Social Production Transforms Markets and Freedom* Yale University Press.
- Bennett, A. (1999). Subcultures or Neo-Tribes? Rethinking the relationship between youth, style and musical taste. *Journal of Sociology*, 33(3), 599 - 617.
- Bourdieu, P. (1984). *Distinction: A social critique on the judgment of taste*. Cambridge, MA: Harvard University Press.
- Brown, R. (1979). Cognitive Categories. In R. Kasschau & N. Cofer (Eds.), *Psychology's Second Century: Enduring Issues* (pp. 188 - 217). New York: Praeger.
- Campbell, K. (2003). The Death of the Album? *The Christian Science Monitor*, 15(1), 3.
- CBS Buys Last.FM, an Online Radio Site (2007, May 31). *New York Times*. Retrieved December 11, 2008, from <http://www.nytimes.com/2007/05/31/business/media/31radios.html?ex=1338264000&en=32fe4d40014e63c1&ei=5088&partner=rssnyt&emc=rss>
- Chandler, D. (1997). An Introduction to Genre Theory. Retrieved January 20, 2008, 2007, from http://www.aber.ac.uk/media/Documents/intgenre/chandler_genre_theory.pdf
- Conroy, M. (2007). The Death of the Album? *Being There Blog* Retrieved Feb, 2007, from <http://www.beingtheremag.com/editorial.php?id=302&issue=21>
- Crawford, W. (2006). Folksonomy and Dichotomy. *Cites & Insights*, 6(4), 1 - 3.
- DeNora, T. (2003). *After Adorno: Rethinking Music Sociology*. Cambridge: Cambridge University Press.
- Derbyshire, D. (2006, Oct 26). Exclusive Peter Gabriel interview. *The Telegraph*,

- DiMaggio, P. (1987). Classification in Art. *American Sociological Review*, 52(4), 440-455.
- Drew, R. (2005). Mixed Blessings: The Commercial Mix and the Future of Music Aggregation. *Popular Music and Society*, 28(4), 533-551.
- Feinberg, M. (2006). *An Examination of Authority in Social Classification Systems*. Paper presented at the ASIS&T SIG/CR Classification Research Workshop.
- Fidel, R. (1994). User-Centred Indexing. *Journal of the American Society for Information Science*, 45(8), 572 - 576.
- Fields, K. (2007). Ontologies, categories, folksonomies: an organised language of sound. *Organised Sound*, 12(02), 101-111.
- Fong, J. (2007, September 3). RIP for the CD? *The Edmonton Journal*.
- Frith, S. (1992). The industrialization of Popular Music. In J. Lull (Ed.), *Popular Music and Communication*. Beverly Hills, CA: Sage Publishers.
- Frith, S. (1996). *Performing rites : on the value of popular music*. Cambridge, Mass.: Harvard University Press.
- Frith, S. (2003). Music and Everyday Life. In M. Clayton, T. Herbert & R. Middleton (Eds.), *The cultural study of music : a critical introduction* (pp. vii, 368 p.). New York: Routledge.
- Gans, H. J. (1974). *Popular culture and high culture : an analysis and evaluation of taste*. New York,: Basic Books.
- Garofalo, R. (1999). From Music Publishing to Mp3: Music and Industry in the Twentieth Century. *American Music*(17), 318 - 353.
- Gillmor, D. (2004). *We the Media - Grassroots Journalism by the People, for the People*: Creative Commons eBook - <http://www.authorama.com/book/we-the-media.html>.
- Glass, S. (2006, May 6). The End of the Album? *Indie-Music*, 2.
- Godin, S. (Writer) (2003). Sliced bread and other marketing delights, *TED Talks*. United States of America: Technology Education Design (TED).
- Goffman, E. (1951). Symbols of Class Status. *The British Journal of Sociology*, 2(4), 294-304.
- Golder, S. A., & Huberman, B., A. (2006). Usage Patterns of Collaborative Tagging Systems. *Journal of Information Science*, 32(2), 198-208.
- Grant, G. (1976). The Computer Does not Impose on us the Way It Should be Used. In A. Rotstein (Ed.), *Beyond Industrial Growth*. Toronto: University of Toronto Press.
- Green, H. (2005, April 11). Picking Up Where Search Leaves Off. *Business Week*.
- Gruber, T. R. (2007). Ontology of Folksonomy: A Mash-up of Apples and Oranges. *International Journal on Semantic Web and Information Systems*, 3(2).
- Guy, M., & Tonkin, E. (2006). Folksonomies: Tidying up Tags? *D-Lib Magazine*, 12.
- Hammond, T., Hannay, T., Lund, B., & Scott, J. (2005, April). Social Bookmarking Tools: A General Review. *D-Lib Magazine*, 11.
- Hanslick, E. (1986). *On the Musically Beautiful*. Indianapolis, IA: Hackett Publishing Company.
- Hastings, T. (1974 [1822]). *Dissertation on Musical Taste*. New York: Da Capo Press.
- Heath, J. (2001). The Structure of Hip Consumerism. *Philosophy and Social Criticism*, 27(6), 1-17.
- Hennion, A. (1989). An Intermediary between Production and Consumption: The Producer of Popular Music. *Science, Technology, and Human Values*, 14(4), 400-424.
- Hennion, A. (2003). Music and Mediation: Toward a New Sociology of Music. In M. Clayton (Ed.), *The Cultural Study of Music: a critical introduction*. New York: Routledge.
- Herlocker, J. (1999). *Combining Collaborative Filtering with Personal Agents for Better Recommendation*. American Association for Artificial Intelligenceo. Document Number)

- Hille, A. (2004). Musical Tastes Fragmenting. *Media Asia*, 6.
- Holt, D. (1998). Does Cultural Capital Structure American Consumption? *The Journal of Consumer Research*, 25(1), 1-25.
- Holt, F. (2007). *Genre in popular music*. Chicago: University of Chicago Press.
- Hotho, A., Jaschke, R., Schmitz, C., & Stumme, G. (2006). *1st Conference on Semantics and Digital media Technology*.
- Howe, J. (2006, June). The Rise of Crowdsourcing *WIRED*, 14.06.
- Howe, J. (2008). *Crowdsourcing: Why the Power of the Crowd is Driving the Future of Business*. New York: Crown Publishing.
- IFPI:07 Digital Music Report. (2007). International Federation of the Phonographic Industry. Document Number)
- Jacob, E. (2004). Classification and Categorization: a difference that makes a difference. *Library Trends*, Winter 2004.
- Jenkins, H. (1991). *Textual Poachers: Television Fans and Participatory Culture*. New York: Routledge.
- Jenkins, H. (2006). *Convergence Culture : Where Old and New Media Collide*. New York: NYU Press.
- Jones, S. (2000). Music and the Internet. *Popular Music*, 19(2), 217-230.
- Kipp, M., & Campbell, G. (2006). *Patterns and Inconsistencies in Collaborative Tagging Systems : An Examination of Tagging Practices*. Paper presented at the Annual General Meeting of the American Society for Information Science and Technology, Austin, TX.
- Kiss, J. (2008, February 28). Last.fm widgets boost user numbers. Retrieved July, 2008, from <http://www.guardian.co.uk/media/2008/feb/28/web20.digitalmedia>
- Kompare, D. (2002). *Flow to Files: Conceiving 21st Century Media*. Cambridge, MA.
- Kroski, E. (2005, December 7). The Hive Mind: Folksonomies and User-Based Tagging. *Infotangle* Retrieved May 10, 2008, from <http://infotangle.blogspot.com/2005/12/07/the-hive-mind>
- Lambiotte, R. (2006). On the genre-fication of music. *The European Physical Journal*, 50(B), 183 - 188.
- Lamont, M., & Lareau, A. (1988). Cultural Capital: Allusions, Gaps and Glissandos in Recent Theoretical Developments. *Sociological Theory*, 6(2), 153-168.
- Leonhard, G. (2006, May 15). Users converging with creators: the rise of the Usators, the advent of distributed selection, and the attention economy's impact on music & media commerce. *Gerd's Bottom Lines and Predictions* Retrieved February, 2008, from http://www.gerdleonhard.net/2006/05/users_convergin.html
- Leonhard, G. (2008). *Music 2.0: Essays by Gerd Leonhard*. Hämeenlinna, Finland: Hämeen Offset-Tiimi Oy - [also available online - www.music20thebook.com].
- Leonhard, G., & Kusek, D. (2005). *The Future of Music: Manifesto for the Digital Music Revolution*. Boston, MA: Berklee Press
- Lerdahl, F. P. (1992). Cognitive Constraints on Compositional Systems. *Contemporary Music Review*, 6(2), 97-121.
- Lessig, L. (2001). *The Future of Ideas: The Fate of the Commons in a Connected World* (1st ed.). New York: Random House.
- Levitin, D. (2006). *This Is Your Brain on Music: The Science of a Human Obsession* New York: Dutton Adult.
- Lewin, K. (1947). Frontiers in Group Dynamics. *Human Relations*, 1(2), 145.

- Macgregor, G., & McCulloch, E. (2006). Collaborative Tagging as a Knowledge Organisation and Resource Discovery Tool. *Library Review*, 55(5), 30.
- Mandler, G. (1975). *Mind and Emotion*. New York: John Wiley and Sons, inc.
- McBride, T. (2008). *Meet the Millennials: Fans Brands and Cultural Communities*. Paper presented at the Music Tank Conference.
- McCourt, T. (2005). Collecting Music in the Digital Realm. *Popular Music and Society*, 28(2), 249-252.
- McCourt, T., and Patrick Burkart. (2006). *Digital Music Wars: Ownership and Control of the Celestial Jukebox*. New York: Rowman & Littlefield Pub Inc
- McLeod, K. (2005). MP3s are killing home taping. *Popular Music and Society*, 28(4), 521-531.
- Meyer, H. D. (2000). Taste Formation in Pluralistic Societies. *International Sociology*, 15(1), 33-56.
- Minsky, M. (1981). Music, mind and meaning. *Computer Music Journal*, 5(3).
- Minsky, M. (1986). *The society of mind*. New York: Simon and Schuster Publishing.
- Montesquieu, C. (1970). An Essay on Taste. In A. Gerard (Ed.), *An Essay on Taste*. New York: Garland.
- Moore, A. F. (2001). Categorical Conventions in Music Discourse: Style and Genre. *Music & Letters*, 82(3), 432-442.
- Mosco, V. (2004). *The Digital Sublime: Myth, Power, and Cyberspace*. Cambridge: MIT Press.
- Murray, J. (2007). Cyberinfrastructure as Cognitive Scaffolding: The Role of Genre Creation in Knowledge Making [Electronic Version]. *Academic Commons*. Retrieved January 2008, from <http://www.academiccommons.org/commons/essay/cyberinfrastructure-murray>
- Negroponte, N. (1995). *Being digital* (1st ed.). New York: Knopf.
- Negus, K. (1992). *Producing Pop: Culture and Conflict in the Popular Music Industry*. London: Edward Arnold.
- Negus, K. (1995). Where the Music meets the Market; Commerce and Creativity in the Production of Popular Music. *Sociological Review*, 43(2), 316-341.
- Negus, K. (1998). Cultural production and the corporation: musical genres and the strategic management of creativity in the US recording industry. *Media, Culture & Society*, 20, 359-379.
- Negus, K. (1999a). The Music Business and Rap: Between the Street and the Executive Suite. *Cultural Studies*, 13(3), 488-508.
- Negus, K. (1999b). *Music genres and corporate cultures*. London ; New York: Routledge.
- Nielsen Music 2007 Year End Music Industry Report For Canada. (2008). Nielsen SoundScan Canadao. Document Number)
- North, A., & Hargreaves, D. (2007a). Lifestyle Correlates of musical preference: 1. Relationships, living arrangements, beliefs and crime. *Psychology of Music*, 35(1), 58-87.
- North, A., & Hargreaves, D. (2007b). Lifestyle Correlates of musical preference: 2. Media, Leisure time, and Music. *Psychology of Music*, 35(2), 179-200
- North, A., & Hargreaves, D. (2007c). Lifestyle Correlates of musical preference: 3. Travel, money, education, employment and health. *Psychology of Music*, 35(3), 473-497
- O'Reilly, T. (2005). What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software. Retrieved November 10, 2008, from <http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>

- Ollivier, M., & Fridman, V. (2001). Taste and Taste Culture. In N. J. Smelser & P. B. Baltes (Eds.), *International Encyclopedia of the Social and Behavioral Sciences* (pp. 15442 - 15447). New York: Elsevier.
- Pachet, F., & Cazaly, D. (2000, April). *A Taxonomy of Musical Genres*. Paper presented at the Content-Based Multimedia Information Access Conference (RIAO), Paris, France.
- Paddison, M. (1996). *Adorno, Modernism and Mass Culture*. London, EN: Kahn & Averill.
- Peterson, E. (2006, November). Beneath the Metadata: Some Philosophical Problems with Folksonomy. *D-Lib Magazine*, 12.
- Peterson, R. (1992). Understanding Audience Segmentation: From Elite and Mass to Omnivore and Univore. *Poetics*, 21, 243 - 258.
- Peterson, R., & Berger, D. (1990 [1975]). Cycles in Symbol Production: the case of popular music. In S. Frith & A. Goodwin (Eds.), *On Record: Rock, Pop, and the Written Word*. London: Routledge.
- Peterson, R., & Kern, R. M. (1996). Changing Highbrow Taste: From Snob to Omnivore. *American Sociological Review*, 61(5), 900-907.
- Peterson, R., & Simkus, A. (1992). How Musical Tastes Mark Occupational Status Groups. In M. Lamont & M. Fournier (Eds.), *Cultivating Differences: Symbolic Boundaries and Making of Inequality* (pp. 152 -186). Chicago: University of Chicago Press.
- Rentfrow, P., & Gosling, S. (2007). The content and validity of music-genre stereotypes among college students. *Psychology of Music*, 35, 306 - 326.
- Roe, K. (1992). Different Destinies - Different Melodies: School Achievement, Anticipated Status and Adolescents' Tastes in Music. *European Journal of Communications*, 7(1), 335-357.
- Rosch, E. (1973). Natural categories. *Cognitive Psychology*, 4(3), 328-350.
- Rosch, E. (1975). Cognitive reference points. *Cognitive Psychology*, 7(4), 532-547.
- Rosch, E. (1978). Principles of Categorization. In E. Rosch & B. B. Lloyd (Eds.), *Cognition and Categorization*. Hillsdale, New Jersey: Lawrence Erlbaum Associates, Publishers.
- Rosch, E., & Mervis, C. B. (1975). Family resemblances: Studies in the internal structure of categories. *Cognitive Psychology*, 7(4), 573-605.
- Rosch, E., Mervis, C. B., Gray, W. D., Johnson, D. M., & Boyes-Braem, P. (1976). Basic objects in natural categories. *Cognitive Psychology*, 8(3), 382-439.
- Ross, A. (2008). Digital Entertainment Survey (Publication., from www.entertainmentmediaresearch.com/reports/DigitalEntertainmentSurvey2008_FullReport.pdf).
- Russell, P. A. (1997). Musical Tastes and Society. In D. Hargreaves (Ed.), *The Social Psychology of Music*. New York: Oxford University Press.
- Sandvig, C. (2007, January 31). "Flow" and the Web. *Seminar Blog*, 2007
- Schiller, H. (1989). *Culture Inc.: The Corporate Takeover of Public Expression*. New York: Oxford University Press.
- Schonfeld, E. (2005, July 18). Culture of Participation. *Business 2.0* Retrieved April, 2008, from <http://money.cnn.com/magazines/business2/b2/web/articles/0,17863,1084144,00.html?cn=n=yes>
- Schwartz, B. (2003). *The Paradox of Choice: Why More Is Less* New York: Ecco.
- Shirky, C. (2003, January 9). Napster and the Death of the Album Format. *Writings About the Internet* Retrieved Feb 27, 2007, from <http://www.shirky.com/writings/>

- Shirky, C. (2005). Ontology is overrated -- Categories, Links and Tags. *Economies & Culture, Media & Community* Retrieved March 4, 2008, from http://www.shirky.com/writings/ontology_overrated.html
- Shuker, R. (1994). *Understanding popular music*. London ; New York: Routledge.
- Spendlove, P. (2005). *The Canadian Music Industry: 2005 Economic Profile*. Gatineau, QUE.: Department of Canadian Heritageo. Document Number)
- Statistics Canada Radio Listening. (2007). In 87F0007XIE (Ed.), *Data Tables* Statistics Canada.
- Steels, L. (2006). Collaborative tagging as distributed cognition. *Pragmatics & Cognition, 14*(2), 287-292.
- Steiner, R., & Weiss, J. (1951). Veblen Revised in the Light of Counter-Snobbery. *The Journal of Aesthetics and Art Criticism, 9*(3), 263-268.
- Styven, M. (2007). The Intangibility of Music in the Internet Age. *Popular Music and Society, 30*(1), 53-74.
- Surowiecki, J. (2004). *The Wisdom of Crowds: Why the Many Are Smarter Than the Few and How Collective Wisdom Shapes Business, Economies, Societies and Nations*. New York: Doubleday
- Tapscott, D. (1999). *Growing Up Digital: The Rise of the Net Generation*. New York: McGraw-Hill.
- Tapscott, D. (2006). *Wikinomics: How Mass Collaboration Changes Everything*.
- Tennis, J. (2006). *Social Tagging and the Next Steps for Indexing*. Paper presented at the 17th SIC/CR Classification Research Workshop.
- Toffler, A. (1987). *The Third Wave*. New York: Random House.
- Van Reijen, W. (1992). *Adorno: An Introduction*. Philadelphia, PA: Pennbridge Publishing.
- Vander Wal, T. (2005, February 21). Explaining and showing broad and narrow folksonomies. *Blog Post*, from <http://www.vanderwal.net/random/category.php?cat=153>
- Veblen, T. (1939 [1899]). *The Theory of the Leisure Class*. New York: The Modern Library.
- Wallis, R. (2006). The Changing Structure of the Music Industry. In S. Brown & U. Volgsten (Eds.), *Music and manipulation : on the social uses and social control of music* (pp. 287 - 311). New York: Berghahn Books.
- Weinberger, D. (2005). Tagging and Why it Matters [Electronic Version]. *Berkman Center Research Publication No. 2005-07*
- Weinberger, D. (2007). *Everything is Miscellaneous*. New York: Times Books.
- White, D. M. (1964). The Gatekeeper: A Case Study in the Selection of News. In L. Dexter & D. M. White (Eds.), *People, Society, and Mass Communications* (pp. 160-172). London.
- White, M. (2001). *Flow and other close Encounters with Television*. Northwestern University.
- Williams, R. (1974). *Television: Technology and Cultural Form*. New York, NY: Schocken Publishers.
- Witkin, R. W. (1998). *Adorno on music*. London ; New York: Routledge.