**OBSTACLES FACING WOMEN SEEKING CAREERS
IN MUSIC TECHNOLOGY**

A Document

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

Master of Music in Music Technology

Production Track

By

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University of Valley Forge

Phoenixville, Pennsylvania

August 2016

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ABSTRACT

The career fields of music production and music technology are traditionally male-dominated occupations. The purpose of this thesis was to examine the obstacles between women and careers in these fields. Related literature identified internal obstacles such as lack of role models and self-doubt, and external obstacles such as societal norms, traditions, status quo, and an unappealing environment to women. In this study, surveys with both men and women in related careers were utilized to determine the current mindsets of music technology professionals. When answers were categorized and tallied, it became apparent that participants in this study most often cited a lack of visible female role models as the greatest barrier between women and careers in music technology. Data related to gender enrollment and faculty gender ratios was also collected from a small sample of universities offering degrees in music technology.

Keywords: Gender, Music Production

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Chapter 1 – Introduction

Throughout the twentieth and twenty-first centuries, women have worked to enter careers that were typically and historically considered male-dominated professions. From medicine and science to manual labor fields, women have endeavored to take their place amongst their male counterparts. They have faced prejudice and opposition on many fronts, and have frequently been passed over for accolades in favor of male colleagues. For example, in his study of MIT professors, Gregory (2003) finds that in comparison to their male counterparts, female professors were given less office space and granted fewer awards, "…despite professional accomplishments equal to or surpassing those of their male colleagues," (p.14). Gregory also states that when male MIT professors interviewed elsewhere, MIT would give salary raises to entice them to remain with MIT. The female professors in the same situation were given no such raise (p.14). There is some evidence that women in management fields still face the "glass ceiling," the idea that women are separated from the most powerful jobs by an invisible barrier of discrimination. Morrison, White and Velsor (1992) find that in a study of Fortune 500 companies, only 2.6 percent of corporate office positions are populated by women (p.6). Similarly, as Waber (2014) documents, women earn on average seventy-seven cents for every dollar earned by a man. It is important to note that the gender wage gap is calculated using the average earnings of year-round full-time female employees compared to the average earnings of year-round full-time male employees (Glynn, 2014). While the cause of these incongruences cannot all be determined to be gender

discrimination; there is the possibility that it plays a role in some of them. Other possible obstacles will be discussed further below.

While great strides have been made in many professional areas, many fields still display a definite lack of a female presence, including the field of music production (Department of Labor, 2014). As an article in popular literature says, "Beats aren't gendered… So why are we still in the dark ages when it comes to gender equality in the music studio?" (Saxelby, 2014). It is highly unlikely that a listener could hear the difference between a song worked on by a male producer and one worked on by a female producer. Why then does this gendered disparity exist?

Women are underrepresented in most occupations relating to music technology, specifically the areas of music production and sound engineering (Leonard, 2005). This disparity does not extend to other music related careers. In fact, the feminine presence is felt relatively strongly in many other musical occupation arenas. The United States Department of Labor (2014) reports that women make up thirty-four percent of U.S. workers in the field of musicians and singers, and female music educators are better represented. The education category of the United States Department of Labor report is not broken down by subject, so the exact ratio of male to female music teachers cannot be determined. However, the Department of Labor reports that in the education, training, and library professions, seventy-four percent of jobs are populated by women, leaving only twenty-six percent of education professions populated by men (2014). If women hold such a large percentage of the overarching category, the subcategories should be similarly populated. It is therefore likely that a relatively large percentage of music educators are women.

In stark contrast to the high numbers of female educators, and similar to the lower percentages of female music producers, is the percentage of women working in computer and technology positions. The United States Department of Labor report states that women make up only twenty-five percent of laborers in computer and mathematical occupations (2014). Despite the large representation in other music-related fields, the Department of Labor recounts that in the category of broadcast and sound engineering technicians, women make up only thirteen percent of professionals. This broad category includes the full range of music production careers (a breakdown of those career fields is included in Appendix A). Narrowing the field to only production reveals a greater disparity. Leonard (2005) cites a report finding that in the United Kingdom, women make up a meager two to five percent of sound engineers (p.52). Backing up this data are articles in popular literature. An article in *Nashville Scene* finds that women comprise less than five percent of professional sound engineers and producers (Haruch, 2010). In her study of female producers, George (2016) finds that since 1974, only six women have received a nomination for the Producer of the Year GRAMMY award (Non-Classical category). Five of those women were artists nominated for their work on their own album (many in conjunction with a male co-producer), and none of the six actually won the award. To date, no woman has won in the Producer of the Year, Non-Classical category (2016).

What must be examined are the obstacles behind the lack of women in the music technology domain. What is stopping women from becoming producers and engineers? These obstacles can occasionally be hindrances placed upon women by outside influences, including parents, teachers, colleagues and bosses (Cohen, et.al, 1978; Hare

1997). The hindrances can sometimes be the traditions in place, or the status quo that has yet to be challenged (Jacobs, 1996; Charles 1992; Corell, 2001). Technology has proven to be a historically male-dominated profession. Production and engineering studios can have a "boys' club" environment which can be daunting to some women (George, 2016; Farrugia and Swiss, 2008; Sandstrom, 2000). Other intrinsic obstacles may exist. For example, Farrugia and Swiss (2008) suggest that due to the lack of female professionals in the music production industry, there are insufficient female role models for young girls seeking jobs as sound engineers and producers (p.93). In order to populate the music technology field, women must break barriers they place upon themselves as well as those placed upon them by others.

The purpose of this study is to examine the struggles faced by women in the field of music production and the obstacles that prevent women from pursuing careers in music technology. It is the goal of this study to examine obstacles facing women in the music production sphere and discuss solutions to the deterrents faced by women interested in music production vocations.

Chapter 2 - Review of Related Literature

A review of related literature on the subject of women in music production returned many interesting results. Three studies discussed the male opinions on women in positions of authority. Seven studies discussed the history of women in technology-based careers, and four studies examined the reasons why women choose to not study technology. One study considered how to raise women's self-efficacy in the workplace, and five discussed the idea of communication as a barrier to women in technology-based fields. Five studies examined the need for female role models in the production community. Finally, three studies reviewed the idea of the archetypal male producer.

The aspect of my research involving women in male dominated occupational roles has been studied extensively, but has returned widely varying results. In a complex study involving male and female participants representing both managers and employees, Hare (1997) researched the perceived differences between male and female managers, comparing the observed values and the ideal model values of both genders. Previous beliefs held that female managers were not as effective as their male counterparts, and that women exhibited low self-esteem that prevented them from adequately performing their managerial duties. Older research on the subject does not necessarily support these beliefs. Cohen, Bunker, Burton and Mcmanus (1978) found that male employees provide negative verbal feedback when supervised by females only. However, while their feedback is negative, their job performance and written feedback is similar to when supervised by males only or males and females together. In other words, male employees will verbally criticize their female supervisors, but will not do so in a written critique, and their performance does not reflect poor supervision. This could be due to a number of

factors, such as entrenched discrimination against their female managers. The men seem to want to complain about female supervision, and seem to perceive female supervision to be inferior to male supervision, even though their performance does not reflect this. It is also not inferior enough to want to raise formal complaints in the form of written critiques. This launches a plane of research related to the perceptions of women in the workplace. The perceptions do not line up with reality in all cases. Lenney (1977) suggests that while women are perceived as having low self-confidence debilitating to their ability to manage, their actual achievement is similar to those of equal males. Hare's research continued along this line by surveying ratings of 130 male managers and 130 female managers, taken by employees and the managers themselves. The managers were rated on three different personality polarities: dominant versus submissive behaviors, friendly versus unfriendly interactions, and whether or not he or she accepts the "…task-orientation of established authority," (Hare, 1997, p.441). The results returned show that the only disparity with any statistical significance is the "self" rating, showing that female managers view themselves as more friendly or positive than their male counterparts. Any other differences in those three specific categories were negligible at best.

The aspect of my research involving women in technology-based careers has also been expansively documented. In the 1960's, nearly seventy percent of women enrolled in college programs were studying stereotypically feminine subjects such as teaching, nursing, home economics, and the fine arts (Jacobs, 1996, p. 168). While this percentage has decreased, many studies show that fields of scholarship in higher education are still drastically separated by sex. Mastekaasa and Smeby (2008) maintain that even though

more than fifty percent of people enrolled in higher education around the world are women, the choices of majors are largely divided by gender (p. 190). They find that this assertion remains true despite the increase in female population and modern cultural ideals of normality. While it is true that an egalitarian society is more nurturing towards females in male-dominated careers (Charles, 1992), it is not always societal expectations that play a part in career choice. Mastekaasa and Smeby state that students who chose "gender traditional" programs chose these fields at a young age. This aligns with the interviews conducted by Farrugia and Swiss (2008), who found that females in the electronica scene, a traditionally male-dominated field, do not typically become interested in the profession until their twenties or thirties (p.84). If girls are choosing their career paths at a young age, they will be more likely to choose a traditionally feminine career, no matter how egalitarian the society. Anna Lunoe, an Australian producer, suggests that breaking this pattern requires introducing girls to production at an earlier age, before society tells them that production is masculine (Saxelby, 2014).

Studies suggest that the reason women do not choose technology-based fields lies in the way mathematics, science, and technologies are taught in schools. In recent years, there has been a visible increase in technological education aimed at girls. STEAM education movements, nonprofits such as Girls Who Code, and engineering based toy lines like GoldieBlox all push for girls to become as involved with and interested in technology as boys. However, these developments have not yet affected the predominant trends, as women are still outnumbered in technology, science, and mathematic fields. It has been suggested that women are choosing not to further their math and science education in high school. Many societies allow greater freedom in choosing classes as

opposed to mandating curriculum requirements, and these societies often display a disproportionately large number of women choosing to discontinue their education in science and mathematics. An even higher number of women choose never to study engineering at all (Bradley, 2000, p. 11).

Many researchers have studied the reason behind this trend. Previous beliefs in the area of gender differences held that males were genetically better at mathematics than females and there has been some research documenting that difference (Kolata, 1979, p. 1235). However, this concept is disputed by other researchers. Baker and Jones (1993) report that there is no direct correlation between math scores and gender (p. 99). They claim that there is largely no data that supports the belief that boys are inherently better than girls at mathematics. Nevertheless, Corell (2001) states that persistent cultural gender beliefs hold that men are more competent in mathematical fields than women, and that these cultural beliefs can actually cause men to believe that their mathematical skills are above those of women. If society is constantly reiterating the idea that men are better than women at math, the stereotypes will eventually be taken as fact. As Corell (2001) affirms, "…since males tend to overestimate their mathematical competence relative to females, males are also more likely to pursue activities leading down a path toward a career in science, math, and engineering," (p. 1724). In summary, although test scores do not reflect a gender difference on most aspects of mathematical performance, the cultural and societal belief that men are better than women in mathematics will ultimately affect women's choices of fields of study related to mathematics, and therefore, technology. We can see how this affects music technology in an interview conducted by Farrugia and Swiss (2008) with producer Ashley Adams, who intimated that, "…she still undergoes a

constant mental struggle with herself over her [technology] abilities," (p. 90). The authors assert that the perpetuation of a culture that positions women outside the technological sphere in turn gives women little confidence in their abilities to participate in technological careers, including the music industry and electronic dance music production. Popular media and everyday culture also tend to fortify the concept that women are not technologically competent (Farrugia and Swiss, 2008, p. 91). The study mentions that women in commercials and television programs are frequently shown as models exhibiting technology, instead of adept users of it. Again, the perpetuation of gender stereotypes by the media and popular culture can only serve to impair and discourage the hopes of young girls hoping to join the field of music technology.

In an attempt to minimize the consequence of women's doubt in their abilities, certain studies are researching the effect of increasing the self-efficacy of women entering the technology fields. Lourens (2014) examined the effects of a series of interventions designed to increase the number of women in the South African engineering field (p. 113). The interventions were designed to increase the women's belief in their engineering capabilities, and were carried out as a series of workshops led by the Women in Engineering Leadership Association (WELA). Lourens' findings show that:

> The workshops created an environment for WELA members to make connections with other [women engineering students] in the engineering faculty, which led to WELA members forming a cohesive team (social persuasion). WELA members supported one another strongly, not only academically, but also emotionally and socially. Most of the respondents remarked that they felt more confident because

they had gained greater self-knowledge, identified their weaknesses, and built on

their strengths (2014, p. 121).

Through the organization and intervention of like-minded women, the female engineering

students seemed to overcome deficiencies in self-efficacy and gain the confidence needed

to enter the job field.

The idea that communication acts as an obstacle to women pursuing careers in

music production has also been explored. Mulac (2004) found that gender affects how

young children communicate, in that girls tend to talk to build relationships while boys

talk to command attention (p. 227). Abramo (2011) builds upon this research by studying

how Mulac's observed communication differences affected communication in a popular

music lesson. Abramo states that communication in popular music is of paramount

importance, but that popular music communication takes different forms, such as

terminology, nonverbal gestures, and eye contact. Abramo conducted his study with

fifteen high school students separated into small group songwriting teams. Abramo found

that the group consisting solely of boys communicated primarily by "attaching language"

to a musical event after it happened, meaning the boys would play, and then describe or

define what they had played after if needed. The rehearsal recordings demonstrate many

inaudible sections where the boys would play during discussions. In contrast, the all-girl

group communicated clear ideas about the songs, and then put the ideas into effect

through trial and error. The female rehearsal recordings are all clear, as the girls distinctly

separated discussion and rehearsal. In the mixed groups, communication differences

created problems. In one group, a female member was often ignored as the male

members played over her comments. She became increasingly frustrated and participated

less in the band. The author argues that the current popular music pedagogy favors boys and pushes girls away, not necessarily an intentional bias, but because of the male-domination in the field. In other words, the male learning style (not reliant on communication) governs the music industry, and neglects the importance of the female communication style. Similarly, Pegley (2000) finds that in music technology curriculums, the ability to self-direct one's learning is seen as the more esteemed method, and the observed female preference to collaboratively create is downplayed in importance (p. 314). Abramo's observations in the mixed gender group (wherein the female member was often ignored while attempting to communicate with her group partners) would be troublesome if similarly observed in a recording studio environment, and would serve to isolate any women involved in the production.

Porcello (2004) discusses the ability to understand the language of the recording studio as a crucial step to belonging in the recording studio (p. 733). This notion, combined with Farrugia and Swiss's findings that women do not tend to become interested in production until later in life (2008, p. 84), suggests communication as a further obstacle between women and the recording studio. More research is needed into the difference in communication between men and women in the recording studio.

Some researchers suggest that the present lack of females in the music production field serves to perpetuate the problem due to a lack of female role model for girls potentially pursuing the career. The interviews and research by Farrugia and Swiss (2008) suggest that, "…women find the presence of other women more motivating than the presence of men," (92). Similarly, according to Mastekaasa and Smeby (2008), females who participated in courses of study that were largely female-dominated were

less likely to drop out of the program than those who joined courses of study that were male-dominated or gender balanced (p. 198). This suggests that the communion and support of other women helps to encourage and keep women in the field. Farrugia and Swiss (2008) elaborate, saying that the social support aspect also serves to provide women with the gear and equipment necessary to succeed in the field (p. 84). It is no secret that music technology equipment is expensive. A home studio can cost upwards of $10,000 (Farrugia and Swiss, 2008, p. 88), but the support of a social network can supply access to equipment that could be otherwise unattainable. According to their research, the "male cronyism" rampant in music technology circles can serve to isolate women, denying them access to vital technologies, instruction, and employment opportunities. Sandstrom (2000) discusses this circumstance, and the women interviewed by Farrugia and Swiss experience it first-hand:

> Many of the women knew that the best way to learn how to produce is to find a more experienced producer to work with [sic], but reported on the difficulty of finding someone who was willing to share his/her knowledge and with whom they felt comfortable. (2008, p. 90-91).

George (2016) also discussed this phenomenon, suggesting that the lack of female producers creates an environment of few social opportunities for women, "…going hand in hand with an equally limiting professional growth trajectory wherein men traditionally work with, answer to, and promote other men." George asserts that women are essentially crowded out of the studio because of the mere fact that they are women. Fitts (2008) conducted interviews with men and women working on the sets of rap music videos in production where gender stratification was also observed. He reports that

women working with the production team were not only isolated from the women working on camera (described as being overly sexualized in the workplace and set aside by the men), but also from the men in their departments due to the "boys' club" mentality (p. 230). Other women in the production describe needing to behave and speak in a masculine manner in order to get by on the set (p. 228). According to Fitts, this type of production dissuades women from working together and supporting each other.

The lack of female role models can cause women seeking careers in music technology to become discouraged due to lack of a support system, lack of educational opportunities, and lack of career advancement opportunities. However, in recent years, women in the music industry have sought to form alliances with the intent of providing the support desired. Gender Amplified, founded by female producer Ebonie Smith, describes itself as a movement whose goal is to, "…provide a platform for the promotion and advancement of women in music production and to identify and motivate the next generation of women music producers," ("Gender Amplified," 2013). Similarly, Femmixx.com, founded by Tachelle Wilkes, is committed to emboldening women engaged in music production and DJ'ing, ('Femmixx.com," 2009). These two movements hope to provide the support system lacking for female producers and DJ's.

Another obstacle between women and the mix desk supported by literature is the concept of the archetypal male producer prevalent in the music industry. In her interviews with thirteen female producers, Saxelby (2014) spoke with San Francisco-based producer Holly Herndon. Herndon discusses the problems women face in the music industry and how to fix these problems. Herndon states:

Music, despite common misconceptions, is quite conservative. The archetypes

don't seem to ever really change… Our biggest barrier is our infatuation with

these old archetypes, and a lack of insistence on establishing new ones that reflect

a culture we would like to live in. That extends far beyond gender issues… I

think a number of people struggle to find a place within the industry due to this

preoccupation with old archetypes, and insistence that people adhere to the same

affected role-playing in order to be considered worthy of opportunities.

In her research, Sandstrom (2000) describes mixing as total control over sound, and

likens the phenomenon of the archetypal male producer to the typical set up of white

males in control in the United States. She argues that controlling the sound, "…makes

the mix engineer feel powerful and therefore want to guard this position carefully. Most

men in these positions were not willing to share this power," (p. 294). Sandstrom also

believes the archetype idea goes so far as to include physical traits, and claims that the

nature of loading equipment trucks and the weight of the gear itself puts the male

producer at an advantage. Saxelby (2014) also interviews Asma Maroof, who states that

the stigma of being a female producer, instead of the expected male, is an obstacle for

female producers, who have to explain themselves, "…simply because people aren't used

the idea of a woman being in charge." For women to overcome this obstacle, it would

require people to seek out female producers instead of males, and for female producers to

be more visible in their professions (Lunoe, interviewed by Saxelby, 2014).

While the "old boys' network" and the gender differences in communication seem

to isolate women from the apprentice-style training prominent in the sound engineering

field, some studies assert that this could prove favorable to female producers. Sandstrom

(2000) states that instead of on the job training, many women must seek out university training in the science of sound along with production classes, providing them a broader knowledge base than their male counterparts who studied in the master-apprentice style (p. 297). This idea cooperates well with Farrugia and Swiss's conclusions that women do not tend to become interested in music technology until a later age (2008, p. 84). Should women train for careers in music technology in a university course, learning the language of the recording studio and earning a broad knowledge base, they could potentially be on equal standing with the "old boys' network" dependent on the master-apprentice set up.

In conclusion, more research is needed on the reasons behind the low population of female producers. The literature review revealed many reasons why women may be reticent to become producers. Men have conflicting views of the idea of women in authority, which would certainly be the case in a production studio led by a female producer. Women have discussed a variety of doubts about joining technology careers, such as self-doubt and communication issues. The literature review identified the idea of an archetypal male producer as a potential barrier for women wishing to become music producers. It also indicated a need for visible female role models in the music technology field.

Chapter 3 – Design

In chapter one I affirmed the need for more research to determine the reason behind the lack of female producers in the music technology field. The literature review established that the while there is a definitive lack of women in production and music technology, the reasons why are theorized, but not yet fully known. Through this research, it is the hope of the author to determine if more women are currently becoming active in music technology compared to previous years. The author also hopes to determine reasons why women are reluctant to join the field and ways to overcome the barriers between women and careers in production and music technology.

The study will be a mixed methods approach. While the terminology "mixed methods" is widely used and understood, other terms such as synthesis, integrating and multi-method are also accepted (Cresswell, 2014, p.217). According to Creswell (2014), mixed method research is defined as, "…an approach to inquiry that combines both qualitative and quantitative forms of research. It involves philosophical assumptions, the use of qualitative and quantitative approaches, and the mixing or integrating of both approaches in a study," (p.244). The qualitative aspect of the study will consist of interviews with professionals in the music production field. The quantitative aspect of the study will consist of data collection from universities offering graduate and undergraduate degrees in music technology. The data from both designs will be separately analyzed and then combined and compared for meaning. Controversies and conflicting data will also be collected, notated and analyzed in the study. A mixed methods approach was chosen because of the value of both the qualitative and quantitative data to this particular study. For example, the enrollment history of a

university's music technology graduate program combined with an interview with a graduate of the particular program will be more enlightening to the study than either of the data sets individually. The complexities of this particular topic will be best explained and explored with both qualitative and quantitative methods.

The topic will be explored through the lens of a transformative worldview. Creswell (2014) defines the transformative worldview as a philosophical perspective that holds that, "…research inquiry needs to be intertwined with politics and a political change agenda to confront social oppression and social justice at whatever levels it occurs," (p.249). In this study, the social factors resulting in a smaller number of female producers will be studied and it is the hope that the insights gained will help to lessen this situation.

Data collection will be done through interviews and through figures compilation. The interviews will be conducted with female music producers and other women in the music technology field. The author will interview Dr. Lynn Purse and Dr. Judith Bowman, two professors of music technology at Duquesne University in Pittsburgh, Pennsylvania. Kat George will also be interviewed. George is a journalist who authored "Where are the Female Music Producers?", an article discussing the reasons behind the lack of a female presence in the recording studio. Male and female graduates from the University of Valley Forge Music Technology Masters Program will also be interviewed. In these interviews, questions will be asked pertaining to the reasons these women chose to pursue careers in music technology, if they have experienced any obstacles related to gender, how they cope with these obstacles, and if they have any advice for other women or men pursuing careers in music technology and music production. The interviews will

be performed over the telephone or via email, and will be recorded and transcribed to accurately collect the reflections of the interview subjects. Interviews will be conducted during the spring and summer of 2016. Interview questions are included in the appendices.

Enrollment and graduation data will be gathered from University of Valley Forge and Duquesne University. Both universities are located in Pennsylvania and offer both undergraduate degrees and graduate degrees in music production. Data will be collected from multiple years in both undergraduate and graduate programs. The data from multiple years will be analyzed to see how the amount of enrolled women in the music production programs can be compared. The data will be collected from secretaries and related personnel at the universities.

The qualitative aspect of this research will put the author in the role of interviewer. It must be noted that as a woman enrolled in a music technology graduate program, and more specifically as a self-considered feminist woman in the music technology field, the author has a critical interest in this gender-related topic. As a researcher, however, the author will remain unbiased and accurately reflect the experiences and values of the interviewees. Interviewees have no prior relationship with the author. Interviews will be strictly limited to the interviewees' experiences involving their music technology careers and training. Data collected from universities (including University of Valley Forge) will be strictly enrollment based, and will not reflect on the performance of any students or graduates.

Considering the professional diversity of the participants and the personal nature of the question, a survey is the best method of data collection for this topic. The survey

will be cross-sectional in nature. Participants will be chosen to serve as representatives of larger populations. In this case, those populations are students, professors, and professionals in the music technology field. The eleven individuals selected span age ranges, genders, and professions, and can therefore represent the wider population of the music technology field. The individuals were selected because of their degrees in music technology, their careers as music technology educators, or their previous work in the research field. While a random survey is preferable to non-random when sampling a larger population, the specific nature of this research made a random sampling impossible. A database of all music technology students or professionals does not exist, and would therefore be impossible to sample. Instead, participants were chosen from local universities that offer degrees in music technology. While this study focuses on women in music technology, both men and women were surveyed.

The survey will be designed by the researcher, and distributed through email to the participants, who may either schedule phone interview or fill in and return the survey by email at their earliest convenience. Returned answers will be organized in a spreadsheet for ease of reading and easy classification of responses.

The individual qualitative interviews will be read and scrutinized on a singular basis first. Each survey answer will be paralleled to the corresponding questions in other interviews. Answers will be classified according to similarity of answers. If possible and relevant, answers will be quantified in Microsoft Excel and graphically represented. Quantitative data from the participating universities will be associated and analyzed by year, degree status, and degree program. Increases in enrollment by year will be determined and compared, and represented graphically. Finally, quantitative and

qualitative results will be compared to each other, in the hopes of relating thoughts and

experiences of the music technology professionals with any increases or decreases in

enrollment rates in the universities' music technology programs. If no relation can be

found, the research will reflect so.

A copy of the survey sent to participants is found on page 27. A copy of the forms used

to collect data from the universities is found on page 28.

Interview Questions

1. What is your name?

2. What is your current occupation?

3. Did you attend college or trade school? If so, where? What was your major?

4. What drew you to a career in music technology?

5. Who influenced you the most in your career?

6. Do you have any particular role models? How have they influenced you?

7. Have you ever experienced any gender prejudice in your career?

8. Do you consider yourself to be in a position of authority in your workplace?

9. How do your co-workers respond to your authority?

10. What is your opinion on the male-female gender ration in music production?

11. Why are there so few women in the music production business?

12. How would you change the music technology field if you could?

13. Do you think the music technology field would benefit from the addition of more

    women in the field? Why or why not?

14. What would you say to inspire a young woman to become a music producer?

	University of Valley Forge Graduate Program		University of Valley Forge Undergraduate Program	
	2011	2015	2011	2015
Total Enrolled				
Production Track				
Education Track				
Composition Track				
Men Enrolled				
Production Track				
Education Track				
Composition Track				
Women Enrolled				
Production Track				
Education Track				
Composition Track				
Graduating Class Size				
# Men Graduating				
# Women Graduating				

	Duquesne University Graduate Program	
	2004	2014
Total Enrolled		
Music Technology		
Men Enrolled		
Music Technology		
Women Enrolled		
Music Technology		
Graduating Class Size		
# Men Graduating		
# Women Graduating		

Chapter 4 – Implementation

Data collection was completed by means of a survey distributed to sample members of the music technology community and by the collection of data from universities offering degrees in music technology. Obstacles were encountered in the collection of the data from the universities. The intention was to compare the graduation rates of women in music technology fields in 2015 to previous years, to establish whether or not that number had grown in recent years. This data was gathered from the University of Valley Forge. Unfortunately, this information was unavailable from Duquesne University, as it was deemed confidential and inaccessible to the general public. Commencement programs were collected from Duquesne University, but the programs only related the graduation rates for graduate level students. Commencement programs for all but a few years were largely unavailable due to a clerical error during library relocation at the university. Data regarding Duquesne University's undergraduate Music Technology students was unavailable. Because of the lack of Duquesne data and the small sample size of University of Valley Forge graduate students, the gender enrollment comparison was cancelled.

Because the desired data could not be collected, additional data was considered. Four Universities offering degrees in Music Technology were identified; University of Valley Forge, Duquesne University, Carnegie Mellon University, and Berklee College of Music. The music technology staff was examined and considered in regards to gender representation. The data was collected from the university web sites.

Collection of interviews was carried out successfully. The surveys were administered by email in all cases but one. Participants seemed to prefer to provide

answers in writing and respond by email rather than conduct the interview by phone. Only one interview was conducted over the phone. Interviews were conducted with two female professors at Duquesne University. Duquesne University is located in Pittsburgh, Pennsylvania, and offers both undergraduate and graduate-level degrees in music technology ("Duquesne Academics," 2016). Both women work as professors in the Music Technology Departments as well as teaching in other departments (music education and composition). Interviews were also conducted with two female professors at Berklee College of Music. Berklee College of Music is located in Boston, Massachusetts, and offers a degree in Music Production and Engineering at the undergraduate and graduate level ("Berklee Academics," 2016). Both women serve as professors of Music Technology. They are the only female professors of Music Technology on staff at Berklee.

Interviews were conducted with graduates of the University of Valley Forge Master of Music in Music Technology degree program. As the first enrolled graduate student completed the program in 2011, there are only fourteen graduates (who have completed the program) to contact. Of the fourteen graduates, six are male and eight are female. Seven Valley Forge graduates replied to the request for an interview; five female graduates and two male graduates responded. The seven graduates that replied currently hold jobs in a wide array of fields, including music education, composition, music library cataloging, technology integration, warehouse management of a sound company, and database administration. The varied assortment of sampled careers provided an interesting insight to the study's inquiries.

A request for an interview was extended to Ebonie Smith, music producer and founder of GenderAmplified via email and social media (i.e. Facebook and Twitter). Unfortunately for the study, Ms. Smith was unable to be reached for an interview. In attempting to reach Ms. Smith, many other producers, engineers, and people in the Music Technology business were discovered. Kat George is a professional journalist and the author of *Where Are the Female Music Producers,* a popular literature article discussing the lack of female music producers and the shortage of recognition of existing female producers. George was approached for an interview because of her interactions with the female producers referenced in her article. She also provided an interesting "outsider's perspective" on the subject.

Chapter 5 – Results

This chapter will include six sections, organized according to the main topics that became apparent when comparing the returned surveys. These six sections are workplace authority, production gender ratio, gender prejudice, perceived obstacles, female role models, and the possible benefits of increased female representation.

Workplace Authority

The literature review established that women who are considered to be in positions of authority in their workplace are intermittently treated with less respect than men in similar positions. Hare, Lenny, and Cohen, Bunker, Burton and McManus all conducted research on the role of women in the workplace and the reaction of men to women in the workplace. These findings are relevant to this study because a woman serving as head producer would be in a position of authority over any coworkers in the studio, both male and female. Her colleagues' reactions to her authority could negatively or positively affect the product.

The participants in this study were asked if they considered themselves to be in a position of authority in the workplace. Two participants (both male participants and one female participant) answered that they did not particularly consider themselves to be in positions of authority in the workplace. Eight of the eleven contributors replied that they did consider themselves to be in positions of authority, all eight of whom were women. Participants were also asked how their co-workers responded to their perceived authority. Three participants mentioned mutual respect as a key component in a favorable response to authority. Participant H gave credit to her knowledge of her subject, saying that her colleagues may argue with her but ultimately submit to her authority because, "…it helps

to be really good at what you do." Three participants mentioned negative responses to their perceived authority. One participant claimed that while the people over whom she is directly in charge respond positively to her authority, her immediate co-worker tends to undermine her, although she believed this to be due to "inexperience or ignorance" rather than gender discrimination. Participant E stated that while some teams with which she collaborates respond positively to her authority, others,

> don't like the fact that I have knowledge or skills that mean they should listen to me. They either grudgingly (sometimes loudly) go along or continue to do things their own way until it is proven (or administratively directed) that they need to do things as I have recommended.

In a brief follow-up interview for purposes of clarification on this topic, Participant E was asked whether she thought the begrudging attitude of her coworkers was due in any part to her gender. She replied, "I think it varies from individual to individual. Some of them I think would respond better if I were male, but others just want to do it their own way."

Production Gender Ratio

Survey participants were asked their opinion of the male to female gender ratio present in the music production industry. It is important to note that participants were not told of the average ratio, which is approximately one female to every twenty males, according to Leonard (2005) and Haruch (2010). Not provided with this information, participants were free to research the ratio on their own, or give their answers based on their own assumptions. Given the nature of the question, the answers were varied. Three participants declined to comment, given their lack of knowledge on the subject. Three

participants described simply that there were more men in the field. Three participants answered that the gender ratio was a negative mark upon the music production field, using such language as "abysmal," and "stupid." Participant A had a more positive view, stating that as, "…more women are becoming actively involved, the ratio is improving." This particular question was asked to ascertain the mindset of members of the production field. As can be seen, the members surveyed, without provided figures, generally agree with the statistics given by Leonard (2005), Haruch (2010), and the Department of Labor (2014).

Participant J described the ratio as, "…really sad." She went on to describe that in her years teaching classes in music production, she frequently has all male classes, or classes with only one or two females. She claims the current male to female ratio is not different from that which she experienced in the late 1970's, and that while other male dominated careers have become gradually more inhabited by females, music production has stayed the same. Participant J had many interesting theories on the reason behind this. She claimed, "It can be argued, perhaps successfully, that women feel intimidated, or maybe they just don't know it's a possibility... There may be ... some self-belief by a lot of young women that they can't do it." Her idea of self-belief as an obstacle to a production career echoes the research of Lourens (2014), where building self-efficacy was found to have a positive impact on women in technology fields. If Participant J is correct, then efforts should be made to raise the self-esteem of women in music production.

Gender Prejudice

Participants discussed the role gender prejudice has played in their career. Of the nine female responders, all but one experienced gender prejudice in some regard. Many of these experiences relate to the inconsistent pay scale between male and female coworkers, but some touch on more personal discriminations. Participant H stated that her experience with gender prejudice ranges from, "… things like being expected to make coffee and take notes in meeting if I was the only woman present, to being paid less than a man in the same position." Participant D related that a comparable male colleague,

> the same as me professionally in every objective way--was being paid over double what I was being paid… I also once had a totally sexist male boss who would suggest things like losing weight to get a boyfriend, and who called me emotional and unprofessional if I disagreed with him or made any extra demands for myself.

Participant K had personal experience with diversity hiring. She stated,

> When I first applied for a job at a big music studio, my resume was strong. They told me I was the most qualified candidate they had interviewed, but they already had a female working there. So they passed on me. That was not illegal at the time.

Participant F related the story of a highly experienced female colleague who was replaced by a younger male with no previous experience in the position. The previous occupant of the job was, "…experienced, but held the lowest title for that position. They changed the title and raised the hourly pay rate for [the new hire], even though he was doing the same exact job that she did for many years."

Several participants related that while they did experience gender prejudices, it occasionally worked in their favor. Two survey responders claimed that being female in a male-dominated profession helped get them in the door of their respective careers. Participant I stated, "The guy that hired me actually said one of the reasons he did was for diversity. And honestly, I had no experience to my name, just degrees, so being a woman actually proved to be beneficial in that regard." Similarly, Participant J claimed that as a young sound engineer, she experienced, "…the assumption that if you're a woman you're going to do the job differently than a man will, and sometimes that gets you in the door… but once I get in the door…we do the job more or less the same." Participant K saw gender prejudice as a way of being memorable in her field, saying, "…for every person I met who was turned off by the idea of a female engineer, there was someone else who remembered me because of it." While this particular outcome is certainly a more preferable outcome to discrimination than not being hired due to your gender, gender-based favor is discrimination, albeit in a different direction.

Participant J's experiences with discrimination did not end there. She gave a detailed and complicated answer when asked if she had experienced gender prejudice in her career. She started by saying that she has definitely experienced prejudice, which she defines specifically as, "… a preconception, which is what prejudice means, about you based on your gender." She continued on to say that early in her career there were,

some prejudices that I experienced in my first job, which was Audio Industries Corporation in Hollywood, from the old guard. Some of the older fellows thought I was a twenty-three year old know-nothing, and they were one hundred percent correct. I was a twenty-three year old know-nothing. I was a beginner, and I

needed to prove to them that I knew a little something anyway, and that I could do

my job.

It seems that this particular prejudice is more based on age and experience than gender. Participant J was contacted for a follow-up interview regarding this question, wherein she was asked if she believed the need to prove oneself would have been so prevalent if she were a male new hire, as opposed to a female new hire. She responded saying that while she agrees that new employees need to demonstrate that they can be responsible and be trusted with expensive equipment, she also believes that, "…young people who are different from the norm will probably be viewed extra skeptically. It was (and is) rare to see young female audio technicians, so we do have to put up with more skepticism than our male counterparts."

Participant J continued her discussion of gender prejudice to say that in her opinion, the largest difference between the genders in the workplace is the fact that,

a woman's body has to go through a much more complicated stunt to reproduce

than a man's body does… if [a woman] is going to reproduce and bring another

human being into this world, she's in it for a much longer haul, and the toll its

going to take on her physically, emotionally, mentally…there's no comparison.

Participant J does not have personal experience with any workplace discrimination based on childbirth, but a study by Fuegen, Biernat, Haines, and Deaux (2004) proposed that administrators in a hiring position do hold prejudices against parents generally, and mothers specifically. The study found that while people with children were assessed to be, "less committed," males with children were treated with much more clemency than mothers (p.737). Participant J did not have personal experience in this matter. However,

the idea of childbirth and motherhood as a hindrance to women entering the music production field (or any field, truly) is formidable.

Perceived Obstacles

Participants in the survey were asked why they believed so few women were involved in music technology fields such as production and sound engineering. Many participants echoed sentiments from studies referred to in the literature review. Kolata (1980), Corell (2001), and Farrugia and Swiss (2008) discussed male domination in technology fields as being due to the perception that men are inherently more technologically competent than women. Four participants, interestingly all female, echoed this idea. When asked why there were so few women in the music production field, Participant H said, "Its not a traditional field for women." Participant E responded, "In production fields, I believe it is the same stereotypes that scientists, engineers, and computer programmers are expected to be male. Girls tend toward the more social fields." Participant K blames gender roles typically enforced in early childhood, saying, "It's a cultural problem that starts at a very young age when boys get toy trucks and girls get dolls." Even more simply, Participant F claimed, "I sense there is a perception by employers that men are better at technology than women." Participant I gave a more detailed explanation, saying that some aspects of music technology (live sound in particular) may seem,

more 'suited for men,' based on stereotypes of course. As far as engineering, producing, mixing, and the hundreds of other job fields in the industry, I am not

sure why it has remained so male dominated. As with most career options, it

began that way.

Perhaps most interesting is Participant B's response, in which she claimed that such a

question is one with "…few answers," but referred to research by the American

Association of University Women and Catherine Hill. The study stated that the weight of

what they refer to as "stereotype threat," or the stereotypical belief that men are better

than women at math or technology, could hinder a woman's performance on assessments

in those fields (2010). In other words, the knowledge of how society expects them to

perform is enough to cause anxiety in the actual performance. Transferring this to music

technology could imply that women remain out of the production studios simply because

production is traditionally male-dominated.

Fitts' (2008) research introduced the "boys' club" mentality and institutionalized

misogyny present in many studio situations, while Sandstrom (2000) referred to the male

unwillingness to relinquish control in the studio. Similarly, when asked why there were

so few women in the music production field, Participant A stated that some women may

be deterred from the producer's booth by "…male gear enthusiasts," inferring that the

male cronyism may be enough to drive women away (Farrugia and Swiss, 2008).

Participant D also discussed this boys' club mentality in-depth, claiming:

Right now the men are getting all the cookies--it's a boys club. And when there's a

boys [sic] club the boys in it become very protective of their cookies. It's a cycle,

where men have all the production jobs, so women don't see it as something they

can crack. They might even see it as something they don't want to try and crack,

and I don't blame them. You have to be really passionate about something to go

up against a wall of entitled white guys.

Hers is a passionate claim, but one backed up by the literature examined in chapter two.

She further explained, "You hear all these horror stories about sexual abuse and general

gendered bias, and I think that's such an effective deterrent." The sexual abuse and

gender bias to which she refers is confirmed by Fitts (2008). However, Participant D

seemed positive about the future of women in music production. She stated,

I think women are starting to get really fed up with the status quo. We're starting

to see women in music seeking empowerment not just through sexuality but

through actual, real power; power derived from controlling their product, and not

needing to "rely" on male producers to the point where they're abused and

exploited.

A status quo such as the one described by the survey participants is an abstract concept.

It is not a physical obstacle blocking women from the production studio, but it is a

powerful abstract concept. If this status quo is to be changed, it must be challenged by

more women joining the career field despite the preexisting circumstances.

Female Role Models

In the review of related literature, the issue of a lack of female role models in the

technology field was discussed. Studies conducted by Farrugia and Swiss (2008),

Mastekaasa and Smeby (2008), George (2016), Fitts (2008), and Sandstrom (2000) all

concluded that women could be dissuaded from occupations in the technology field due

to a lack of female role models. Participants in this study were asked about influences

and role models in their careers. These two questions were asked separately because often the person or persons who influence one to enter an occupational field are not necessarily the people to whom one looks for specific career guidance and mentorship. When asked who provided the biggest influence over their career, one participant described a female influence, four described male role models, and five described gender neutral influences, or influences whose gender could not be determined by the survey answer. One participant did not name a direct career influence. When asked about specific role models in their career, two participants described female role models, seven described male role models, and one declined to answer. Broken down by gender it reads thus: the participants included eight women, and only two of those women listed female role models. Both male participants listed male career role models.

When talking of career role models, Participant A, a university level Professor of Music Technology, related that early in her career she was one of five female members of the Association for Technology in Music Education. The other female members acted as mentors and, "…encouraged me to join the organization…encouraged me to seek office in that organization, and … were simply supportive and generous in sharing their experience and research." Participant J, who began her career in the music production business as a young woman, stated that when looking for role models, "I used to look for women's names on the albums of course, and be sort of thrilled when I saw Leslie Ann Jones… You just didn't see women's names on records back then... it was just so rare." It seems that for young Participant J at least, the mere notion of a successful, visible woman in her field and the knowledge that such a career was open to a woman was enough to inspire a passion for the occupation. Along the same lines, when asked why

women were deterred from the production studio, Participant G proposed, "Perhaps it is because women aren't seeing other women leading workshops and trainings in music technology. If there were more women role models in these positions it would change that ratio." In her response to how the music production industry would benefit from the addition of more women in its fold, Participant J circled back once again to the idea of female role models. She asserted that when enough young women get into the recording studio and visibly succeed, "…they're going to change the landscape such that women are going to go, 'Oh yeah, of course we do this. This is what we do.'"

In analyzing university data, four universities and colleges offering undergraduate and/or graduate degrees in music technology were considered. The faculties of these institutions were counted and categorized by gender. Only current, full-time faculty members were considered. The analysis produced the following results:

	Full Time Mus		
	Total	Male	Female
University of Valley Forge	4	4	0
Carnegie Mellon University	5	5	0
Duquesne University	8	6	2
Berklee College of Music	23	21	2

Figure 1: Gender Breakdown of University Music Production Faculty Members

Of the four music production programs considered, and the forty faculty members included, only four faculty members are female. If women are more included to seek university level training as opposed to on-the-job training, as suggested by Sandstrom (2000), then this low ratio of male to female faculty members would certainly not provide

the female role models the participants suggest young women need. The faculty gender ratios of these universities were compared to the gathered student gender ratios. University of Valley Forge, having zero women on the music faculty, currently has two enrolled female production students and four male production students at the graduate level (it should be noted that some Valley Forge graduate students choose an education track as opposed to production due to an inability to take courses on campus, which is required in the production track). Duquesne University, having two women on faculty in the music production department and six men, graduated zero female music production students and three male production students at the graduate level in 2014. Berklee College has two female music production faculty members, and twenty-three male music production faculty members. While no student data was collected from Berklee College of Music, the faculty gender ratio can be compared with the approximate gender ratio commented on by Participant J (a professor at Berklee College), in which she mentions that in a typical class of eight or nine students, she has at most two women in her classes, and frequently has none at all. If [as Sandstrom (2000) argued] women are more likely to join the music production field later in life and through a university program, and if women are seeking female role models in their career fields, these low numbers of female faculty members at the university level would certainly be detrimental.

Possible Benefits of Increased Female Representation

Survey participants were asked if the music technology industry would benefit from the addition of more women. One participant did not answer due to a formatting error in the survey. The remaining ten participants answered that yes, the field would

benefit from the addition of more women. Reasons why the addition of more women would be beneficial were diverse, but two central themes were discernable: that of the need for a female role model, and the need for diversity in any field.

Four out of ten responses (including those of both the male participants) specifically referred to the need for a female role model for future female music producers. Participant D responded, "You have all these men doing the work, and it just isn't welcoming for women. It's certainly not fair in the slightest, and the more transparent the music industry becomes I think the more available/enticing those roles will become for women." Participant C answered simply that the greatest benefit gained from the addition of more women to the field would be for more women to serve, "…as a role model to female students." Participant G stated that having more women in the field would, "…would show other women that they could be successful in music technology. It would also inspire the younger generation of students to get involved as well. Participant E replied, "It would be good for female students to see that it is something they can do… It could potentially boost female student morale and self-worth." This last response in particular echoes the research of Lourens (2014), showing that a female community in a male-dominated field can serve to raise self-efficacy and help women gain confidence in their field.

The remaining six participants discussed the need for diversity in any field. Participant H perhaps summarized this idea best, saying, "Diversity in any field always enriches the outcomes and experience." Participant I recognized the differences between men and women as positive variances, and answered,

Women and men differ in personality structure. Women have a lot to offer: our

organization, our different levels of creativity, our encouragement and motivation,

our abilities to communicate with others, all sorts of things. While we should be

treated with equality and fairness, women do differ from men in various ways and

we have positive attributes that can enhance and strengthen the industry.

Participant J responded along a similar line, saying,

[Women] mix it up a little bit… They have a unique perspective that is beautiful

and appreciated and great. We need to have more women in [the studio] who are

manipulating sound in such a way as to make it express what they want to hear

expressed.

Participant A discussed the need for everyone to be vitally involved in music technology,

saying, "As technology permeates music and almost every music discipline, anyone

should be fluent enough with technology… It continues to be a field with considerable

opportunity for creativity of all kinds."

Participant F brought up a most interesting argument in the need for more women

in the music production field. She claimed:

It is a documented medical fact that women in their teens through twenties have

the most acute hearing. Given this, it seems to me that women in their twenties

who have degrees in music technology would make highly qualified audio editors

and engineers.

The medical fact to which she referred is confirmed by Sagi, D'alessandro, and Norwich

(2007), and Sax (2010), who delineated the ages at which hearing is at its peak and stated

that females are more sensitive to certain tones than men. Participant J also mentioned

this idea, asserting that, "There is some evidence out there that men and women literally hear differently, that certain frequency bands women prefer, and that men prefer others." If it is true that young women have the most sensitive and discriminating hearing, or at least have different hearing than men, then it is also true that the music technology field, especially the studio environment, would benefit greatly from the addition of more women in their numbers.

Chapter 6 - Summary and Conclusions

The purpose of this study was to examine the struggles faced by women in the field of music production and the obstacles that prevent women from pursuing careers in music technology. While research has been conducted in relation to gender stratification in career fields and the role of women in typically male-dominated fields and music careers, the general literature is inconclusive on the obstacles barring women from joining music technology occupations.

The study surveyed both male and female members of music related career fields. Universities offering degrees in music technology or music production were assessed regarding gender ratios of both students and faculty. When the survey answers were categorized, one main conclusion became apparent. A startling amount of survey answers related to the lack of visible female role models in the music production and music technology fields. This is the most mentioned barrier standing between women and the recording studio. The dominating male presence acts as a deterrent when too few successful women are available as role models to young girls. The lack of women in the career also creates a lack of social structure to assist and support current and future members. If the creative and aural benefits achieved by the presence of more female producers are to be realized, more women must join the field, and current female members must strive for visibility to provide role models to future female music technology professionals.

The scale and inexact nature of this topic is such that much more research must be conducted to gain an adequate idea of why women are not joining music production fields. The study suggests that communication is a barrier between women and the music

production field. An analysis of the communication between men and women in a studio environment would help to assess the interactions therein. Data should be collected determining how both men and women seeking careers in music production prefer to gain their education; comparing gender choices between a master/apprentice setup and traditional university training. Furthermore, much could be learned from the comprehensive collection of data pertaining to gender enrollment in music technology programs at both the undergraduate and graduate level. Lastly, a survey should be conducted of women seeking careers in music technology to determine if a university program with more female faculty members is a more attractive option than one with less.

While music technology is undeniably a male-dominated field, women have the means and ability to succeed and thrive in the environment. More research must be conducted in order to truly understand the reasons why women seem to circumvent this occupational arena, but it is fully anticipated that gender diversity in the music production and music technology fields will follow the same trends as other traditionally male dominated careers in the past few decades.

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      workplace-what-data-analytics-says.

Appendix A:

Breakdown of the population of occupational fields by gender.

	Total Employed	Men employed	Women employed
	(in thousands)		
Computer & Mathematical Occupations	4,303	3,201	1,102
Education, Training & Library Occupations	8,686	2,250	6,436
Musicians, Singers, & Related Workers	194	128	66
Sound Engineer Technicians & Radio Operators	108	94	14
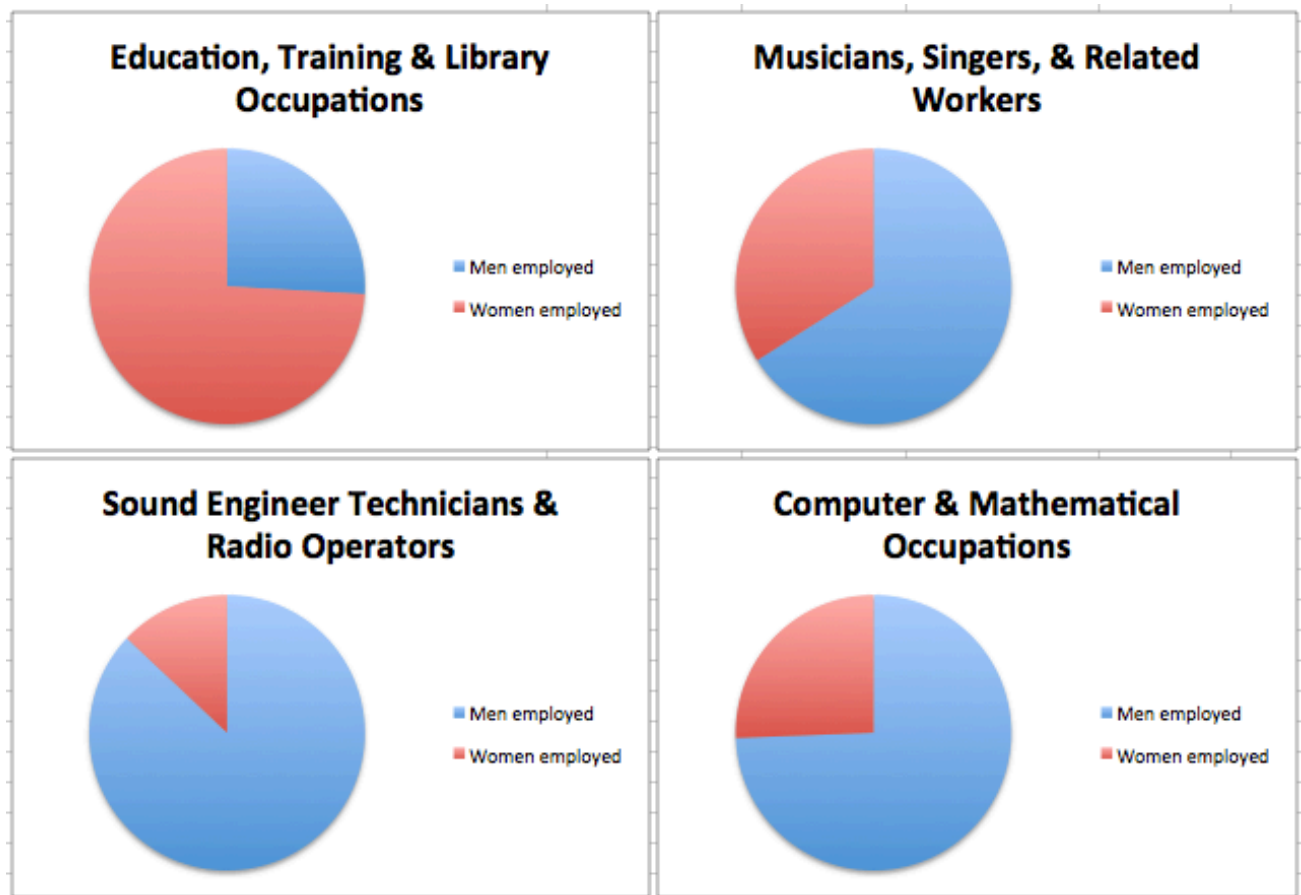
Appendix B:

Interviews with participating subjects

Interview Questions – Participant A

1. What is your name? [Redacted]

2. What is your current occupation? Professor, Music Education & Music Technology

3. What educational path did you take to reach your current career? BA in Piano Performance; MM in Music Education (primary applied—piano; secondary applied—organ); PhD in Music Education—research on computer-assisted instruction in music theory; designed music educational software games for children.

4. What drew you to a career in technology? Opportunity to be creative, build something new, lead in innovation.

5. Who influenced you the most in your career? Doctoral advisor who encouraged me to explore and experiment with computer-assisted music instruction; college piano instructor who encouraged independent thinking.

6. Do you have any particular role models? How have they influenced you? No particular role models—early in my career I was one of about 5 women who were members of what is now the Association for Technology in Music Instruction (ATMI). One of them encouraged me to join the organization, another encouraged me to seek office in that organization, and others were simply supportive and generous in sharing their experience and research.

7. Have you ever experienced any gender prejudice in your career? Not that I was aware of. People in the technology area seemed more focused on the work and in promoting development and applications of technology.

8. Do you consider yourself to be in a position of authority in your workplace? Yes, in my area of specialization—online learning—but I view that as an opportunity to help others develop their own online courses and pedagogy usually in a collegial and informal way.

9. How do your co-workers respond to your authority? Those who are interested in technology and online learning in particular appreciate the assistance and often seek it out.

10. What is your opinion on the male-female gender ration in the technology field? More women are becoming actively involved, the ratio is improving.

11. Why are there so few women in the technology field? Some women may be put off by male gear enthusiasts, but women are also creating and composing for video games and working as recording engineers, and men are also active in pedagogical areas. A comparison could be made to women in STEM fields.

12. How would you change the technology field if you could? I feel that it's more a question of educating teachers in productive uses of technology that are relevant to their discipline so they can integrate technology into the disciplines in authentic ways. If teachers are competent and confident in their use of technology, that attitude can be passed on to colleagues and students and may lead to more balanced representing in the field.

13. Should more women be interested in technology? Why? As technology permeates music and almost every music discipline, anyone should be fluent enough with technology, and that may grow into greater interest. It continues to be a field with considerable opportunity for creativity of all kinds.

14. What would you say to inspire a young woman to join the technology field? There's room in the technology field for a great variety of creative interests— composing, performing, teaching, software design, curriculum design, writing and publishing, and more. The field is open and accepting. Join the organizations dedicated to technology, e.g., ATMI, to meet and interact with people who share your interests, to learn what others in the field are doing, and to find ways to move the discipline forward.

Interview Questions – Participant B

1. What is your name? [Redacted]

2. What is you describe the job requirements of your current occupation?

    I am an Associate Professor of Music Technology and Area Coordinator of Composition. I teach classes in composition, electronic music performance, electronic orchestration, sound design and production, multimedia design, private electronic composition lessons, and conduct an electronic ensemble. I also

administer the electronic composition track at both the undergraduate and graduate level.

3. Did you attend college or trade school? If so, where? What was your major? B.A. at Chatham University, in World Religions with a minor in music. M.M. in Music Composition at Duquesne University, additional post-graduate studies in multimedia and music therapy at Duquesne University.

4. What drew you to a career in music technology? I had already performed for years using electronic instruments, as well as wrote and arranged for other groups and for commercial work. Teaching became a natural extension of that.

5. Who influenced you the most in your career? My husband/musical partner

6. Do you have any particular role models? How have they influenced you? I performed with composer David Borden and his minimalist group Mother Mallard, the first electronic ensemble in history. He influenced my interest in composing using minimalist elements as well as serving as a model for the electronic ensemble that I started at Duquesne University.

7. Have you ever experienced any gender prejudice in your career? Yes, most of that was when I was performing in commercial venues. Some early on in my teaching career but not for many years now.

8. Do you consider yourself to be in a position of authority in your workplace? Yes, definitely. I was a co-founder of the music technology program, created many of the courses, and have handled various administrative elements in addition to teaching.

9. How do your co-workers / students respond to your authority? Generally, very well. I treat both my colleagues and my students with great respect but also clearly expect them to act in the same way. We have an excellent rapport and collegiality in our school, which also helps set the tone.

10. What is your opinion on the male-female gender ration in music production? Abyssmal. I often teach all male classes in our school. The females who do enter our program are very smart, dedicated, and self-confident.

11. Why do you think there so few women in the music production business? That is a question with few answers, although a similar issue has been researched in the science/math professions and could provide insights. Here's a link to an article by the AAUW about females and STEM. [http://www.aauw.org/research/why-so-few/] Lack of role models and male domination of the music production business may be underlying factors but my guess is that the problem starts in middle and high school as young women begin to explore their career options.

12. How would you change the production business if you could? Develop financial support and mentoring opportunities targeted for women since a lot of the business is entrepreneurial in nature. Scholarships for female students, start up costs for creating a studio available through grants and low-interest loans, etc.

13. (Questions 13 and 14 were deleted in a formatting error).

Interview Questions – Participant C

1. What is your name? [Redacted]

2. What is your current occupation? High School Music Teacher

3. Did you attend college or trade school? If so, where? What was your major? Bachelors in Music Education from Temple University and a Masters in Music (Technology) from Valley Forge Christian College

4. What drew you to a career (or education) in music technology? I enjoy technology and I think it can tap into aspects of music education that are neglected in more traditional instruction.

5. Who influenced you the most in your career? My colleagues.

6. Do you have any particular role models? How have they influenced you? My high school saxophone teacher, my high school band director, and as previously stated, my colleagues. My high school saxophone teacher was very supportive and a great musician. He's still the musical bar I strive to be. Similar things can be said about my high school band director. He also showed me how much work and passion goes into the job. And lastly, my colleagues - in particular a fellow instrumental music teacher in my district - showed me the nuts and bolts of running a music program.

7. Have you ever experienced any gender prejudice in your career? No.

8. Do you consider yourself to be in a position of authority in your workplace? No. If I have any authority it's due to my years of dedication and hard work.

9. How do your co-workers respond to your authority? I don't really think I have any.

10. What is your opinion on the male-female gender ratio in music technology?

11. Why are there so few women in the music technology field? I don't know. But most music tech gigs in education fall under the purview of the band director.

And while there are women band directors, it still seems to be mostly male. Again, I don't really know if that's true.

12. How would you change the music technology field if you could? More access to hardware.

13. Do you think the music technology field would benefit from the addition of more women in the field? Why or why not? I don't think it would hurt. I think the greatest benefit would be as a role model to female students

14. What would you say to inspire a young woman to become a music producer? Keep at it. Don't sweat formal education. And try to learn as much as you can from the best.

Interview Questions – Participant D

1. What is your name? [Redacted]

2. What is your current occupation? I am a freelance writer/journalist.

3. Did you attend college or trade school? If so, where? What was your major? I went to Melbourne University and I have a Bachelor of Arts (Media & Communications) and LLB (Law). I am currently studying a Graduate Certificate in Business Administration at RMIT and I'm hoping to go back to Melbourne Uni next year to do a Masters in Human Rights Law.

4. How did you first become interested in writing about the music business? I've always loved music and it was a happy coincidence that about 5 years ago I was poached for a writing job at VH1.

5. In your article, you mention that of the six women nominated for producer of the year, five of them are performers self-producing. Do you see a trend in female performers wanting to self-produce? Why do you think that is? I don't know if it's a trend yet, but it's certainly something that might start becoming more and more popular. If you look at an artist like Grimes, the male driven industry was just so hostile towards her, like it is to many female artist, and I think women are starting to get really fed up with the status quo. We're starting to see women in music seeking empowerment not just through sexuality but through actual, real power--power derived from controlling their product, and not needing to "rely" on male producers to the point where they're abused and exploited.

6. Have you ever personally experienced gender prejudice in your career? Oh yeah. I won't name the publication but I once found out that a male counterpart who had

previously been employed at the same company as me, had the same skills (although frankly I thought I was a much better writer than him but that's subjective) and credentials, the same amount of social media followers, and was the same as me professionally in every objective way--was being paid over double what I was being paid per article. I also once had a totally sexist male boss who would suggest things like losing weight to get a boyfriend, and who called me emotional and unprofessional if I disagreed with him or made any extra demands for myself. Aside from that, there's all the rape threats you get online through social media.

7. Do you consider yourself to be in a position of authority in your workplace? I work from home, so yes! I'm the boss :)

8. How do your co-workers respond to your authority? N/A.

9. What is your opinion on the male-female gender ration in music production? I think it's stupid. I think there's no reason why the music industry shouldn't be encouraging women into production. But right now the men are getting all the cookies--it's a boys club. And when there's a boys club the boys in it become very protective of their cookies. It's a cycle, where men have all the production jobs, so women don't see it as something they can crack. They might even see it as something they don't want to try and crack, and I don't blame them. You have to be really passionate about something to go up against a wall of entitled white guys. There are some really tough women out there pioneering the way though, and I certainly hope that many more follow.

10. Why do you think there are so few women in the music production business? I think I answered this above! It's a self fulfilling prophesy [sic]. You have all these men doing the work, and it just isn't welcoming for women. You hear all these horror stories about sexual abuse and general gendered bias, and I think that's such an effective deterrent. It's certainly not fair in the slightest, and the more transparent the music industry becomes I think the more available/enticing those roles will become for women.

11. What would you say to inspire a young woman to become a music producer? No one's going to do it for you. If that's what you want for yourself, what you really, truly, want, go for it. Don't let men tell you "no" just because they think a woman can't do the job. Do it, and show them that you can do it just as well, or better. The only way to break a glass ceiling is with cold hard evidence, because you can't deny the facts when you're good at what you do.

Interview Questions – Participant E

1. What is your name? [redacted]

2. What is your current occupation? Elementary Instrumental Music Teacher

3. Did you attend college or trade school? If so, where? What was your major? Graduate degree UVF, Master of Music Technology; Undergraduate degree West Chester University of PA, Bachelor of Music Education

4. What drew you to a career (or education) in music technology? It was something that interested me and that I believe is necessary to prepare my students for the future. It helped to keep me aware of modern innovations as well.

5. Who influenced you the most in your career? In my choice of career – My HS band director and God. In the paths that I have taken in my career – my own personal drive for things and God.

6. Do you have any particular role models? How have they influenced you? My HS band director was a dedicated and vibrant character. He always encouraged me and took time to really talk to me and help me. That gave me the skills and confidence I needed to succeed in the career that I chose.

7. Have you ever experienced any gender prejudice in your career? Yes

8. Do you consider yourself to be in a position of authority in your workplace? To some extent over musical things, yes. Sometimes over very specific technological situations.

9. How do your co-workers respond to your authority? Some teams of which I am a part are terrific and we all work well together. There are others who don't like the fact that I have knowledge or skills that mean they should listen to me. They either grudgingly (sometimes loudly) go along or continue to do things their own way until it is proven (or administratively directed) that they need to do things as I have recommended.

10. What is your opinion on the male-female gender ratio in music technology? There are more males in the field

11. Why are there so few women in the music technology field? From the education perspective, women tend to focus more on the students and are more inclined to pursue further study in traditional education or just music rather than on the technological tools. In production fields, I believe it is the same stereotypes that scientists, engineers, and computer programmers are expected to be male. Girls tend toward the more social fields.

12. How would you change the music technology field if you could? Put music technology experiences in the curriculum for *every middle school* student. I believe the way that society and music practices are changing, the exposure to these skills is just as important as Music Appreciation courses to help kids understand people out in the real world doing these things. It would also help

foster students' interests in the Music Tech field early on before stereotypes take hold.

13. Do you think the music technology field would benefit from the addition of more women in the field? Why or why not? It would be good for female students to see that it is something they can do in the same light that we want more scientists and engineers to be female so that those students are not turned off by those subjects in school or give up on themselves. It could potentially boost female student morale and self-worth.

14. What would you say to inspire a young woman to become a music producer? I would praise the skills of that person and tell them that there is no reason why they couldn't do it if it was what they wanted to do. People with passion for their occupation succeed more than anyone else, sometimes even regardless of skill.

Interview Questions – Participant F

1. What is your name?   [redacted]

2. What is your current occupation?   Freelance published composer, church director of music, and library music cataloger.

3. Did you attend college or trade school? If so, where? What was your major? Yes. Rutgers University, B.A. Music Theory and Composition; University of Valley Forge, M.M. Music Technology, composition track.

4. What drew you to a career (or education) in music technology? Composition, as I use notation programs to compose and DAWs to produce recordings of my works. The University of Valley Forge offered the only partially distance program that combined two of my great loves: composing and technology. The curriculum boasts great courses taught by leaders in the field.

5. Who influenced you the most in your career? Too many to count! Probably my father, who did not raise me as a weak female. He encouraged me to work hard and achieve.

6. Do you have any particular role models? How have they influenced you? Again, too many. Paul Scheid, my undergrad organ teacher, and the music faculty at UVF were a great influence as they encouraged and challenged me.

7. Have you ever experienced any gender prejudice in your career? Yes, many times. Examples: "Inexperienced men with a handful of published compositions are routinely hired as conductors or clinicians for National seminars, or employed as editors by publishers, while women with hundreds of published compositions are

passed over." Another interesting example I observed a few years ago at the office: A man was hired to replace a female (not me) staff member. He had no previous experience. She was experienced, but held the lowest title for that position. They changed the title and raised the hourly pay rate for him, even though he was doing the same exact job that she did for many years.

8. Do you consider yourself to be in a position of authority in your workplace? Yes, in my church job as Director of Music.

9. How do your co-workers respond to your authority? My choir members (both male and female) respond with support and respect. Unfortunately, my co-worker tends to undermine me. I believe this has more to do with his inexperience and ignorance about musical occupations than it does with discrimination.

10. What is your opinion on the male-female gender ratio in music technology? From casual observations there seems to be many more men employed in this field.

11. Why are there so few women in the music technology field? I sense there is a perception by employers that men are better at technology than women.

12. How would you change the music technology field if you could? Hire people on the basis of their ability, regardless of gender, race, or age.

13. Do you think the music technology field would benefit from the addition of more women in the field? Why or why not? Yes. It is a documented medical fact that women in their teens through twenties have the most acute hearing. Given this, it seems to me that women in their twenties who have degrees in music technology would make highly qualified audio editors and engineers.

14. What would you say to inspire a young woman to become a music producer? 1. Be the best that you can be. Identify your strengths and rely on them. Conversely, know your weaknesses and seek education or avenues to improve in those areas in which you are lacking. 2. You're never too old to learn. I am living proof as I earned my M.M. two months before my 60th birthday. 3. Never EVER play the weak woman card, especially in the workplace. 4. Take an active role in your future. Opportunity doesn't always knock on the door. Sometimes you have to make your own opportunities. 5. Never sacrifice your principles to get ahead. Your values reflect your very soul and beliefs. Integrity is everything.

Interview Questions – Participant G

1. What is your name? [redacted]

2. What is your current occupation? Technology Integration Specialist and Band Director at Corpus Christi Catholic School in Chambersburg, PA

3. Did you attend college or trade school? If so, where? What was your major?
   I attended college for undergraduate work at Geneva College, where my major was Music Education. I also received a Masters of Music in Music Technology from the University of Valley Forge.

4. What drew you to a career (or education) in music technology?
   A big chunk of my teaching career has been in cyber education so I've worked a lot with educational technology and music technology. I wanted to further my knowledge and insight in this area when attending Valley Forge.

5. Who influenced you the most in your career?
   Probably one of my biggest influences was my college band director and advisor. He showed me what it took to be successful in all aspects of a teaching career.

6. Do you have any particular role models? How have they influenced you?
   I would again say that my college band director and advisor has been a great role model both in my personal and professional life. He showed me a great example of how to carry yourself as a professional as well as the value of building relationships.

7. Have you ever experienced any gender prejudice in your career?
   When I taught younger grades in general music, I felt that sometimes people were surprised that I was good with kids and interacted with them well. I'm not sure if that was because I was young, or because a lot of times females are in those positions.

8. Do you consider yourself to be in a position of authority in your workplace?
   I am not in a position of authority among my teaching colleagues, but I am in a position of authority over my students.

9. How do your co-workers respond to your authority?
   My students respond in multiple ways, but for the most part they are respectful. I try to treat students with respect and value them and their opinions. I also build relationships as much as I can with them, which I believes [sic] bears good fruit in terms of how to respond to me.

10. What is your opinion on the male-female gender ratio in music technology?
    I do see that there are a good amount of male music technology leaders in the industry. I don't know why this would be the case, but I do know a lot of females who are very adept with music technology, but may not be in a position of authority or giving trainings, etc.

11. Why are there so few women in the music technology field?

Perhaps it is because women aren't seeing other women leading workshops and trainings in music technology. If there were more women role models in these positions it would change that ratio.

12. How would you change the music technology field if you could?
    I think overall there needs to be more awareness and training for music faculty across the country. Also, the training needs to focus on how music education can be integrated into what teachers are doing. Workshops and trainings need to be less abstract and more concrete.

13. Do you think the music technology field would benefit from the addition of more women in the field? Why or why not?
    I think it would. It would show other women that they can be successful in music technology. It would also inspire the younger generation of students to get involved as well.

14. What would you say to inspire a young woman to become a music producer?
    I would say that if you have the desire and the talent, the possibilities are endless. You have the opportunity to put your mark on the industry. Don't let anything hold you back.

Interview Questions – Participant H

1. What is your name? [redacted]

2. What is your current occupation? Oracle Database Administrator/private piano teacher

3. Did you attend college or trade school? If so, where? What was your major?
    Portland State University -- General Ed
    Portland Community College -- AAS in Computer Operations 1981
    Portland State University – MPA
    Marylhurst University – BA in Communications 1989
    University of Valley Forge – MM in Music Technology, composition track 2011

4. What drew you to a career (or education) in music technology?
    I wanted an advanced degree in music and the VFCC masters fit my prior ed/work

5. Who influenced you the most in your career?
    Probably my Parents [sic], who were church planters. I started playing piano in church at age 11, and they encouraged my continued involvement in music.

6. Do you have any particular role models? How have they influenced you?
    The music faculty at UVF were certainly influential in my music "career". When I was taking classes I used to say I wanted to grow up and be Dr. DeSanto, but Dr.

Richmond was a huge help in the composition part of my degree, and Mr. Smith helped me remember the music theory I learned 40 years ago.

7. Have you ever experienced any gender prejudice in your career?
I have made my living in Computer Technology, particularly in Higher Education, where, yes, there has been gender prejudice. It has ranged from things like being expected to make coffee and take notes in meeting if I was the only woman present, to being paid less than a man in the same position.

8. Do you consider yourself to be in a position of authority in your workplace?
Where my responsibilities involve the Oracle Databases, yes, absolutely. I make them put it in writing, if they want me to do something that I think will be harmful to the database.

9. How do your co-workers respond to your authority?
Sometimes they argue, but most often, they say that I know best. It helps to be really good at what you do, as well.

10. What is your opinion on the male-female gender ratio in music technology?
Don't have one, as I have not been much involved in that field

11. Why are there so few women in the music technology field?
It's not a "traditional" field for women, perhaps, but neither is DBA work. There are much fewer women than men in that field as well.

12. How would you change the music technology field if you could?

13. Do you think the music technology field would benefit from the addition of more women in the field? Why or why not?
Diversity in any field always enriches the outcomes and experiences. I believe that will be the best thing about Heaven. Everyone will fit in and bring individual giftings [sic] to the whole.

14. What would you say to inspire a young woman to become a music producer?
If it is something that you really want to do, and you have the blessing of God, go for it, what more do you need?

Interview Questions – Participant I

1. What is your name? [redacted]

2. What is your current occupation? I am the Warehouse Manager at M&L Sound in Knoxville, TN. I am also a barista at Starbucks.

3. Did you attend college or trade school? If so, where? What was your major? I attended Western Carolina University and received a Bachelor of Music in Commercial & Electronic Music. I also attend the University of Valley Forge and received a Master of Music in Music Technology.

4. What drew you to a career (or education) in music technology? As a teenager, I wanted to be a rock star. Then a friend suggested studying recording arts and that was that. I have been involved in music since I was a kid and I have always wanted to work with audio and live/recorded sound engineering.

5. Who influenced you the most in your career? Two of my high school teachers were HUGE in influencing me in all things regarding music. The woman who taught me the flute and all of the instructors I had in flute lessons made a huge impact as well. Of course, I also have that friend to thank – without him, I wouldn't be where I am (having gone to college for music/recording and living in Knoxville for this current job).

6. Do you have any particular role models? How have they influenced you? My role models are all rock stars. People using their gifts and their pain to write and play incredible music that touches lives all over the world. They help me to remember why it is I sought after a career in the music industry. Papa Roach and Linkin Park are the two biggest models.

7. Have you ever experienced any gender prejudice in your career? In doing research for my thesis on mixing engineers in the rock genre, I definitely "experienced" just how male-dominant that particular part of the industry is (and of course the ENTIRE music industry is male dominant). All of the mixing engineers that mixed every album I've ever bought or listened to were all men. Even the assistants were men. Every single engineer I found research on was a man, minus maybe 3-4. In college, I was one of maybe 5 women in my major. At my current job, I am the ONLY female employed by my company. On the few shows I've gone out to assist, all of the stage hands, engineer, technology producers, venue employees … all men. Minus a few, once again. I do get "picked on" in aspect of my gender here at my job. All in good fun. I also kind of play along with gender stereotypes just for laughs. Like today, I made a gender based joke about me liking to shop. I have also come across "jokes" in regards to my physical strength. I get pretty competitive when it comes to that anyway. I like to show the boys that even though I am a 5'1" female, I can help load/unload a truck, lift gear, do physical labor, etc. Also, on a different side of the spectrum, one of the reasons I first began to work for this company was because my gender made me different – it helped me to stand out. The guy that hired me actually said one of the reasons he did was for diversity. And honestly, I had no experience to my name, just degrees, so being a woman actually proved to be beneficial in that regard.

8. Do you consider yourself to be in a position of authority in your workplace? Not really. I do have quite a bit of responsibilities, but ultimately, everyone else has authority over me. I just do what they need me to do.

9. How do your co-workers respond to your authority? N/A

10. What is your opinion on the male-female gender ratio in music technology? As I said earlier, it's so male dominated. I have always looked at that as a challenge of sorts. Women need to even the playing field, so to speak. The job force in general needs to be more evenly divided, gender wise. There are tons of career fields that are still so lacking in women, for one reason or another. I am honestly not sure of the reason for the lack of women in music technology. I can see in the field I am involved in – working in a warehouse, handling heavy and often dirty gear, setting up shows, doing the "grunt work," may all seem more "suited for men," based on stereotypes of course. As far as engineering, producing, mixing, and the hundreds of other job fields in the industry, I am not sure why it has remained so male dominated. As with most career options, it began that way, but I am not sure why women haven't had more of an influence yet. Most women seem to be called to teach, to play instrumental music, to be any sort of musician, etc. Technology is for everyone. I am lucky and blessed enough to have such a unique passion/calling. Every time I tell people my degrees are in music technology, they respond – Oh so you want to be a teacher? NO! That is the last thing I would want to do. No offense to teaching, just not my thing. Never had the drive to teach. I've always wanted to be in the studio, in the concert hall, crafting the music. And as a 26 year old, this job I have now is definitely not the end of the road for me.

11. Why are there so few women in the music technology field? See #10.

12. How would you change the music technology field if you could? I would help people to understand that women belong here. Doing the physical work, doing the dirty work, helping to make music happen, whether that be working with equipment, setting it up, tearing it down, maintenance, producing, visionary and creativity, whatever it may be … We deserve every right to fulfill our love and passion for audio and music in general. Ideally, I wish I could erase stereotypes and misconceptions, as far as a woman's physical strength, abilities, and desires.

13. Do you think the music technology field would benefit from the addition of more women in the field? Why or why not? Yes!!!! Women and men differ in personality structure. Women have a lot to offer. Our organization, our different levels of creativity, our encouragement and motivation, our abilities to communicate with others, all sorts of things. While we should be treated with equality and fairness, women do differ from men in various ways and we have positive attributes that can enhance and strengthen the industry.

14. What would you say to inspire a young woman to become a music producer? GO FOR IT!!!!!!!! Follow that dream wherever it may take you. And never forget the driving passion for music that lies behind the aspiration of succeeding in the music industry.

Interview Questions – Participant J

1. What is your name? [redacted]

2. What is your current occupation? I am an associate professor
   of at Berklee College of Music in Boston. I teach in Music Production and
   Engineering where I teach record production, and I also teach the analog tape
   class, because the kids are really into that. I also teach in the Sciences; I teach
   music cognition, I teach psychoacoustics, and I teach statistics.

3. Did you attend college or trade school? If so, where? What was your major?
   When I was working in the music business I was a high school dropout. But after
   I left the music business I earned a bachelor's degree in psychology and
   neuroscience, and then I earned a PhD in the (…) behavioral neuroscience at
   McGill University in Montreal.

4. What drew you to a career (or education) in music technology? I always loved
   records when I was a kid, just crazy about records. I took piano lessons like many
   kids when I was about nine years old. I was terrible at it. I didn't like it at all. It
   did nothing for me. And that's true of a lot of kids. If I had kept at it, maybe it
   would have clicked. But my passion was always for records. Every spare dime,
   baby-sitting money, birthday money, that kind of stuff, I spent on records. I
   listened to the radio like a fiend. I think I was just born to be on the other side of
   the glass. And I fantasized about it when I was a kid. Anytime I would have an
   album that would have a picture of the studio on the back, that's where I imagined
   being.

5. Who influenced you the most in your career? Everything influences
   you, and the artists that you love are a huge influence. When I was quite young, it
   was Led Zeppelin, and Crosby Stills and Nash, and it was also, being very young,
   Sly and the Family Stone. They were a huge influence on me in the 60's. Sly,
   and James Brown, in the 60's I was a James Brown Fan. In the 70's, a lot of soul
   music, like Al Green, especially. Coming up in the Late 70's, early 80's, it was a
   lot of R&B, soul stuff. But mainly that triumvirate: Al Green, James Brown, Sly
   and the Family Stone. And then when Prince came along, of course, I was a
   Prince fan. And no list would be complete for me without Stevie Wonder. Those
   were huge influences on me.

6. Do you have any particular role models? How have they influenced you? I used to
   look for women's names on the albums of course, and be sort of thrilled when I
   saw Leslie Ann Jones… I remember seeing Peggy McCreary's name on those
   Prince Albums and just imagining, you know, who is this woman? What is she

like? You just didn't see women's names on records back then... it was just so rare. There was a guy named Bill Schnee ... he did a direct to disc album with (??) and Pressure Cooker. I remember listening to that and having my mind just blown. And of course the great Mick Gisowsky (sp?). I idolized his work. Al Schmidt, George Masonberg, those people just blew my mind.

7. Have you ever experienced any gender prejudice in your career? "yes, but it was quite mild and easily handled. When you use the term gender prejudice, it we're going to take it really literally, we'll say that it's a preconception, which is what prejudice means, about you based on your gender. So, that can, if you want to be really literal about it that can swing both ways. So there were, early some prejudices that I experienced in my first job, which was audio industries corporation in Hollywood, from the old guard, some of the older fellows, thought I was a twenty-three year old know-nothing. And they were one hundred percent correct. I was a 23 year old know nothing. I was a beginner, and I needed to prove to them that I knew a little something anyway, and that I could do my job. So yeah, there were prejudices. Later on there were prejudices in the opposite direction. The assumption that if you're a woman you're going to do the job differently than a man will. ... If you think I'm going to do this job differently, and you're willing to hire me, great! But once I get in the door, they will see, and I can demonstrate this, and my colleagues can demonstrate as well, we do the job more or less the same. The individual aspects of our personalities, our way of working, our traits, {undetermined}, those things that are individual to us, are far less likely to be specific to our gender. Some people are assertive and aggressive, and some people are more passive, and some people... we all have this range of personality traits, and um, its not really rooted to whether or not we have a Y-chromosome. You know, its just personality. So yes, to answer your question, yes, there were some gender prejudices, but not of the kind that made me feel that they were a barrier to my success. I can expand on that more. There is one barrier that is no one's fault and that we'll never get around, and that is the fact that a woman's body has to go through a much more complicated stunt to reproduce than a man's body does to reproduce. A man's body can reproduce in a matter of minutes... that's biological fact. But a woman, if she's going to reproduce and bring another human being into this world, she's in it for a much longer haul, and the toll its going to take on her physically, emotionally, mentally, whatever, its... there's no comparison.   There's simply no comparison. So that's where the biggest, most fundamental difference is. But, that is not a problem for women in the industry who don't have children, who don't reproduce. And I'm one of them. But if having kids is your goal, a woman is going to have to answer some tough questions for herself, for her family, for her kids.   She's got some tougher questions to answer than men do, that's just how it is.

8. Do you consider yourself to be in a position of authority in your workplace? I've got my little corner; I've got my little corner of expertise. I'm well trained in several disciplines, starting with basic audio electronics, working up through applying that in the art of record production and engineering and mixing, I've

done all that at the highest level. So I could say honestly that I'm an expert there. I've got my actual PhD work in auditory neuroscience, So I've got a little corner of the market over there too. So in my workplace, yeah, I do feel very respected for what I know. I'm also really grateful to be in the company of people who know a lot of stuff that I don't, that I might know a little bit but they are far more expert than I. I'm happy in my corner.

9. How do your co-workers respond to your authority? [Refer to #8]

10. What is your opinion on the male-female gender ratio in music technology? Oh, it's really sad. It's really sad. I mean to this day, in our major, in music production and engineering major, which is my home base; honest to goodness its about nine or ten to one. Our classes are usually about 8 kids in a class, because its taught in a control room, so we can't fit that many kids in there, so we'll have 8 kids. And frequently, it'll be all male. Sometimes, there'll be, ah, two or even three females. The ratio is not that much different than what I saw in 1978. That has to be informative, because it suggests with all of our advances, all our female advances in the workplace, in different areas of society, for all our advances, it hasn't changed at all. It suggests then that the barrier is actually just personal choice. I don't know if that's the answer, but I think it at least suggests that not that many women are interested in audio technology. We've got women artists all over the map; you've just got to look at the charts and see, its obvious that women are artists. Women are not tuned in to technical careers in rates or ratios that have changed much in decades. It can be argued, perhaps successfully, that women feel intimidated, or maybe they just don't know its a possibility... but lets look then at other disciplines. Lets look at being policemen and firemen. Lets look at being physicists, lets look at being astronomers and other male dominated fields. The obvious observation is that women who do pursue these goals are every bit as good as men. There is no innate barrier to a woman's success to an engineering or technical field. There is no question. There may be ... some self belief by a lot of young women that they can't do it, I don't know if that's the case, but there may be the possibility that a lot of women are just simply not interested in it. If that's true, I think we'd be doing women disservice by trying to force them or shame them into adopting careers that they might not want. I think we should let women just be naturally who they are, and let them decide for themselves what they want.

11. Why are there so few women in the music technology field? [refer to #10]

12. Do you think the music technology field would benefit from the addition of more women in the field? Why or why not? Oh Hell yes. Of course it would. Because women are…we mix it up a little bit. Look at women in the visual arts, look at women filmmakers. Look at women in sculpting and painting and writing. …They have a unique perspective that is beautiful and appreciated and great, of course they do. We need to have more women in there who are manipulating sound in such a way as to make it express what they want to hear expressed. There is some evidence out there that men and women literally hear differently,

that certain frequency bands women prefer, and then men prefer others. I don't' know enough right now about that, I haven't read enough of the data...there's some suggestion that men and women hear differently. The field would benefit technically, artistically. The workplace would improve. So many men have told me they hired me because they wanted a woman in the room to keep the conversation at a certain level. [Tangent on female comics being for people, not just women, having men on the team, etc.] It was unthinkable in my era that there'd be just as many women mixers and engineers and producers as there are men. And that's still the case. But when enough of those forward thinking women out there - the Lena Dunhams of audio, the Amy Schumers of audio - go "Oh Hell yeah, I'm going to make great records and I'm going to make them well. When they get in the studio, they're going to be tearing it up. And they're going to change the landscape such that women are going to go, "Oh yeah, of course we do this. This is what we do."

13. What would you say to inspire a young woman to become a music producer? To both young women and young men, I would talk to them about what it is like. I would describe the thought process. It is both very difficult and very exciting. The philosopher Sam Harris said that the definition of a good life is to wake up everyday to work that is both difficult and interesting. It has got to be hard enough to keep you engaged and interesting enough so that you'll want to do it. It can't be too easy. And that's what record production was to me. It was very difficult, and very interesting. There were always new problems I wanted to solve. If that's the kind of life you want, that's a great life. There are tremendous sacrifices for men and women who want to go into this field. So I would describe it, and if people are willing to make the sacrifices in order to have that prize, then that's the right career for them. If not, then they shouldn't think about that as a career. Its really really competitive. It's really really hard to do, you're going to be in it for the long haul.

Interview Questions – Participant K

1. What is your name? [redacted]

2. What is your current occupation? Professor of Music Production and Engineering at Berklee College of Music

3. Did you attend college or trade school? If so, where? What was your major? Two years of liberal arts at University of Minnesota. Later, 10 week course at Institute of Audio Research

4. What drew you to a career (or education) in music technology? I had dropped out of college and was looking for my career path. I went with some musician friends to the studio where they were making a demo and fell in I love with the whole idea. The studio was Eventide Clockworks in NYC, cutting edge technology,

some of the first digital gear, very exciting. I immediately saw that recording engineering was a combination of art, science, and psychology and I had the feeling I would never be bored. That first insight has held true!

5. Who influenced you the most in your career? My parents raised me to believe that I could do anything I wanted, that women are suited to everything, and that was a mindset I took into the world. The sheer talent of Joni Mitchell convinced me that I could never be a musician or a painter; I had to find some other way to express myself. At the time I was getting interested in sound, Todd Rundgren put out the record "Something/Anything?" where he wrote, played, sang, and recorded everything himself. I realized that the audio textures were part of the creative process as much as the other components. I had never thought about the technology piece before. I wasn't a techie, I never took my radio apart as a kid, so this was a revelation. At the same time I was also listening to a lot of Grateful Dead. The amount of money and energy they invested in Alembic Sound suggested that they were fascinated with audio quality like I was.

6. Do you have any particular role models? How have they influenced you? In the beginning I didn't know if I could even do it. I got a lot of encouragement from Richard Factor (owner of Eventide) that first day, and although I never worked with him he remained an inspiring figure. The chief engineer at the first music studio that did hire me was Geoff Daking. He was a self-taught engineer and he liked to say, "pack your own parachute", meaning don't make any assumptions or rely on anyone else to take care of the details; aligning the tape machine, setting the mics, the patch bay, the tape copies. (He also liked to say, "don't take any wooden pickles", but never mind.) He taught me to tune drums, to solder and troubleshoot, and everything about running a session. As far as engineering idols, Ken Scott, Bob Clearmountain, and Chuck Ainlay were guys I tried to model my sound after.

7. Have you ever experienced any gender prejudice in your career? Well, who knows? I can never know what it would be like to be a guy in any situation I encountered. When I first applied for a job at a big music studio, my resume was strong. They told me I was the most qualified candidate they had interviewed, but they already had a female working there. So they passed on me. That was not illegal at the time. Luckily, that employee quit and they then hired me. As I began engineering, it felt like I was encountering skepticism sometimes when the client would walk into the room. I thought I could see a thought bubble "can she do it?" which usually went away a few hours into the session. Probably male engineers feel that way, too. One thing I can say for sure; for every person I met who was turned off by the idea of a female engineer, there was someone else who remembered me because of it. I was certainly unique in the 70's. It's a big business. I just went toward the path of least resistance. I feel that I have my job at Berklee because they wanted diversity in the MP&E department. I have worked here for 12 years because I'm good at my job. But I was hired because I was both qualified and female.

8. Do you consider yourself to be in a position of authority in your workplace? Yes

9. How do your co-workers respond to your authority? The whole rainbow from embracing my thoughts to ignoring them. How people deal with authority has more to do with them than with me.

10. What is your opinion on the male-female gender ratio in music technology? It makes me sad that more women don't see the beauty in tech, and mad that so many men assume women won't.

11. Why are there so few women in the music technology field? It's a cultural problem that starts at a very young age when boys get toy trucks and girls get dolls. We make a mistake in thinking that the very important job women have of bearing children has to happen at the exclusion of other roles. If the culture were oriented toward both sexes raising offspring, then both sexes could inhabit other work equally. If girls were taught early enough, (from birth, as boys are) that tech is a worthy pursuit, more of them would be open to it.

12. How would you change the music technology field if you could? [no answer]

13. Do you think the music technology field would benefit from the addition of more women in the field? Why or why not? Women make up half the planet and have half of the good ideas and half of the inspiration. We need to include all that creative power and diversity. When we don't, we just impoverish ourselves.

14. What would you say to inspire a young woman to become a music producer? Why let guys have all the fun?