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A Few Thousand Takes Later: Recording A Multi-Track A Cappella Album

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A FEW THOUSAND TAKES LATER: RECORDING A MULTI-TRACK A CAPPELLA ALBUM

A Major Qualifing Project

Submitted to the Faculty of the

Worcester Polytechnic Institute

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ABSTRACT

This project was intended to record and release an album for WPI's all men's a cappella group, Simple Harmonic Motion (SHM), in addition to reccomending a procedure to be followed to assist in similar future endeavors. As I was the musical director of the group during the recordings, my job involved arranging songs for the album as well as teaching these arrangements to the members of the group. As the recording engineer, I was in charge of preparing the studio for each session by setting up microphones, encouraging the best performances out of the singers, and running the recording software as to capture the sound.

ACKNOWLEDGEMENTS

1. Featured on the Album:
   1. Samuel Bartlett '12
   2. Scott Brooks '12 - Soloist
   3. Ravi Raval '12 – Soloist
   4. José Navedo '12 – Soloist – Arranger – Director – Engineer
   5. Ryan Burgan '14 – Soloist – Arranger
   6. Joshua Croke '14 – Soloist - Arranger
   7. Anthony Guerra '14 – Business Manager
   8. Taylor McNally '14 – Soloist
   9. Douglas Davis '15 – Soloist
   10. Nicolas Hewgley '15 – Soloist
   11. Jesse Lehman '15 – Soloist
   12. Tucker Tibbetts '15 – Soloist
2. Other Group Members
   1. Geoffrey Hook '13 – Former Director - Arranger
   2. Michael Gebhart '13 – Former Director – Arranger
   3. Jarrod Ratcliffe '10 – Production on *Vital Sines*
3. Production
   1. WPI Recording Club
   2. Jesse Herrera '09 – Producer – Former Director – Arranger
   3. Adam Vadala-Roth '12 – Recording Club President
   4. Jason Rosenmann '14 – Live Recording Sound Engineer
4. Advising
   1. Professor John F. Delorey (SHM)
   2. Professor Richard Falco (WPI Recording Club)
5. Financing
   1. WPI Student Government Association (SGA)

Chapter 1 – INTRODUCTION TO THE ALBUM

This major qualifying project was designed to complete the Worcester Polytechnic Institute's

requirements for a Bachelor's Degree in Humanities and Arts with a concentration in Music. The purpose for this project was to bring an a cappella group through the process of releasing a studio recorded album using the resources available at WPI, whether physical [such as the studio] or metaphysical [the relationship with our producer Jesse Herrera who would never have been considered had he not attended WPI]. The deliverables for this project are an eleven-track album and a written report to help guide those who similarly want to create an album. Recording and releasing an album of any sort is extremely time consuming and requires great care, and working around the intense academic environment at WPI proved to be challenging. This report will cover pointers to assist those attempting a project like this in the future, as well as tips learned from having gone through the process personally.

The album took about a year to finish – from it's infant stages of identifying tracks and a producer, to two full terms of recording, followed by the work that will be completed by the producer, and the release work – purchasing royalty rights and identifying the best way to release. Preparation for the album started Summer 2011, with the Producer being selected in A term 2011. Recording began November 2011, and finished April 19th, 2012. The album is currently in the hands of producer Jesse Herrera and will be released A term 2012 at a release show.

 As I was willing to assist the project in any way I could, I ran the recording sessions. Someone trained with the LOGIC PRO TOOLS SOFTWARE and the WPI RECORDING STUDIO EQUIPMENT could capture in 44.1 Hz, the rate at which the data is sampled on a CD.

During the summer of 2011, a former SHM Music Director, Jesse Herrera, announced on FACEBOOK and LINKEDIN that he wanted to produce music for other artists and that any interested should contact him. As a senior during my freshman year in Glee Club, Jesse Herrera had been both the Student

Conductor of the WPI Men's Glee Club and the SHM Music Director, and had a major influence on myself as a musician and a person.

In August 2011, former SHM member Jarrod Ratcliffe likewise approached myself and offered his services as a producer for the album and similarly to Mr. Herrera had been a major influence to how I handle myself as a musician and person. He had, however, done producing work for the previous album *Vital Sines*. Having experience made Mr. Guerra & myself discuss his participation for some time, but in the end his vision for the final sound did not match what I desired and the decision was made to hire Mr. Herrera as the producer.

In addition to all of this work simply recording the album, I was also the musical director for the year. So I was in charge of running rehearsals and being the most attentive rehearser in the room as to inspire the others to be the same.

CHAPTER 2 – BACKGROUND

2.1 – A CAPPELLA

A Cappella music traces it's roots back to the Catholic church, as it means 'In the manner of the chapel'. Although it had liturgical origins, it eventually moved to more secular organizations, such as the Yale

University Men's Glee Club, the oldest men's choir in the United States. However, it wasn't until the 1970's and 80's where the style spread further, and skyrocketed in popularity thanks to TV shows like *Where In The World Is Carmen Sandiego?* promoting a cappella with live performances by the consistently excellent group Rockapella. Now, there is a large scale reality TV show featuring a cappella groups in competition, *The Sing-Off*. (A Century of A Cappella, 2005)

WPI enjoys the presence of a large choral program, with _____ students participating. There exists the large coed choir (Festival Choir), the women's chorus (Alden Voices), and the Men's Glee Club. As subsets of AV & GC exist the Technichords and SHM respectively. A more independently created coed group The Audiophiles also exists. Once a term or so the groups perform large public performances on campus, with one group acting as host and singing an extended set once a year, along with guest groups from other schools in the nearby states.

2.2 TECHNOLOGY
_____
In order to create the arrangements performed and recorded, many groups use digital composition software such as FINALE or SIBELIUS. I personally have used Sibelius 6 for my arrangements. It is able to create both sheet music and .midi versions of those arrangements to send out to help teach the group their parts.

The recording of this album was done using AVID PRO TOOLS program, allowing users to record & play back tracks, as well as a very good production tool. With the ability to punch in and out to get individual bars/phrases just right.
The producer however has chosen to use FRUITYLOOPS as his editing software.

In addition, the auto-tune software MELODYNE was used to help bring some human errors more into line to get a crisp, tuned group.

2.3 RECORDING MUSIC

Recording an album takes a lot of planning. Arrangements must be selected and/or created, teaching them to the group, scheduling recording slots and doing the actual recording, conversing with producer to ensure the proper mixing and mastering, followed by release.

2.3.1 RECORDING A CAPPELLA MUSIC

A Cappella music has some specific and unique differences in tonal quality and and sound capture. Firstly, since all sounds must be syllables of some kind, care must be taken to ensure that syllables are consistent throughout each voice part and on every take as to ensure the cleanest, crispest sounds.

For this particular album, there were two styles of recording used – live and multi-tracked. On *Vital Sines*, there is a track recorded with the entire group in one space ("Lucky Old Sun"). However, such recordings allow for very little editing opportunity from the producer – since many voices are together on one track, changing anything will change all the parts captured by that microphone/track. It also is difficult to schedule 12 people to meet all at the same time for 2 hours to do this. However, the energy & developed group instincts the group has will shine through here, as members will be in the same room.

In contrast, the method used for 9 of the tracks on the album is called Multi-Tracking, invented by the late Les Paul. By having the performers record while listening to a guide/scratch track of the recording,

people can be in sync with the recording and blend with the parts they hear at the time. By having every single person record their parts individually [and twice each] the producer can play the most with them and bring out the tone they feel best represents the group.

2.4 THE TONE
_____

Some albums can be completely changed pending on their mastering & tone. The Beatles' *Let It Be* and *Let It Be... Naked* are incredible examples of this. Phil Spektor's influence on the album gives songs a very thick texture, whereas under Paul McCartney's [*Naked*] direction, the songs sound as though the performers are in the room with you. After being particularly hung up on the vocal percussion sounds on some heavily produced songs [*VOICES ONLY 2009*] and how it seemed to take the soul & drive from a song away. I decided to go for a more 'real' sound – more true to the sound I hear when our rehearsals are at their best, not simply the perfected version of a song I catch on the radio.

Audio Examples
  USC SoCal VoCals – Misery Business
  The Beatles – I've Gotta Feeling [*Let It Be/Let It Be... Naked]*

Chapter 3 – METHODOLOGY

The best laid plans can go astray, and with the amount of manhours necessary to record each track with the group could cause a song to get delayed very easily. At the end of the day, the delays give a more accurate image of how recording a CD actually works and will help prepare those who follow in this

process.

3.1   INITIAL TIMELINE

In order to convince everyone that a long term large scale goal such as recording a CD is possible, people need to be able to see the finish line from the beginning. Have planned out which terms will record which pieces in various terms as to maximize effectiveness of time. However, having taken a little longer to get the project going in B and C terms set us behind.

3.2   RALLYING THE GROUP FOR THE PROJECT

As with any group endeavor the results will be useless without support the work and contribution from the entirety of it. When members feel as though this CD will represent not only themselves but also the group & their friends/colleagues, members proved to be very excited/inspired to work towards the final product. Thankfully, there was both *Vital Sines* and the Technichords' *Pinned Up* to use as additional benchmarks to meet and surpass – the members of the group felt it important to have the best completed album.

Part of the completion of this album involves receiving the finances from the SGA to pay our Producer Mr. Herrera for his work on the album. The Technichords in 2010-2011 received $9,000 from the SGA in order to complete their album, and this cost included studio time as well as production & release assistance. As a service, what The Vocal Company offered to the Technichords was less input on their end for a product that was more like other commercially successful albums, yet there were parts that sounded overproduced & fake to my ear. Parts were sung which none of the members could sing all the notes, the drums were sampled in and do not sound fresh or lively, and does not. represent the soul of the group as it is live. By volunteering my hours as a studio engineer, I also cut down on the cost of the album substantially – SHM SFR'd for $3625 to solely cover producing/release costs, saving $4375 from the Technichords CD.

3.2.1 SCHEDULING

With an undertaking that has so many people participating, adhering to a schedule and using time in the studio effectively are of upmost priority. In order to keep up a routine & remind people to appear, I set up a repeating weekly schedule every term, offering all my free time as slots in which people could sign up to record for an hour. A WHEN2MEET was used as the primary scheduling site – have people register for slots of time. By having the minimal additional time necessary to record scheduled for each person, the members of the group don't feel overly taxed with their workload – it's a feasible amount. The time it required from myself, however [11+ hours a week of recording, plus any rehearsal time] was a little much, so hiring a studio engineer is not a terrible choice].

3.3 PREPARATION

When it's time to think about pulling together a new album, which tracks will be on the CD is an important topic. A decent size set of arrangements 13-18 should be reviewed as candidates before honed down to the numbers the group enjoys and feels best represents it's arrangers, soloists, and would flow well together.

When heading into the studio to record, there are two options for a backing track – using the original, which may not be perfectly in tempo, be in a different key, not be completely in sync with the or simply not having the singer's part being played for them. However, when singing along to the original, it's much easier for the vocalist to get into the groove of it and enjoy it more. Singing with energy will come through on the recording, making a more interesting recording & a better final product. Contrastingly, using a .midi of the arrangement makes it easy for the performer to hear their part in the mix. In addition, the midi is very easy to put into the key the group performs in, although usually. However, as a .midi will have the exact same tone on every single note it plays, it leads to an extremely flat & unlively backing track, and care must be taken to pull energetic performances out from the

members instead.

3.4 MULTI-TRACK RECORDING

When recording, there are some practices that have proven time and time again to lead to final tracks that will bring out the sounds and stylings that match the vision of the music director.

Have every member record at least 2 good takes of each section so that the producer can layer/edit them to make the group sound full. It's also helpful to catch the little errors missed by not the most intense of ears – if one track messes up, simply mute and have the other take cover.

Make sure that you record transitions into and out of major segments or chunks so that it sounds more real than simply a robot pasting out A B A B C A.....

Record the drums different parts at a time. To get the best cymbal crashes, for example, I recorded just them on their own track, had snare & hi-hat on another, and bass drum on a third. While it took some time to set up recording for each track, the end result is a kit that balances out good tones on each segment, that also sounds like a human being and not a robot.

The soloist needs to be giving just as much energy in the isolation booth as when they sing live, because the soloist on a track drives the energy of the song and if the soloist sounds bored and tired the song will be tainted by this. Finally, record in chunks long enough to capture the phrasing and feel of a live version, but punch-in over mistakes to get a clean track.

3.5 POST-PRODUCTION

Have the producer edit the backing track first for a loop through the song form [verse/chorus] so that they can copy/paste their work – if well sung, the background will still be tuned & tight while the solo grabs the listener's attention.

Using an auto-tune software such as MELODYNE will help take those recordings which are just outside of being in tune and snap them in causing the recording to resonate and ring well.

Balance the tracks so that no part is buried, but that the solo can be clearly heard on top of the rest of the mix. Be sure to double check with other sets of ears for this – everyone will have a different opinion and taking feedback can't hurt.

3.6 FURTHER CONSIDERATIONS

Even with our collection of songs recorded and produced, there were still some things to be considered and finished. Firstly, as there is only one song that is not a cover, all of the other songs needed to have licenses purchased for each song. The album must be named, must have cover art, and the methods of distribution must be selected. As for the album name, find something the group can agree on, and don't worry if those outside don't get it – they'll just understand it's the title for this collection of music. Track listing is an art form, and sometimes very stressful. Trying to find the right flow between genres & songs is difficult, and whatever is finally decided will be set in stone forever as the official listing. The opener should be high energy & really grab the listener's attention, getting them to stick around for the rest of the album. The following tracks should bring the listener up and down on an emotional ride, ending with your most engaging number. Personally, as a fan of vinyl records, I also believe very firmly in making an album feel like two parts – having a spot in the center as an emotional rest, even for a few seconds only.

Chapter 4 - RESULTS
COMPLETED TRACKS

Below is a table of tracks, in the order they were recorded, that are on the final album. Audio files of the tracks will be released in Fall 2012, and will at that time be linked to the eCDR of this project. Additionally, the SHM Facebook page will list the final location for any interested in purchasing a copy.

	Title	Year	Original Artist	Album	Arranger	Harmonist[s]	Soloist[s]	Vocal Percussion
1	Never Gonna Give You Up	1987	Rick Astley	Whenever You Need Somebody	Geoff Hook		Douglas Davis	José Navedo
2	I Kissed A Girl	2009	Ben L'Oncle Soul	Soul Wash	José Navedo		Joshua Croke	
3	No Time	1970	The Guess Who	American Woman	José Navedo		Christopher Tucker Tibbetts	José Navedo
4	Valerie	2006	The Zutons	Tired Of Hanging Around	José Navedo		Taylor McNally	José Navedo
5	Drift Away	1973	Dobie Gray	Drift Away	Michael Gebhart	Ravi Raval, Taylor McNally	Douglas Davis	José Navedo
6	New Song	2009	SHM	THIS ALBUM	Geoff Hook		Scott Brooks	José Navedo
7	Just A Friend	1989	Biz Markie	The Biz Never Sleeps	José Navedo	Jesse Lehman	José Navedo	José Navedo
8	Remember The Time	1992	Michael Jackson	Dangerous	Ryan Burgan		Taylor McNally	Ravi Raval
9	Sweetest Girl	2007	Wyclef Jean	Carnival Vol. 2	Geoff Hook	Taylor McNally, Ryan Burgan, Nicolas Hewgley	Ravi Raval	José Navedo
10	People Get Ready [Live]	Trad.	Trad.		Jesse Herrera		Joshua Croke	

Chapter 5 – CONCLUSIONS

5.1 – PERSONAL EVALUATION

This is going to be one of the experiences I remember for the rest of my life. Years from now I can

reference this project and album as one that not only will forever be an achievement to me, but such a part of myself. It seemed so much larger than I in the beginning, and I managed to overcome and succeed.

I am also amazingly proud of the group of gentlemen I got to work with during my time as SHM Music Director. It was a pleasure and honor beyond most that I've known, and while I'm sad that my time with the group is drawing to a close, the time I got to spend in it was wonderful. Thank you very much for entrusting me with this.

In the future, if I were to be leading the charge of creating a CD again, I'd take on either the role of recording engineer or music director – it was a little overwhelming at times, and taking on one role or the other full time would really make it a more manageable project. In addition, if it's possible, try to record over the summer as well – the more time you can put in on tracking, the better the results will be.

5.2 - GROUP EVALUATIONS

1. Does the group feel the project was successful overall?

   1.1 "I feel the project was overall successful. Although the CD was originally going to have more tracks, we still managed to produce a CD, a remarkable feat in just a year's time." (Hewgley, 2012)

   1.2 "I think the project was more successful than I thought it would be. Our album's raw tracks sound awesome and everyone worked really efficiently to record around our schedules." (Bartlett, 2012)

2. What is the group happiest with (About the process and result)?

   2.1 "I'm happiest that I was actually able to be a part of a CD let alone an A Cappella CD at that. Before this year, I had never been in an A Cappella group or had even sang A Cappella.

So for me to learn many songs in a new field as well as actively participate is what I'm happiest with." (Hewgley, 2012)

2.2 "That we have something to show for all the work we've done over the past year." (Bartlett, 2012)

3. What was the most difficult or frustrating part of the project for the group?

3.1 "The drama between the members when setting up recording times, and dealing with each other. Mainly a few people were the issue, and while I understand we are all busy college students, I was able to finish my recording before half of the group with my schedule." (Hewgley, 2012)

4. What would the group have changed if possible?

4.1 "I would have changed the time constraints on the CD's release. Although we were able to do a CD, we barely finished and we may not get the result that we want from the two live tracks. I felt like we were pressured to rush the CD once C term came around." (Hewgley, 2012)

5. Would the group have found anything specifically helpful in the process?

5.1 "Having some of the new arrangements beforehand would have been very helpful for me. I like to prepare so seeing the parts ahead of time would have helped me." (Hewgley, 2012)

6. Do you have any reccomendations for future Directors who push for a CD?

6.1 "I would recommend having a team of people to oversee the process. More people dedicated to the project makes sure that the director never gets overwhelmed with the work they have to do" (Bartlett, 2012)

6.2 "I would recommend that the Directors push the CD but not to make it a number one priority. With gigs and college life, it was very stressful to complete everything. Perhaps a CD should not be constrained to a single year for completion?" (Hewgley, 2012)

7. Do you have any reccomendations for future members working on a CD?

    7.1 "Keep in mind that recording is very different than singing live, so you will struggle, but you have to learn new techniques. If you do it right, things will sound amazing, and you will learn more about your voice." (Bartlett, 2012)

    7.2 "For future members, patience is a virtue you absolutely must have. Sometimes group members aren't going to follow what needs to happen, sometimes they'll believe that they're the best singers in the group, but the point is that we are a group and must work together in order to create the best representation of SHM." (Hewgley, 2012)

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Avid's Sibelius - http://www.sibelius.com/products/sibelius/7/index.html

Facebook - http://www.facebook.com/

Image-Line's FLStudio - http://www.image-line.com/documents/flstudio.html

LinkedIn - http://www.linkedin.com/

MakeMusic Inc.'s Finale - http://www.finalemusic.com/finale/default.aspx

When2Meet - http://www.when2meet.com/

APPENDICES

APPENDIX A – EXAMPLE SCHEDULE SHEET

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
11 AM	Ravi	Nick	Ravi	✗	Sam		
12 PM		NOT AVAILABLE	Ravi	Jilik	NOT AVAILABLE	Taylor	
1 PM	✓	NOT AVAILABLE	Nick	Sam	NOT AVAILABLE	Taylor	Tony
2 PM	Sam	Sam	Tony	Sam	Tony	Taylor	Jilin
3 PM	R-	L-	Tony	Nick	Tucker		Doug
4 PM	R-	H-	Doug	Nick	Tucker		REHEARSAL 3HM
5 PM		Jesse	Doug	Kim	Doug		REHEARSAL 3HM
6 PM		GLEE CLUB	Scott	GLEE CLUB	Josh	NOT AVAIL-ABLE	
7 PM	Tucker	GLEE CLUB	Tucker	GLEE CLUB	Nick		
8 PM	Tucker	-gu	Tucker				
9 PM							

Please select ~~two days~~ to Record and Please write your name in the appropriate time slot for ~~each of those days~~ Thanks!
(Ex: Josh might record at 8 am monday, 4 pm tuesday etc.)