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Voice in Alternative Application:
An Examination of Culture, Tuning and Aesthetic

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by

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ABSTRACT OF THE THESIS

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This Thesis attempts to examine three different worlds of performance and relate them to the same vehicle, Voice. In these chapters, one will find an examination of Georges Aperghis' piece, *The Recitations* , Tuvan throat singing, and the tuning system, Just Intonation. These methods are not typical to the Western classical singing tradition and try to further singing beyond classical, operatic technique. Aperghis' Recitations silences the singer's general text abilities and demands emotion through other vehicles of the voice. The style of Tuvan throat singing uses different formants than classical

operatic technique altogether and is based off of the replication of natural sound. Just Intonation pushes the singer to tune with beatless intervals, a technique that requires close listening and non-vibrato. Although a singer generally does not generally employ all of these methods into his or her performance practice, the knowledge of these different practices can enrich a performer's approach.

Aperghis' Recitations: The Freedom of Interpretation

When first opening the score of *The Recitations*, the performer is confronted with a score that resembles a series of instructions disguised as a painting. Entirely hand-written, each page has a shape or graph that represents a new musical idea. While some are more recognizable, others are entirely unreadable without Aperghis' written paragraphs on the side. Another key aspect of these pages is the fact that the performer is not presented with a clearly detailed path. The performer is left to fill in much of the interpretation by varying dynamics, speed and intention, as long as the minimal guidelines are followed. These guidelines may refer more particularly to an emotion or an intention behind the sound or may refer to a simple imitation of a particular percussion instrument. While emotion may be represented literally, the story behind the character of these pages is completely flexible, leaving the performer to create a particular character, leave it as an unknown musical entity or create something entirely different. Thusly, the performer creates their own embodiment of this score; one where a large amount of the resulting performance is due entirely to the performer's own aesthetic wishes.

Before studying these pages, an understanding of Aperghis' aesthetic and interest in performance art can create a greater insight into the score. His music spans many facets of performance art including musical theater, opera and concert music. Rebstock claims that to grasp the aesthetics of the music theatre of Aperghis is difficult "as the only constant element in his work is the constant search for new ways, new possibilities, new adventures." (225) This is readily apparent in his vocal work, as well as in his work for

other instruments. This flexibility can be contributed to many things, including the fact that as a child he had worked in the fine arts and other different art forms. Aperghis has also said that "I have always dreamed of creating a working space where actors, musicians and painters can work together on projects and explore the relationships between music, theatre, painting and film." (Rebstock, 226) With the creation of ATEM (l'Atelier Théatre et Musique) in 1976, Aperghis created a world in which a bridging of artistic genres could flourish.

It was in this world that he began to create completely unique musical characters with a clear purpose.

> *The task was how to find a different kind of character who would not be like Chekhov's characters but rather more like musical characters. That means there is a rhythmical accent, an intensity of particular colours - so there are characters that exist of nothing but a special intensity. And that becomes theatre, but it comes from music. And the other problem was - coming from writing for the opera - how is it possible to put the different elements on the same level, the voice, the lights, the stage, the sound and the text - or even no text, music - or even no music, visual music and all that. In opera there is a certain hierarchy. It is basically like a pyramid, with a text that gets presented by the music in a certain way that is scenically presented by a stage director, and all this comes together to create a single object, around a single text and with theatrical situations as in classical theatre. So the question was how to free all these elements and try to build a different kind of syntax that has nothing to do with a single story, but one that produced different stories, that is polyphonic.* (Rebstock, 227)

The concept that one should not consider the character as a developing theme or real personality but rather as a shining moment is one not commonly found with many typical characters in play and opera. In Chekhov, characters develop over a period of time with a clear progression. Uncle Vanya's characters, for instance, are always unhappy, representing a continued, conceptually wasted life. When approaching a character, the

performer ideally embodies human emotion and complexity specific to the character. If the character is meant to represent a musical idea instead of one that can be empathically understood in the most human sense, then this challenge has been altered. As a result, the character becomes an ethereal being; one where the sound world is the character and the character is a subsection of a larger artistic image.

Logically, the compositional thought process must be altered as well. When speaking of writing these characters, Aperghis says that -

> *[You] have to do it in a way that the music, that someone plays or sings - that what I write for him - that that carries the vague idea of a character, abstract and often imprecise, that is contradictory, that changes. But I don't want them to play theatre. I am happy if the music and the work we do together makes them exist in a very strong manner and if one is touched by this energy or quality of what they do. But my aim is that one never really knows what it is that they are doing. You can come a bit closer but if you knew, you would stop listening to the music. If you say: 'Ok, this is that', it's all over. People pull in their antennae and that's it.* (Rebstock, 228)

By keeping the performer constantly searching for understanding, each performance can become completely unique - a single interpretation becomes the performer's understanding for that specific day. Subsequently, the audience watches a performance that is more similar to an improvisation than a scripted performance, and the nature of the performance encourages the artists' adrenaline and instinct to rush in and change the outcome.

In addition to this complex character role, Aperghis also requires his performers to bridge multiple worlds. The actor is required to fulfill the role of a musician - music that is quite complex even for the virtuoso - and the musician is required to fulfill the role of actor when approaching this music. When learning the sounds, Aperghis has said that a

score may not be necessary but can be dictated through an oral score - much like actors when learning a new play. This fueled his initial work at ATEM -

> *for me it was very important that they were actors because I did not want to hide behind a musical ability, where I could write musical things. I wanted to simplify in order to make an oral work, like in theatre, and dictate the music only by heart because the actors could not read music. For me, that was a very, very difficult task. An actor is not a musician but an actor. You have to come to the point where the music or the theatre originates from him, with him doing enormous inner work on his own. The musician reads the score and that's it.* (Rebstock, 228)

Such commentary is important for the performer to be aware of when approaching an Aperghis project. When looking at his work, it is clear that great musical virtuosity is vital.

But when thinking of how to embody the music, Aperghis wishes the performer to go further, to think of other things than simply the music. He pushes the interpreter to create a representation of themselves in the work that bears no relation to the score. Furthermore, this sense of collaboration in the score alters the role of composer and performer. The goal is not for the composer to spend time alone creating a masterpiece to fuel his ideas through the performer. Instead, a relationship is created where the composer pulls emotions and spontaneous interpretations out of the performer. The overall character that can potentially change becomes the goal, a character that is entirely dependent on the performer's own personality as opposed to a specific sound world based on literature or atmosphere. Ideally, the performer ignores a specific storyline and instead celebrates different aspects or character in the most human sense. This means that the quintessential performer for Aperghis' work is one who can bridge many worlds. This performer must be actor, musician, composer and also be able to convey the spirit of

improvisation or spontaneity. Such a rich environment creates a new world in which a person can explore many different facets of style in performance.

Being flexible in performing a score is something that Aperghis voices as being integral to his interests in producing music. He is known to often create his scores with the performer rather than writing the final score on his own; his method of collaboration emphasizes his wish for art forms to be equal. Additionally, he wants the performer to feel free in this creation and not to be meticulous. When speaking of Kagel (although he is a great admirer and draws a great deal of inspiration from him), Aperghis states, "It is a pity that none of the players has the chance to breath a little bit. So this confirmed my idea not to write in this sense. I am just as manic as Kagel, but I leave some parameters open." (Rebstock, 235) This freedom onstage allows the performer to really inhabit characters in a different way, one in which the performer does not try to become the score or exhibit only their interpretation of the composer's thoughts. Instead, a complicated equal partnership results between the composer's wishes written in the score and what the performer wishes to express.

Written only two years after the creation of ATEM, *The Recitations* exemplifies Aperghis' wish to give the performer freedom but it also requires them to go beyond hiding behind a score. Created for Martine Viard, an actress with vocal training, each Recitation has its own very clearly written instructions that also explicitly ask the performer to fill in some of the key components.

> *Technical obstacles are applied very consciously in 14 Recitations. The order of syllables, the progression of colours, the combination of vocal expressions I choose form a barrier and are a hassle to perform, and these difficulties in turn create little musical and theatrical situations which distinguish the work. We see and hear a singer realizing a musical*

> *score, but at the same time we witness somebody who can't speak properly, someone who is very nervous, restless or hunted, etc. That is the human dimension of this work. We see people in their daily life struggle, people who are fragile, people who have trouble expressing themselves - elusive mental portraits en miniature. I had many such imaginary stories in mind when I wrote 14 Recitations. A free floating chain of associative stories, just as our mind happens to create them.* (Gee, 194)

The idea of the performer filling multiple roles is readily apparent. Several of them could not be performed without some sense of composition occurring or thoughts on how the sounds expressed affect the miniature stories.

In *Recitation 1*, the notes are readily available with words indicated.

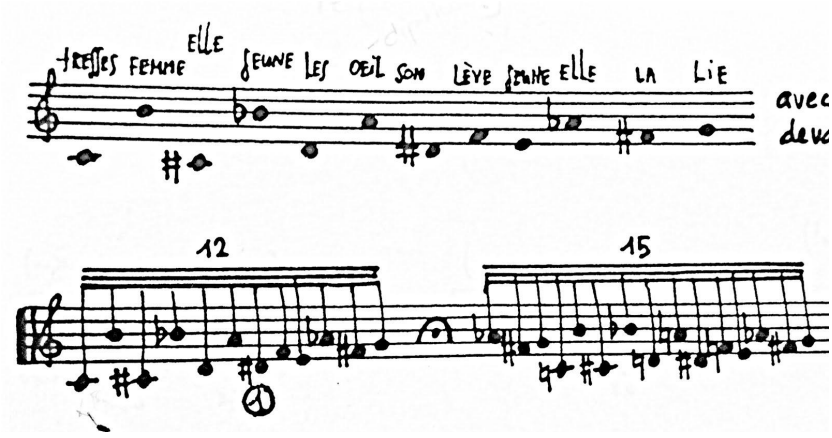

Figure 1.1 Recitation 1 - Aperghis

The composition aspect comes into play with the idea that each segment of sound (or approximated measure) is sung into six resonators of the performers' choice which is (or are) indicated by the number below the segment. This could include megaphone, snare drum, glass, or any sort of physical object that resonates. These worlds of sound can completely alter intention, presence or emotion simply by another object filtering the sound. The need for a careful choice of resonators becomes obvious at the very end (even

if the choice is for them to be nonsensical), when the six resonators are applied one at a time with fermatas in between, starting with four on a single note and with five and six having more extensive passages.

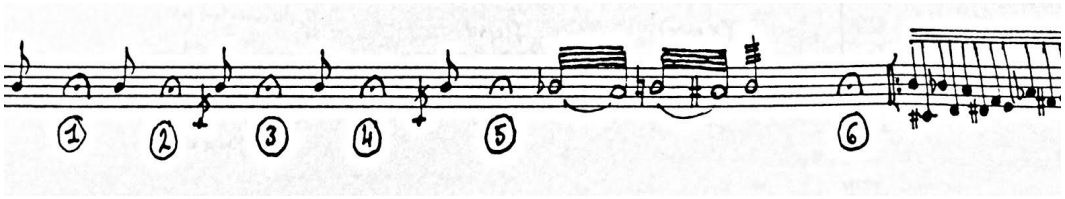

Figure 1.2 Recitation 1 - Aperghis

As a result, many possibilities of interpretation can exist. In one scenario, the interpretation of numbers could be pushed; the notes in the measure could be ignored outright and the performer only expresses the extension of time in which each resonator exists. The resonators then become a separate, independent element with its individual character. In another scenario, the notes themselves could be performed in their own right, focusing on the particular nonsensical syllables that accompany the pitches. Subsequently, only one similarity would exist between these elements - the measure of time in which they exist.

Recitation 3 asks the performer to emote particular characters for each measure including mocking oneself, acting as a clown and using elegant speech. He has indicated eight characters that can be rotated accordingly but has also indicated that the performer may choose his own eight affects as long as they rotate in the same way originally planned.

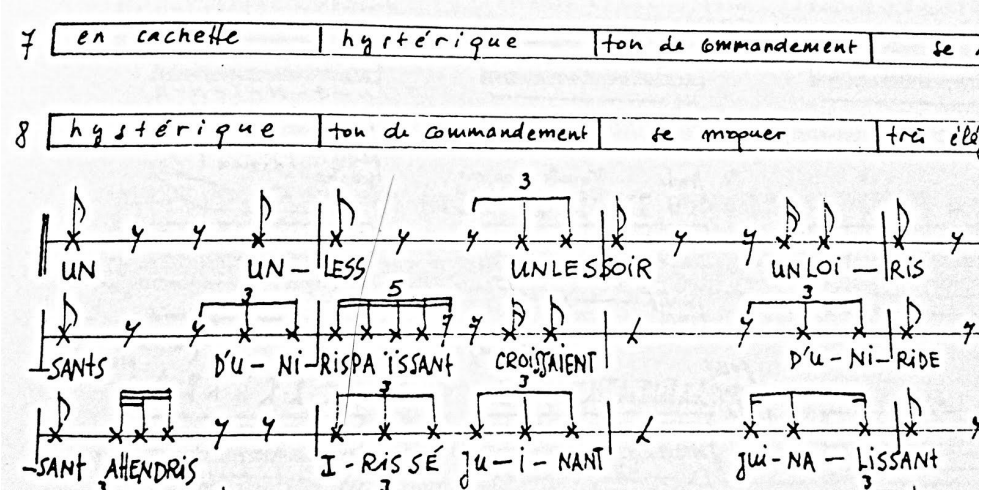

Figure 1.3 Recitation 3 - Aperghis

Pitch has been entirely ignored in this segment, with only a request that the text be true rhythmically and without exaggerated articulation. This Recitation also differs from all of the others as there is a written text that accompanies the score, "un soir de juin bercés par les flots attendris les iris palissants croissaient au bord de l'onde," meaning "an evening of June, rocked by the tender waves, fading irises growing by the waters." This gives the performer a clearer message, allowing the performer to think of a poetic line creating an emotion as opposed to singular words. It does not, however, give a full spectrum character. The emotion portrayed seems more linked to an impressionistic view, a wistful romanticism in the idea of a June night. By breaking up and coupling this text with a full range of emotions (from the manic, to the subdued, to sheer emptiness), the question does not become one of how to create a character whose emotions range in wide variety in short amounts of time but how to link a lovely evening to different emotions that do not always automatically portray a picturesque ideal. That being said, Aperghis requests that the text is delivered in a neutral fashion. He adds an additional element

where the performer is asked to think and portray these different emotions without vocal changes either through facial expressions or other methods.

Text adds another color to Aperghis scores, fueling the ideal that the performer should not truly understand the character. These phrases are generally fragments made of primarily French words. On this subject, Gee states "Syllables from the French language are recombined to create French-sounding words with no meaning (for example in Recitations 1 and 5), and French words are spoken with sudden breaks of intonation with the word (for example in Recitations 4) rendering them useless as meaning-carriers within a normal sentence." (Gee 193) The idea of having absolutely no meaning behind text or verbal gestures seems a difficult task for humans to conceive. Every moan or sigh uttered has its own character and subconscious thought. This idea goes along with Aperghis' statement about miniature stories. Bits of words help to create his goal of the image of a person who finds difficulty in expression, showing pieces of himself but not the full spectrum of what he means to say. This goes for the performer as well, one is left to understand the character in a different perspective. Without a direct understanding of the narration, the performer cannot rely on words to give meaning but instead must rely on the self - giving the impression of looking at these partial words and progression of sounds.

These are just two examples of the fourteen Recitations; others ask the performer to play with order, play with tempo, dynamic and imitation, and intentionally push the full extension of range in both character and vocal ability. Some have marked pitches and some are completely unmarked, leaving the performer to discover and push their own abilities as a singer. Along with a lack of key indications which is more commonly seen,

the score never marks the order in which the Recitations can be performed. Some suggest that they can be performed multiple times and it is never stated whether they must all be performed. As a result of this flexibility, many performances are wildly different, leaving very few similarities and like characters.

Martine Viard, for whom the piece was actually written, is not primarily a singer but an actress. However, she has worked with several composers including Cage, Stockhausen and Kagel and has a rich history in contemporary vocal performance. Her interpretation does not include many of the Recitations and she reiterates several of them. The sound varies greatly - from a gritty, almost yelling sound uncommon in classical singing to a pure, almost folk-like sound. Although she does not include many of the coloratura passages in many of the segments, she makes a gesture that emulates the intention. She also takes extra liberties in the overall sound; in Recitation 9, there is a repeated section that she whistles the last time only, rather than throughout as written. More interestingly, she also adds a visual component to each Recitation. Ignoring the idea of allowing the theatricality to arise from the music itself (Aperghis describes the addition of theater as "the worst that can happen to these pieces.") (Gee, 194), she instead emphasizes and creates a new theatrical story by accompanying each Recitation with a specific scene. One example is Recitation 11, where she holds a purse and rummages through it, taking out several objects and peering at them, seemingly discussing their importance or issue. Although her interpretation explicitly ignores Aperghis' wishes for a simpler sense of the theater, her interpretation does not take away from the overall success of the performance. The character is still strange and unknown but has some links to a visual, partial character that the audience may recognize in themselves or others. By

including these visual components, the character touches multiple senses in the audience. Rather than allowing connections to be drawn (which would be the expected result if given more information about the character), she successfully leaves more unanswered questions about the character's intentions than would be possible with sound alone.

Despite this success, her additional props are uncommon in standard performance, as the score does not indicate any except ones that alter the sound world. The average contemporary vocalist interpretation generally includes just the score. A virtuoso in contemporary vocal repertoire, Donatienne Michel-Dansac has premiered works by an enormous number of contemporary composers including Manoury, Dusapin, Francesconi and other works by Aperghis (Machinations). Additionally, she has worked closely with IRCAM since 1993. She not only sings contemporary chamber repertoire but also works in opera and early music. She states that she "has no interest in specializing in one single musical era, so she performs French, Italian and German Early Music (with Les Arts Florissants…), [and] Romantic and Classical music in recitals with Vincent Leterme." (SMCQ) Her interpretation of the Recitations is generally more accurate to the score, following rhythmic and tempo indications. This version also marks the first, complete interpretation of the Recitations. While the order has been altered, all fourteen scenes are represented in her performance. She uses no props or extra theatricality but reads from the score, which is set on two music stands. Strangely, she ignores all resonator suggestions (as in Recitation 1), only changing vocal timbre to express these. All of her facial expressions show the emotions enlisted in each scene and her vocal range, ease in tempo and timbre changes show clear changes in character. At times, her performance creates sound as if there are many women singing instead of one. This expression shows

clear emotional change in the character - but because of her ease in performing all of the scenes, it seems to lack an element of struggle. Although the interpretation is more accurate, the character seems very relaxed and playful, entirely capable of expressing herself in this strange speech pattern despite the audience's lack of comprehension due to the nonsensical text. The Viard interpretation emulates more of the struggle, almost as if the performer holds a weight and the clear inability to fully convey the true meaning behind the phrases.

The founder of Leitundlause Musiktheater, Matthias Rebstock directs an interpretation of the Recitations entirely unlike Michel-Dansac or Viard's interpretations. Ignoring both the suggestion of the sound coming from the notes themselves and the score indicating solo female voice, "Leitundlause shows the Recitations as a musical theater piece for five singers and actresses. The forms of action and images emerge from the musical-compositional method; the scene is largely managed as a separate voice. The sopranos sing with fives voices and act as if it were only one, sometimes they diverge into a Babylonian confusion of voices, and eventually they will all share the character. Objects and costumes were simultaneously developed in consultation with the scene." (Leitundlause Musiktheater) Although this interpretation seems to ignore Aperghis' original intention, Leitundlause has created something entirely unique, employing the musical character as a vehicle for a greater context in an aesthetic image. The use of his score as a vehicle for a character ties into the concept of the character coming out of the musician. Leitundlause went even further with the idea. The characters maintain a sort of strange entity that does not explicitly state that they are anything other than a musical

character. They, in fact, create a large moving entity as a part of a concrete, greater image.

Simply analyzing three separate interpretations shows wildly different settings in terms of staging - Viard looking through a purse, Michel-Dansac as the quintessential contemporary vocal role and finally Leitundlause with multiple personalities describing a complete, theatrical story. Each is effective in their intention but not entirely recognizable as coming from the same score. Looking at these interpretations, one can see that Aperghis is successful in his wishes for the character to rise out of the performer, not only in the nature of the sound but also in the sheer openness that he has left. Whether or not the character can be explicitly identified by each performer is unclear, but the change in aesthetic would imply that each performer understands the piece differently. Although working with Aperghis on each interpretation is not possible, the score has clearly expressed an openness that ties in with his aesthetic interests and allows each performer to play with different forms of expression and role.

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Tuvan Throat Singing and its Progression in the Western World

Throat singing, a long-standing tradition in several cultures in the Eastern world, has a sound that has recently astonished the Western world. The ability of creating several pitches at once with a voice gives an ethereal experience to the listener not only in sound but in the clear historical and natural richness that it holds. As of yet, overtone or throat-singing has yet to become common practice in the West unlike the integration of Eastern percussion instruments into the standard. This may be simply from a misunderstanding of technique or a more technical reason in fatigue. The intention here, however, is not to comment on whether or not the bridging of techniques is possible but to identify the technical needs to achieve different styles of throat-singing and to trace the influence of overtone singing that has slowly started to become more popular.

Tuva, a federal subject of Russia in the south of Siberia above Mongolia homes a group of people called the Tuvans. Hidden inside a border of mountains, this region has a generally cold climate, the average low being -26 F in the winter and an average high of 64 F in the summer. In terms of geography, this region is rich with mountain, rivers, lakes and forest. Tuva was ruled by the Mongols from the 1200s to the 1700s and was ruled under Qing dynasty until the early 1900s. It has since been left in Russian control. Three main religions are prevalent in the region, Tibetan Buddhism, Orthodox Christianity and Shamanism. Culturally, Tuva has a very rich oral tradition, with a great deal of folklore ranging from tongue twisters to hero tales and epics. (gov.tuva.ru) Their language is Tuvan from the Turkic family with four main dialect groups – Western, Central, NorthEastern and SouthEastern. A smaller constituent of Russians live in Tuva as well.

Turkic languages contain roots in Indo-Iranian, Chinese, Arabic, Persian and Mongolian after the 13th century. There are four main dialect groups – Western, Central, NorthEastern and SouthEastern. A smaller constituent of Russians live in Tuva as well. Palatal Vowel Harmony, where all the vowels of a given word are either all back or all front (Brittanica, "Palatal Vowel Harmony"), and Labial Vowel Harmony, where a high vowel agrees in rounding with the vowel of the immediately preceding syllable, are characteristics in Turkic languages. (Brittanica, "Labial Vowel Harmony") The spacing of the vowels in the back of the mouth lends itself well to some of the sound palates involved in throat singing. As some of the words already position the vowels to resonate back, the resultant vocal formants are focused in the throat instead of towards the front and middle such as in English. An easy way to feel this is to say the word hurry in an American accent. Both of the vowels are positioned in the middle of the mouth and the tongue goes from a flat position to being raised in the middle. Then, if one moves both the vowels to the back of the mouth, the resonant passage moves toward the throat and the resultant sound is not dissimilar from the sound of one of the higher drones in throat-singing.

Historically, it was not until the mid-19th century that any written documentation about khoomei started to arise. The general folklore behind throat-singing is known by all of the Tuvinians. They believe that "the boy orphan lived for three years in solitude, at the foot of the cliff, responding to the polyphonic echoes in the surrounding valley. As a result, the jet of air under high pressure formed a resonant effect between the rocks. The very nature of what would promote the ingenuity of people in search of self-expression, when a man is alone with violent elements. One day a young man was sitting and made

the sound, imitating the sounds of buzzing coming out of the rock. Wind carried the sound to the people and they called it singing 'khoomei'." (gov.tuva.ru) This folklore has led to a tradition of imitating the sounds of nature through throat-singing. Traditionally done outside, each of the different techniques in khoomei comes from a desire to imitate the sound of a natural phenomenon or event.

Tuva contains possibly the most developed range of sounds and kinds of throat-singing. Similar to Western classical singing, the true khoomeizhi or masters of throat-singing, do not mature into their voices until their twenties. Unlike classical singing, however, the strongest time of the voice is under thirty whereas mature opera singers seem to find their thirties to be the strongest point of their voice. This may be from a general physical strength issue behind throat-singing as it takes quite a deal of natural physical strength. (Tongeren 71) There is still no formal teaching behind khoomei despite the clear accumulation of techniques that has occurred. Rather, it continues with the oral tradition and a student will listen to a teacher sing while the student attempts to imitate.

Although there remains disagreement as to how many kinds of khoomei there are, the general agreement speaks of three main types – khoomei, sygyt and kargyraa. Khoomei both refers to all throat-singing and also to a specific kind of throat-singing. Considered the oldest of the throat-singing techniques, its style of harmonic singing seems to be the most basic. Its sound is generally softer than other techniques and a khoomei song will usually have a basic melody ornamented with short grace notes in order to embellish the harmonic and accentuate the pulse of the song. Sometimes, a second harmonic richens the sound between the fundamental and the main overtone melody with an occasional third harmonic above the rest. (Tongeren 64) In khoomei the

stomach is fairly relaxed and has less tension on the larynx than other styles. The fundamental is a mid-range sound with a high pressure in the throat. The lips move with an “oo-uh-oo-uh” style for rhythm and the singer moves his tongue back and forth in order to imitate the sound of the wind swirling among the rocks. Its pitch can also be altered by moving the jaw or flexing the throat. The harmonics resonate one or two octaves above the fundamental. (Ellipsis Arts)

Sygyt is a highly pressured type of throat-singing which allows for a single or a maximum of two high brightly-colored harmonics. Its sound similar to whistling, this technique focuses entirely on the harmonics with no reference to speech in song. Ideally, the fundamental barely sounds at all giving way to a brilliant bird-like sound. Although traditionally this ideal does not have varied melodies, the modern sygyt singers have begun to incorporate more phrasing rather than the basic “ornamental tremolo mainly on two tones.” (Tongeren 65) The tongue is held against the top molars in the back of the mouth and the vowels are shaped in an “ur-ee-ur-ee” style with the mouth shaped as “ur” in the word urn with a mid-ranged fundamental. It is meant to imitate the gentles breezes of summer or the songs of birds. (Ellipsis Arts) The direction of the sound is between the teeth toward the front of the mouth and resonates more forward than other types of throat-singing techniques.

The final of the three main types is kargyraa. This method is the most jarring to some initially as its mode of vibration is an octave lower than that of a normal voice. Its sound is created with both the vocal and vestibular folds. It comes in many different varieties but has two main kinds, dag kargyraa or mountain and khovu kargyraa or steppe. Mountain generally resonates lower than steppe and is executed with an open,

unstrained voice. Steppe has more pressure, similar to that of khoomei and sygyt. These techniques allow for complex melodies and are altered with different vowel sounds. (Tongeren 65) Its sound describes the howling winds of winter or the despairing cries of a mother camel losing her calf. The drone, created by constricting the larynx and raising the vestibular folds, is a deep undertone or sub-harmonics that can result in a three or four note style. There are some who are able to create up to 8 different harmonic tones over the drone. (Ellipsis Arts)

Several other kinds of khoomei, borbangnadyr, ezenggileer, chylandyk and dymzhuktaa) are common as well but there remains a disagreement as to whether or not they are individual forms on their own or if they are part of a larger main technique. Borbangnadyr generally has no words associated in the technique. Associated with the idea of water clattering in a book, it is rooted in the Tuvan verb “to roll over”. Its sound is similar to that of a fast vibrato or a tremolo. (Tongeren 66) Although the sound would imply a back of the throat sound, the trills are actually made with the lips, tongue and/or glottis. Ezenggileer reminds one of the rhythmic clicking of stirrups or the sound of a horse galloping. It literally comes from the word “ezengi” meaning stirrup and has a pulsing sound. Its execution happens through rapid movements of the tongue switching between the nose and the vocal cavity as its formants. (Tongeren 66) This technique differs from other techniques with its use of the nose as a vocal formant. Borbangnadyr and ezenggileer are often used together or in addition to khoomei to create a more complex song. Chylandyk, a mixture of regular singing voice with kargyraa, kargyraa with sygyt or khoomei with sygyt, is created by singing two styles at once. When a mixture of khoomei with sygyt, the listener hears a deeper scratchy tone with high

whistling. This technique imitates the chirping of crickets. (Ellipsis Arts) This style also has roots in the idea of the beginning of khoomei, or the first sounds that a boy makes when attempting to imitate a teacher or family member. The child is unable to separate the techniques initially and this results in a mixture of the sounds. (Tongeren 69) Dymzhuktaar or "throat-humming" can be produced with all of the basic styles but the nose is the main resonant passage and the mouth can be closed to exhibit this. Dumchuk means "to sing through the nose". (Ellipsis Arts)

Other types of throat-singing exist in Asia outside of Tuva. Particular to note is the Mongolian khoomii. Generally khoomii is not practiced on its own but rather with other instruments. Although evident in Tuvan throat-singing as well, the instruments in Mongolian khoomii tend to be the focus and throat-singing on its own generally is not practiced. The main types in Mongolian throat-singing are khoomii, kharkhiraa and shakhai. Khoomii can be divided up into uruulyn or labial khoomii, tagnain, palatal khoomii, khamryn or nasal khoomii, bagalzuuryn or glottal khoomii, tseejiin khondiin or stomach khoomii and finally turlegt or long song khoomii. Unlike Tuvan singing, these styles sound more closely related. The main differences between the techniques are placement in the mouth and chest cavity. Khoomii has a strong overtone sound, kharkhiraa has a strong bass sound and shakhai has equal parts between bass and overtones. (Tongeren 123)

Altai has developed a form of throat-singing entitled kai. Generally used for epic singing, the guttural deep sound of subharmonics dominates this style. This epic singing can last for several days and describes all of the mythical histories in the area. This used to be common in Mongolian and Tuvan tradition as well but has mostly been changed to

a speaking form of storytelling. Unlike Mongolian and Tuvan epic singing, kai chorchok literally means to sing the epic with a guttural vocal technique and does not focus on overtones at all. Similar to kai, the Khakassians have come up with a form of singing called khai, which has more developed melodic and lyric interpretation. This style may be combined with epics or with songs and uses some spoken word or even sprechgesang. (Tongeren 129)

Tibetan choral chanting uses sound not to create song but to create some form of spiritual comprehension. There is not really song but the idea of sound with a highly symbolic nature. This chanting has the lowest sound of the subharmonics and uses the sound in hopes of reaching a "oneness". These chants can include other instruments and have changing attire to create a visual affect along with an aural one. The umze or the leading monk starts the song and has solo parts that lead the group chants. The chord changes and there are no fixed scales or pitch but the *Aum Mane Padme Hum* chord stays intact when recaptured at the right moment. This moment is the central mantra. The singing or yang has a very low fundamental that resonates and has a total of two or three notes. The sound remains continuous through catch breaths and must attempt to sound as one. (Tongeren 146)

Mark van Tongeren discusses the physical approach in throat-singing in his book *Overtone Singing*. He outlines the vowel triad, OO, EE and AA and all of the vowels in between them.

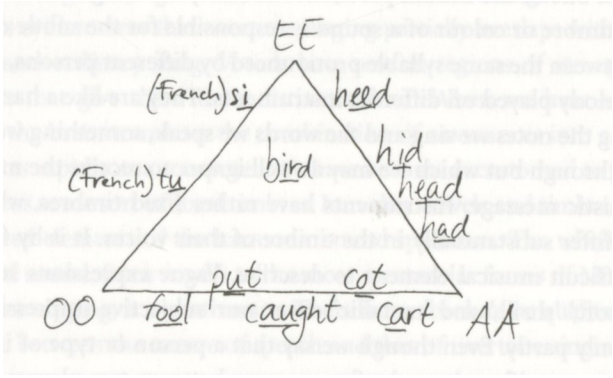

Figure 2.1 Vowel Chart – van Tongeren

This triad, similar to that of the IPA chart, helps one to examine the different shapes of the tongue. Tongeren states that "the simplest way to discover overtones is to follow, in a slow and controller manner, the path from one vowel to another." (Tongeren 5) He further explains that harmonic overtones are always present no matter the sound uttered but the key is to understand the vehicle by which they become more present. Tongeren states that the voice mechanism in the human body performs the necessary functions with "the lungs, the larynx and the various parts of the mouth respectively." (Tongeren 11) These various parts of the mouths are presumably vocal formants, or resonant passages in the vocal cavity that when trained to resonate at the proper Hz will resonate quite loudly. In operatic or classical singing, the *singer's formant* is achieved through a lowered larynx and high soft palate. This is contrasted by "Chinese classical opera, country and Western and Broadway musical theater styles [where] it has been reported that the larynx is elevated when compared to normal phonation." (Edgerton 13) What distinguishes throat-singing from classical operatic singing is the raising of the larynx or the raising of the

vestibular folds to create this deeper sub-harmonic sound when needed as described earlier. The breath support system remains almost the same with slight differences in freedom in the stomach.

Unfortunately, in the Western setting, overtone singing has only just begun to become integrated into vocal technique. This may be due to the fact that throat-singing is not taught in a classroom setting. There are, however, many groups who attempt to popularize the tradition. Sainkho Namchtylak, a female Tuvan singer grew a great interest in music as a child. Both of her parents put a lot of time into music with her, her father a guitarist and a singer and her mother on mandolin. This early exposure led to a great curiosity and she says that “my big interest was about discovering recordings and books or dissertations about different techniques of singing in archaic examples of cult music lamaistic and shamanistic traditions of Siberia.” (ponderosa) This interest has led to her incorporation of throat-singing techniques into experimental jazz and other experimental music settings. She uses both throat-singing and Western singing and switches between the two easily allowing her to access her seven octave range. Her talent expands into animal imitation sounds as well as perfecting the sound of lion roars and different bird sounds. Some ensembles that Namchtylak has worked with include the Moscow State Orchestra and the jazz ensemble “Tri-O”. Her work also ventures into sound poetry and story-telling.

Another group of musicians who work to promote throat-singing worldwide is the ensemble Huun-Huur-Tu. At the beginning, their arrangements of traditional song work to continue the tradition of throat-singing as opposed to Namchtylak's work in bridging the gaps between Western and Eastern music. In general, their music puts focus on the

individual instruments putting more light on the actual sound, “they took time to just play or 'sound' the igil, a Tuvan bowed two-stringed instrument, for several minutes with no other instrument, adding only a bit of khoomei.” (Tongeren 108) More recently, the group has entered into experimental sound worlds that include electronics and Western instruments. They still maintain a focus on traditional sound but “without abandoning the influence from European harmony [they further] explore the foundations of Tuvan Music” (Tongeren 109) In the late 90s, Huun-Huur-Tu released two albums with the Bulgarian Voices and have since worked with Sainkho Namtchylak and other musicians and producers such as Carmen Rizzo.

Michael Edgerton, a current Western contemporary composer has attempted to analyze and incorporate overtone singing into the extended voice technique. His book, *The 21st Century Voice*, outlines the modern vocal techniques starting with the basic Western idea of larynx and soft palate technique. He travels into airflow and describes the idea of using inward breath as well as outward breath to make sound. The ingressive sound makes it easier to incorporate multiphonics similar to the idea of overtone singing although it does not rely on the harmonic series for multiple pitches. In both techniques, however, the singer uses an open ribcage to support the breath. Edgerton then continues into the vocal folds. These techniques start to really phonate with overtone singing as kargyraa uses the false vocal folds to create the subharmonic sound integral to the style. Later on in his chapter on filtering, he explains that overtones are always in your voice and that all you must do is amplify them. In a five step idea, he explains that one must first raise the larynx in a comfortable drone, then move the tongue to block out some of the airflow, curl the middle of the tongue, drop the jaw and move it forward and finally

move the tongue back and forth. From experimentation, this technique seems to be most similar the sygyt sound with its high whistle. It also, as he mentions, does not create many amplified overtones at once such as in kargyraa but only a single whistle-like overtone on top of the drone. (Edgerton 61)

In his *Azure Suite*, Edgerton juxtaposes a traditional contemporary soprano sound with an overtone singer. For the overtone singer he uses two staffs, one in bass clef for the drone and one in treble for the overtones. The overtones are exactly notated with harmonic numbers above.

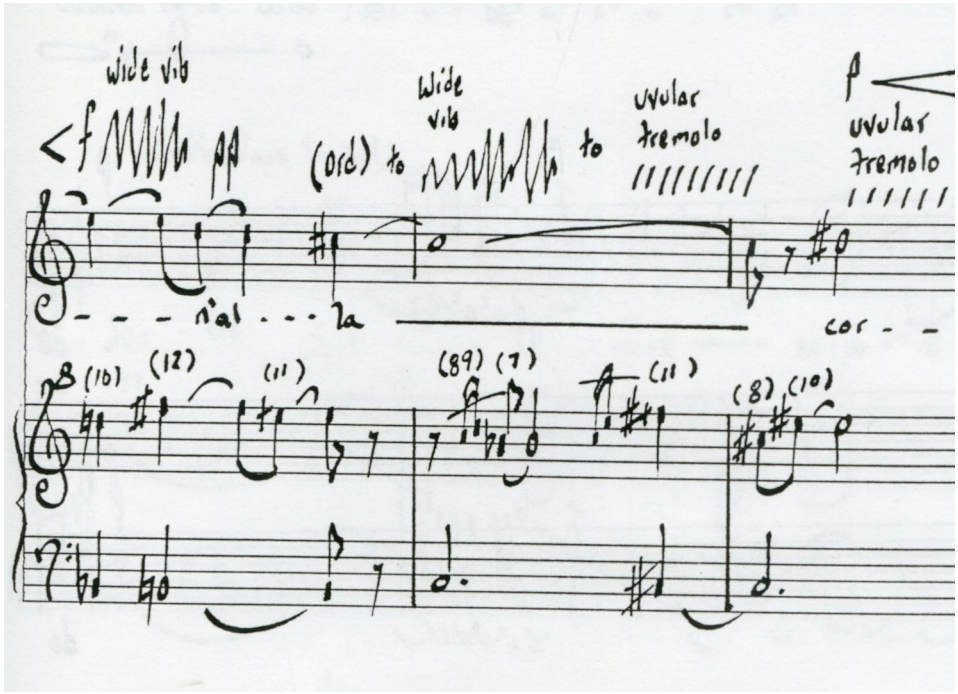

Figure 2.2 Azure Suite - Edgerton

The overtone singer goes back and forth between a drone sound and emphasizing

overtones. He is also required to use some Western techniques including falsetto and a wide vibrato. The soprano uses several different techniques including wide vibrato, uvular tremolo, multiphonics, ingressive phonation and frication. The range goes completely from the top of the soprano's range to the lowest (both are unnotated.) The focus of this piece is the idea of tuning and detuning - "tuning, in this context, refers to the degree of precision involved in matching exactly the state of the other performer – detuning refers to a closely approximated match, left intentionally apart from the intended target – the effect of tuning is to couple the two sources with the greatest fidelity – the effect of detuning should cause a beating of harmonic frequency, or a phasing of resonant frequency." (Edgerton Azure Suite) This piece has no distinct reference to the tradition of throat-singing evident in Tuva. There are almost no words and the words themselves are in Italian and seem nonsensical. This loss of history turns overtone singing into purely a technical aspect of singing as opposed to a truly integrated cultural crossover. Using instruments in non-traditional ways shows up in many contemporary concepts especially in percussion instruments such as gamelan or the djembe. In this context, instead of an interest in preservation of tradition, contemporary techniques and instruments are used purely for sound worlds.

A prolific contemporary German composer from the 20th century, Karlheinz Stockhausen, was perhaps one of the first to attempt to incorporate overtone singing into a Western classical setting. In 1968, he wrote a piece called Stimmung based on his walks through the ruins of Mexico. The piece is for six vocalists with microphones singing in just intonation. Just intonation is a tuning system made up entirely of pure intervals and traces back to the Ancient Greek modes. The piece is tuned to a Bb9 chord

and goes in and out of overtone singing, drone singing and whistling. The harmonics are notated specifically and Stockhausen uses a chart to show how they relate to the vowels in IPA.

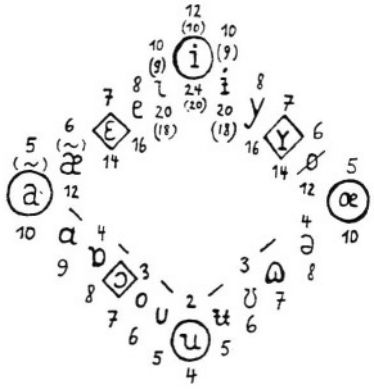

Figure 2.3 Stimmung - Stockhausen

In terms of progression, each voice is given leadership intermittently through the piece and the other voices follow adding separate or new overtones and drones.

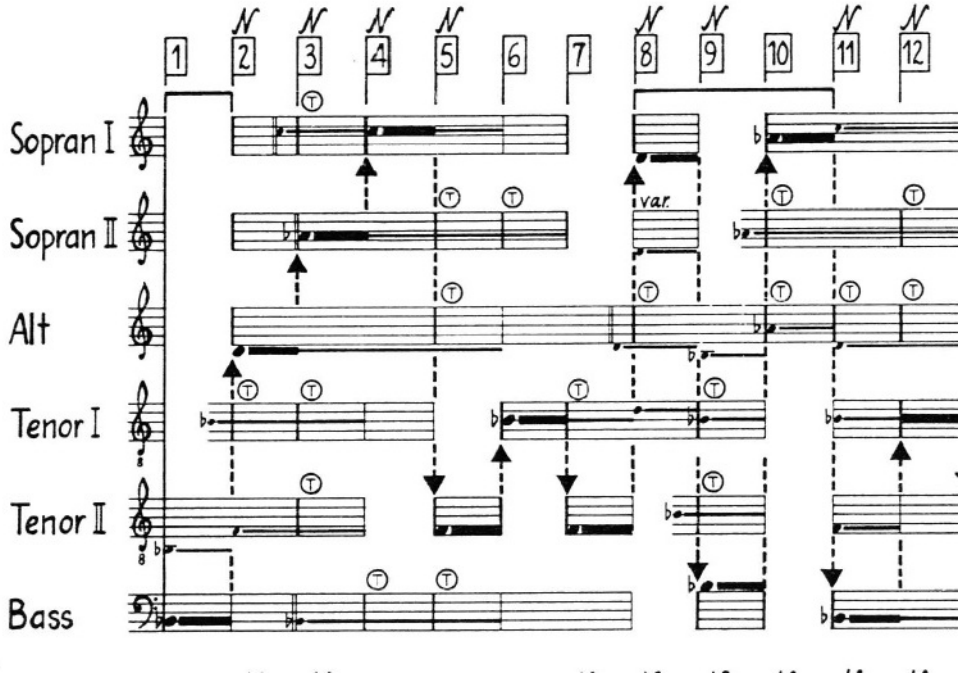

Figure 2.4 Stimmung - Stockhausen

Each number in this chart references a different melodic idea that is written out with IPA and specific harmonics.

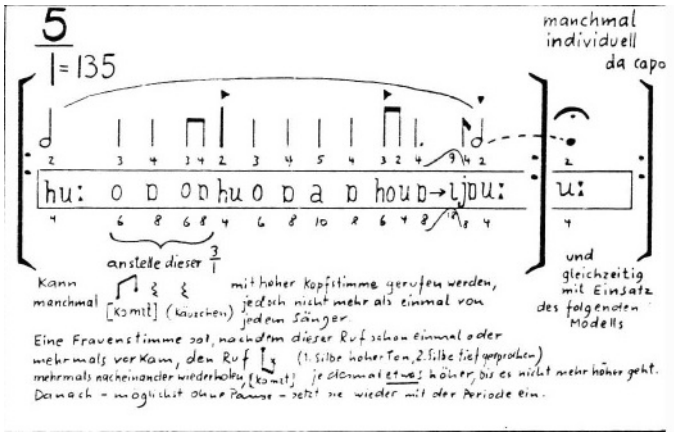

Figure 2.5 Stimmung - Stockhausen

In terms of reference, this piece mentions several religions and symbols ranging from the

Greek Gods to the word Hallelujah to Shiva to the days of the week. Their symbolism, however, is unclear as Stockhausen only mentions walking through the ruins of Mexico as influence. It does, however, seem to have a very meditative influence with its steady drones and moving voices that react to each other's leadership. The possibility of a description of surrounding is also possible, aligning it with the Tuvan idea of describing nature. Although the Mexican ruins are not a natural phenomenon, they do reference a history and the image of nature slowly taking back an area of land. (Stockhausen Stimmung)

Luckily for music, a general trend has emerged toward making overtone singing an integral part of the contemporary singer's technique. Although it has not been technically added to the curriculum, an interest has begun to show itself through pieces, singers and general awareness of the style. Historically, this technique has a lot to offer in terms of traditional sound and imitation. It brings an awareness to environmental sounds that does not permeate the tradition of opera and other classical voice traditions in the West. This has been done through imitation of nature and also the awareness of learning through aural skills as opposed to the more technical learning of the West. Through combined effort by modern musicians and composers, combining the sounds of classical Western singing and Eastern throat-singing, one can feel a bridge connecting that allows for larger sound worlds and interests in tradition.

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Approaching Just Intonation: A Reflection on Kevin Flowers' 3 Songs

Currently, musicians in the modern day are generally unaware of other tuning systems than equal temperament, there are those who have continued to study and explore the different ways in which tuning systems affect the ear. One tuning system that has retained some attention (although not the standard by any means) is Just Intonation (JI). Its clarity despite closeness in pitch heightens the ear's sense and attracts the listener. Additionally, the naturalness to the ear allows someone to grasp performance in Just without any prior training. Kevin Flowers' *3 Songs* began as an experimentation in which two performers were asked to approach this tuning system without prior knowledge or practice. Even with this lack of experience, a generally successful performance was achieved out of a combination of two closely working musicians and the ear's general propensity for pure intervals.

JI is a tuning system that relies on the ear's ability to tune intervals based on sine waves that do not beat against each other. The JI primer defines it as "any system of tuning in which all of the intervals can be represented by whole-number frequency ratios, with a strongly implied preference for the simplest ratios compatible with a given musical purpose." (JI Primer, 1) In order to understand the concept of simple ratios, one needs to understand how musical intervals work. A4, the standard orchestral A, is 440 Hz. Ideally, the A an octave below (A3) would be 220 Hz, giving the octave a 2:1 ratio. This ratio will achieve a consonant interval. When the other notes in the keyboard are divided into small number ratios, one notices that there is an extra amount to the series of intervals, also known as the comma. Commonly known as a wolf interval, this comma causes the

interval to beat wildly, even howl, giving a very clearly out of tune sound even to the untrained ear. Equal temperament attempted to solve this issue by making all intervals exactly even along the octave making each interval (except for the A octaves and certain fifths) slightly out of tune. This causes all of the other intervals to beat. JI wishes to have none of the intervals beat so that one maintains a consonant feel at all times. On a piano, where there are a strict number of notes to the octave, maintaining this purity is an impossibility. On instruments that can alter the pitch by the smallest increment, such as string instruments and the voice, this is entirely a possibility.

This ultimate sense of clarity inherently attracts the ear as the general perception of beating instinctually implies an out of tune interval. Helmholtz, a German physicist who researched the physics of perception, found that "the more consonant an interval was, the freer it was from this roughness, the tighter was it hedged in on both sides by dissonance caused by beating, and consequently, the greater was its 'definition' in the ear." (Lloyd and Boyle, 5) Equal temperament was not invented because it sounded better, but rather because it was convenient for keyboard instruments. It allowed all keyboard instruments to be tuned in the same way for every piece, with an equally out of tune character for all keys. Additionally, it made it easier for composers at the time to explore multiple keys at once, "Equal temperament allowed composers to explore increasingly complex chromatic harmonies and remote modulations without increasing the complexity of instrument design or the difficulty of playing techniques." (Primer, 4)

Before Equal temperament became the standard, there were several instrument builders who attempted to maintain as many pure intervals in keyboard instruments as possible. One such artisan was Charles Claggett who in 1788 had invented a fortepiano

"where each octave was divided into thirty-nine notes, accessed by means of pedals." (Duffin 84) This allowed the performer to distinguish between accidentals and correspond to the specific diatonic key of each section. Additionally, Haydn found these instruments extremely attractive, "you have rendered one of the finest instruments ever invented, perfect, and therefore the fittest to conduct any musical performance, and to accompany the human voice." (Duffin 85) Despite this interest, equal temperament morphed into the standard tuning system over the next 100 years.

This did not mean that people stopped listening for consonant intervals. Generally speaking, the best string quartets and choirs often use JI simply from the naturalness of the sound.

> *"When quartets are played by finely cultivated artists it is impossible to detect any false consonances. To my mind the only assignable reason for these results is that practised violinists, with a delicate sense of harmony, know how to stop the tones they want to hear, and hence do not submit to the rules of an imperfect school. That performers of the highest rank do really play by natural intervals has been directly proven by the very interesting and exact results of Delezenne."*
> (Lloyd and Boyle, 82)

Not only this, equal temperament is a skill that piano tuners work very hard to train in the ear, listening for the correct number of beats in the interval and making sure that they get narrower as they travel up the piano and wider as they travel down the piano. The natural musical ear inherently listens for a consonance in beatless intervals that does not occur in equal temperament except for the octave. Even the fifth has a very slow beating that the piano tuner listens for. Thusly, even out of simple ease, it seems logical that string quartets and choirs would listen for a beatless quality rather than counting the beats in their intervals. Only if they are accompanied by instruments that do not allow for mobile

tuning, such as any keyboard instrument, would they be forced into thinking in equal temperament.

Under this assumption, Kevin Flowers attempted a piece in JI in which two performers had never had prior education or experience in this tuning system. Flowers' piece for soprano and violin, *3 songs*, is a piece in which the soprano and violin are asked to switch between thinking in pure intervals and generally untuned intervals where the partials are too close to hear. In this piece, he strove for the most formalized tuning he had ever attempted. Because this tuning system was a very new process for him, many of the intervals have been left untuned and the specific partial left up to the performers. Ideally, all will be Just. There is no text for the singer, only a sense of different vowels moving between different extremes (lips open and closed, tongue high and low). Additionally, Flowers added occasional consonants for timbral purposes.

The first song is based off of a limit of low-number partials mixed with untuned intervals. (Flowers, Interview) In it the violin stays almost exclusively rooted on a minor third based off of a D (the violin moves from the B to the F in the second half of the movement) while the singer repeats many of the pitches and patterns in an almost strophic sense. The intervallic structure between the two instruments was specific to his chart not only as an experiment in limitations but also so that "the strongest intervals [are created, allowing] the effects and difference tones to be really close." (Flowers, Interview) The vowel structure changed from as open as possible to more closed vowels. Although this was not part of the compositional process, in performance the result was that many of the difference tones stand out more when the vowels are more closed. This is because different vowels allow for different overtones to come forth, automatically

helping or heeding several of the intervals. Additionally, it relies on some pitch memory where tuning the interval would otherwise be impossible.

In this song, an attempt at tuning purely was achieved more easily than the others. Because of the consistency in pitches, once enough rehearsal time had occurred, the intervals were more clearly heard despite their closeness. This innate sense that one would want to tune purely proved entirely true. When listening to the recording, there are times when it wavers slightly away from Just Tuning then immediately settles.

Alternatively in Song Two, Just Tuning was less easily achieved. Unlike the first song, the violin and soprano are able to alter their pitches to each other. In this song, the violin "has no choice but to play in Just Intervals if she tunes her strings in Just Fifths." (Flowers, Interview) This would mean that the singer is left to alter the tuning alone. While entirely possible, the ease and dynamic between the two players from the first song has been altered. Flowers additionally added that depending on the school of the violinist, it is entirely possible that the violinist would not be taught to tune in Just Fifths but to tune in equally tempered fifths. Moreover, the "big reaches are hard to do but some of the harmonics will sound anyway even if you're flat but that will cause the harmonics to be flat too. So this one was kind of speculative, at least on sustained pitches and the accuracy of the rational fidelity of the violin part." (Flowers, Interview)

These difficulties led to an imperfect performance of the second song. Again, it was not an entirely inaccurate one despite a lack of experience but did not have the same successes as the first. The second song was not fixed in its tuning,

> *"It's not tuned but it exposes all these issues whereas the other ones are very dogmatic. This one you don't know what's going to happen. But it's kind of two sides of the same coin where it's intervallically similar*

> *or a more agitated version of the first one. But as far as attitude, it allows all these things to happen whereas [Song One] is more controlled. So it's not tuned but it is tuned because there's an awareness where it could be tuned."* (Flowers, Interview)

Additionally, there is an element of fast-moving vocal lines that has been added. Attempting to tune these sections were much more difficult than others where the pitch could settle even if the onset was incorrect. In these, the result ended up being a line from pitch memory rather than one where close listening occurred.

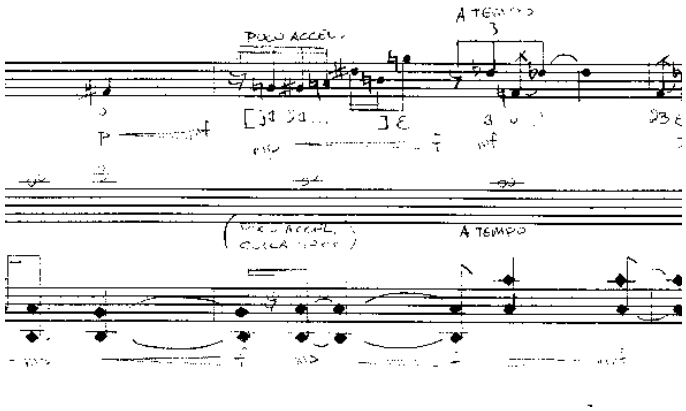

Figure 3.1 Flowers – Song 2

This meant that an entirely instinctive performance was necessary. The violin was very constricted while the singer was left to go in and out of being able to tune justly. However, there was a very large factor in which the violin could have not been tuned. Conceptually, the idea that instinct alone would allow the performers to achieve this song aligns itself with Just theory but in practice the result was not as easily achieved as the first song.

The final movement of this piece was a combination of the first two. Interestingly, Flowers left this untuned but after listening to the recording and studying the score; he

found that the Just intervals that resulted made sense based on the structure. (Flowers, Interview) This concept also aligns that when musicians are closely listening, the instinctual result will be one where the intervals lean towards being Just.

More successful than the second song, this song left a great deal open to the performers in terms of timing and alignment. The violin part is consistently changing by creating two rhythms between the bow and finger movement while the voice has a much higher melody than either of the other two songs and lies mostly in long tones. These long tones go in and out of strict timing.

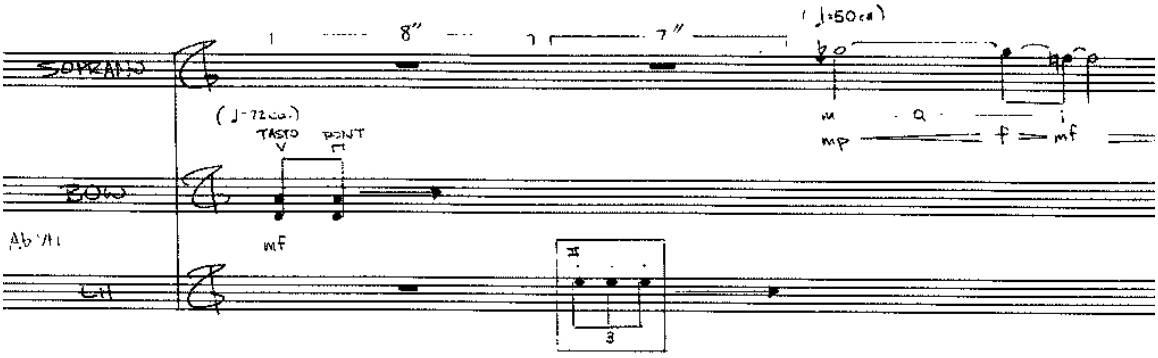

Figure 3.2 Flowers Song 3

The result is an almost drone-like feel in an otherwise fairly structural piece of music. This movement, more than either of the others, was an exercise between the two players in creating a more spontaneous idea. Because of its obvious focus, this movement was perhaps the most successful simply because deep listening had to occur in order for time to progress in the movement.

This deep listening was the intention of Flowers for the entirety of the piece. Although neither of the musicians who premiered this piece had prior experience in JI,

the naturalness inherent in this tuning system allowed the performers to begin the process in creating these pure intervals. While not entirely successful, the idea that a performer could work in a new tuning system based on instinct is a plausible idea. Helmholtz's discoveries prove that the ear prefers these beatless intervals and with close listening, a performer can begin to explore JI without training or even knowledge of what is occurring mathematically. This tuning system is further supported by the fact that even though equal temperament has become the standard, musicians have continued to use other tuning systems out of an instinctual preference for beatless intervals.

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