

KASHCHEI

FOR NINE INSTRUMENTS AND ELECTRONICS

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ABSTRACT

Kashchei is an original music composition scored for nine musicians and electronics with a duration of eighteen minutes. The analytical paper, presented in Volume 1 of this thesis, gives a general overview of the procedures and techniques used to create this piece. The score and electronics are available in Volume 2 of this thesis. The inspiration for the work comes from the characters, visual representations, and sounds of Russian folklore – *skazki*. This work metaphorically represents the different layers of *Kashchei*, a prevalent villain in Russian fairytales who can only be defeated by breaking through several layers to get to his soul. The structure of the seven movement work represents the layers around *Kashchei*'s soul and is woven around a theme quoted from Rimsky-Korsakov's opera *Kashchei the Immortal*. The sonic environment created by both orchestration and electronics attempts to recreate the surrealism of fairytales and the sweeping gestures and vibrancy of Russian lacquer art.

RÉSUMÉ

Kachtcheï est une œuvre musicale pour neuf instruments et dispositif électronique, d'une durée de dix-huit minutes. Une analyse technique de la composition, présentée dans le 1er Volume de cette thèse, fournit une vue d'ensemble des procédures et techniques utilisées dans la pièce. Le 2e Volume contient la partition musicale et la description de la composante électronique. L'œuvre a été inspiré par les personnages, les motifs visuels, et le caractère sonore de la folklore russe – *skazki*. Cette composition représente de façon symbolique les divers couches de *Kachtcheï*, un

personnage désagréable qui réapparaît fréquemment dans les contes de fées russe. Traditionnellement, le héros qui cherche à vaincre *Kachtcheï* doit franchir plusieurs couches avant d'y arriver à son âme sans doute vulnérable. Structurellement, chacun des sept mouvements de l'œuvre représente une des couches qui protègent cet âme et est basé sur un thème tiré de l'opéra *Kachtcheï l'immortel* de Rimsky-Korsakov. L'environnement sonore de l'orchestration et du dispositif électronique, ensemble, tente de recréer le surréalisme des contes de fées et les grands gestes et le dynamisme de l'art du laque russe.

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On a personal level, I must express much thanks to my mother, Kira Young, who is the reason for my knowledge of Russian folklore and music. Professor Lars Lei lead an amazing seminar in Russian Opera in the Fall of 2009 that piqued my interest in the operas of Rimsky-Korsakov. Most of all I must thank my fiancé, Haralabos Stafylakis, for his unending support, both musical and moral, during the writing and editing of this work. With great love and admiration do I dedicate this piece to him.

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1 – INTRODUCTION

1.1 – Description

Kashchei is a work for nine instruments and electronics. It is comprised of seven movements, played without pause, and has a duration of approximately nineteen minutes. The work is scored for flute (doubling on piccolo), clarinet in Bb (doubling on bass clarinet), trumpet in C (doubling on piccolo trumpet in A), violin, viola, violoncello, piano, and two percussion. The electronic component consists of prepared soundfiles and live processing that are triggered by a performer with an onstage MIDI keyboard. The electronics are diffused through a nine-channel speaker arrangement. The work was inspired by Russian folklore.

1.2 – Poetics

1.2.1 – The myth of Kashchei – a villain from Russian folklore

Kashchei the Immortal (in Russian: *Кощей Безсмертный*) is a character of Russian folklore who makes an appearance in many popular fairytales, *skazki*, including *Marya Morevna*¹ also know as *The Death of Kashchei the Immortal*, *the Frog Princess*², *Vasilisa the Wise*³, and as the antagonist of fairtales involving Ivan Tsarevich. He is characterized as a dark, evil person of ugly, senile appearance and is sometimes depicted as either a scaly, amphibious-like or skeletal being. The etymology of his name suggests the root *kost*, or bone, signifying his tie the underworld.

Kashchei functions as the antagonist in most stories. He is an evil sorcerer with shape-shifting capabilities that often take the form of a whirlwind. Despite being evil, he is inwardly emotional and craves female companionship. His evil deeds mostly consist of kidnapping and imprisoning promised princesses and

¹ in Russian: *Мария Моревна*. Alexander Afansyev

² in Russian: *Царевна Лягушка*

³ in Russian: *Василиса Премудрая*

other young maidens who he then attempts to charm within the comfort of his lair. The heroic princes in these stories desperately struggle to free the maidens, as Kashchei is immortal, which in this case means that he cannot be slain by conventional means targeting his body. The essence of his life is hidden outside of his flesh in a needle within an egg that is located on the mystical island of Buyan⁴. Only by finding this egg and breaking the needle can one overcome Kashchei's powers. In one *skazka*, the princess Tsarevna Daris asks Kashchei where his death lies. He explains,

*My death is far from hence, and hard to find, on the wide ocean: in that sea is the island of Buyan, and upon this island there grows a green oak, and beneath this oak is an iron chest, and in this iron chest is a small basket, and in this basket is a hare, and in this hare is a duck, and in this duck is an egg; and he who finds this egg and breaks it, at that same instant causes my death.*⁵

Once the egg is broken, Kashchei begins to weaken, becomes sick, loses his magical powers, and soon after, dies.

As with most elements of cultural folklore, many variations exist on the tales of Kashchei. For the purpose of this musical work I have chosen an outwardly evil Kashchei who secretly pines for companionship. His soul is encased within five layers buried under an oak tree on the island of Buyan:

- 1 – an egg
- 2 – within a duck
- 3 – within a hare
- 4 – within a small basket
- 5 – within an iron chest

1.2.2 – Kashchei's musical history

Kashchei is a character who has had numerous appearances in music history ranging from Slavic folk songs and poetry to Soviet film music. Within the classical music canon he has been most famously featured in Rimsky-Korsakov's opera *Kashchei the Deathless* and in Stravinsky's ballet *The Firebird*.

⁴ Buyan is a mysterious, magical, disappearing island commonly found in Russian *skazki* that is somewhat akin to Avalon.

⁵ Steele, 27

1.2.2.a – *Kashchei the Deathless*

Kashchei the Deathless was written by Rimsky-Korsakov in 1902, with a later revision of the ending in 1906. It was premiered in Moscow at the Solodovnikov Theatre on December 25, 1902. The work is a three scene, one act opera, noted as an autumnal parable (Rimsky-Korsakov wrote a set of seasonal operas). The libretto, written by Rimsky-Korsakov and his daughter, is based on a draft called *Ivan-Korolevich* by Yevgeny Maximovich Petrovsky and combines several Russian fairytales about Kashchei. In this version, Kashchei, the evil sorcerer, kidnaps Tsarevna Nenaglyadnaya-krasa (Unearthly-beauty) who is eventually rescued by Ivan Tsarevich. Ivan manages to kill Kashchei by finding his death in the tears of Kashchei's daughter, Kashcheyevna, who secretly pines for the prince.

The opera is harmonically innovative for its time, with a clear duality created between tonal, lyrical beauty of “good”⁶ and the dense, harmonic chromaticism of “evil” that is founded upon a chain of ascending thirds. Rimsky-Korsakov was very proud of his harmonic invention which seemed to please the intellectual crowds. He is quoted as saying,

*I can satisfy your curiosity in part, for I've already shown some of the first scene to Glazunov, and, despite his dislike for opera in general and program music in particular, this time he declared that he didn't expect anything like this from me.*⁷

Another observer explains,

Overall it left a powerful impression...It was evident that [Rimsky-Korsakov] is highly pleased with what he calls his “layered harmonies” (the shining skulls, snowstorm, Kashcheyevna's enchanted garden, scene of Kashchei's death, etc.). Thus, when Felix Blumenfeld expressed doubt that there is such a harmony as that used at the moment of Kashchei's death (when one hears chromatic progressions in the orchestra dissolve against the background of a diminished seventh chord C, Eb, F#, A...[and] amid this tonal chaos, there suddenly rings out an incredibly daring Bb), Rimsky-Korsakov replied not without pride: “Not in a textbook perhaps, but nevertheless it's superb. What's more, my major thirds aren't so bad either!”⁸

⁶ “‘By the way,’ said Rimsky-Korsakov, ‘you might take note of the fact that this is the first opera of mine which ends in sunny D major.’” (Yastrebtsev, 310)

⁷ Yastrebtsev, 310

⁸ Yastrebtsev, 311.

Interestingly enough, the opera, despite its estrangement from the popular harmonic idiom, became a “revolutionary work” that was encouraged in the Soviet repertoire. This is perhaps due to the duality of good and evil and its portrayal of Russian folk culture. This is also a result of its political significance gained from a student-run, Glazunov directed performance at the St. Petersburg Conservatory after Rimsky-Korsakov was fired for supporting a student strike.⁹

1.2.2.b – *The Firebird*

It is from Igor Stravinsky’s ballet *The Firebird*, that Kashchei is best known to western audiences. The ballet, in two scenes, was written in 1910 for Diaghilev’s Ballets Russes, choreographed by Michel Fokine. The premier performance took place on June 25, 1919 in Paris, France. Stravinsky later revised the work in 1911, 1919, and 1945.

The narrative of this work combines the *skazki* of the Firebird with *The Death of Kashchei the Immortal*. The tale begins with Ivan Tsarevich wandering around Kashchei’s magical kingdom. There, in a garden, Ivan encounters the Firebird and hunts it down. The Firebird promises to assist Ivan in exchange for freedom. Ivan then encounters thirteen princesses and falls in love with one of them. He goes to Kashchei to ask for the princess’s hand in marriage. Kashchei becomes angered and sends evil creatures to prey upon Ivan. The Firebird then comes to Ivan’s assistance and places a magical spell on Kashchei and all of his mignons, making them dance (*The Infernal Dance*) until they fall into a deep slumber. While everyone is sleeping, the Firebird explains to Ivan the secret to Kashchei’s immortality, hidden in an egg. Ivan finds the egg and breaks it, thus killing Kashchei and ending the magical spells on the kingdom.

It is important to note the musical relationship between this work and Rimsky-Korsakov’s opera. Stravinsky began studies with Rimsky-Korsakov in 1906 and was thus exposed to harmonic and motivic methods of his teacher. Richard Taruskin makes a point of connecting Rimsky-Korsakov’s harmonic

⁹ Rimsky-Korsakov (*My Musical Life*), 347.

systems (an octatonic scale referred to by Russian contemporaries as the Korskovian scale) with Stravinsky’s harmonic world.¹⁰ There is no doubt that Stravinsky was completely aware of and thinking about Rimsky-Korsakov’s Kashchei-themed opera when he was composing *The Firebird*. The two works both retain an octatonic scale system and an underlining of the tritone in relationship to Kashchei. In fact, one can see a very apparent similarity in the Rimsky-Korsakov’s innovative ladder of thirds used in *Kashchei the Deathless* (see Figure 1) to that used in *The Firebird* (see Figure 2).

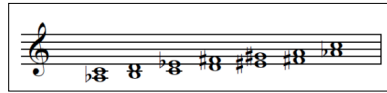


Figure 1: Ladder of thirds used in *Kashchei the Deathless*

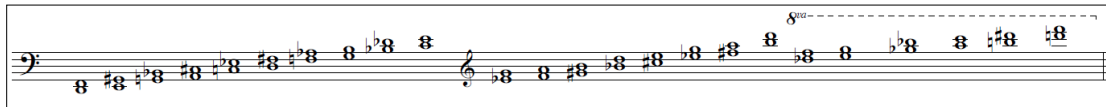


Figure 2: Ladder of thirds used in *The Firebird*

1.2.3 – Kashchei as a personal compositional tool

The character of Kashchei, the narrative of his immortality, and his presence in the classical music canon serve as the inspirational foundation for my work *Kashchei*. The piece takes on the role of tone poem, directly featuring a program that depicts the layers one must unfold to reach the essence of Kashchei’s life. Each movement is informed by and titled as one of the layers and is loosely rooted in the principle of reverse variations. As the music progresses through time, the core musical material (a quotation from Rimsky-Korsakov’s *Kashchei the Deathless*) is gradually exposed. This process can be related to the wooden Russian doll, the *matryoshka*, where a simple, small doll is concealed within the shells of many, larger, more elaborate ones. Similarly, one must unfold many layers to reach the essence of Kashchei’s life: as each movement (variation) is

¹⁰ Taruskin, *Cheremor to Kashchei: Harmonic Sorcery; Or, Stravinsky’s “Angle”*, 132.

peeled away the listener gets closer to the core musical material that defines Kashchei's soul.

The goals of the compositional elements utilized to create this piece are to inform the listener of the narrative. Thus in the compositional process, the poetic narrative became a compositional tool that dictated the structural form, harmony, motivic development, orchestration, texture, and electronics.

2 – NARRATIVE IN MUSIC

2.1 – A brief overview of program music

The term ‘program music’ comes into musical language by Franz Liszt who later coined the term ‘symphonic poem.’ He defined a program as,

*a preface added to a piece of instrumental music, by means of which the composer intends to guard the listener against a wrong poetical interpretation, and to direct his attention to the poetical idea of the whole or to a particular part of it.*¹¹

While there are elements of program music prior to the nineteenth century, such as Beethoven’s “Pastoral Symphony” and Vivaldi’s “Four Seasons”, these works are written with traditional forms, thematic development and musical direction that are independent of their poetic subject matter, and really only hint at an atmosphere. Genres that informed the development of actual program music rather included opera and early meta-opera types such as oratorios. These works carry a narrative, but one that is much more easily portrayed through the use of text. In these works, the instrumental music is representational and supports the vocal music, and is not the sole means of conveying the desired story. One clear distinction between program music and other similar genres lies in that the form and development of program music is completely determined by its poetic subject. Liszt further explains,

*In programme music ... the return, change, modification, and modulation of the motifs are conditioned by their relation to a poetic idea All exclusively musical considerations, though they should not be neglected, have to be subordinated to the action of the given subject.*¹²

During Liszt’s time, another pioneer of programmatic music was Berlioz. His music differed from Liszt’s in that he wrote program inspired music but fit these narratives, with their *idée fixe*, into the formal outline of traditional

¹¹ Scruton, *Grove Online (Programme Music)*

¹² (*Schriften*, iv, 69) – from Grove Online

symphonic structures. Such works include *Symphonie Fantastique* and *Harold en Italie*. This is unlike the direction of Franz Liszt who embraced the creation of a specific genre exclusive to program music – the symphonic poem. This genre, also referred to as a tone poem, comes out of a nineteenth century ideal to unify the arts. With the symphonic poem, instrumental music now had unending creative possibilities that veered away from traditional formal prescriptions of symphonic movements. Continuous, multi movement works with radical motivic and harmonic development were now permissible, as these elements were now driven by the needs of narrative. Certain proponents of program music claimed that it allowed instrumental music to transcend above the highest form of musical expression, which was, at the time, opera.

With the foundation created by Liszt, many of his contemporaries including Smetana, César Franck, Tchaikovsky, Rimsky-Korsakov, and Richard Strauss, implemented the genre into their own musical canon. This concept of narrative composition led to the musical approach that Wagner took in his creation of opera, that Debussy took in *Daphnis and Chloé*, and of course, in the ballets of Stravinsky.

2.2 – *Kashchei* as a meta-operatic tone poem

The composition of *Kashchei* was directly founded in the narrative I describe in section 1.2.1. The subsequent chapters will explain how the narrative controlled my approach to form, orchestration, textural fabric, harmony, motivic development, and electronics. It is no accident that this composition is inspired by both an opera and a ballet – genres which I will explore in future compositional projects.

3 – FORM AS NARRATIVE

3.1 – Introduction

Kashchei is presented as a series of seven linked movements, played without pause.

- I. An Oak Tree on the Island of Buyan
- II. The Iron Chest
- III. A Small Basket
- IV. The Hare
- V. A Duck
- VI. Egg
- VII. The Death of Kashchei

Poetically, each movement functions in the narrative as a layer concealing Kashchei's soul, which when exposed leads to his death.

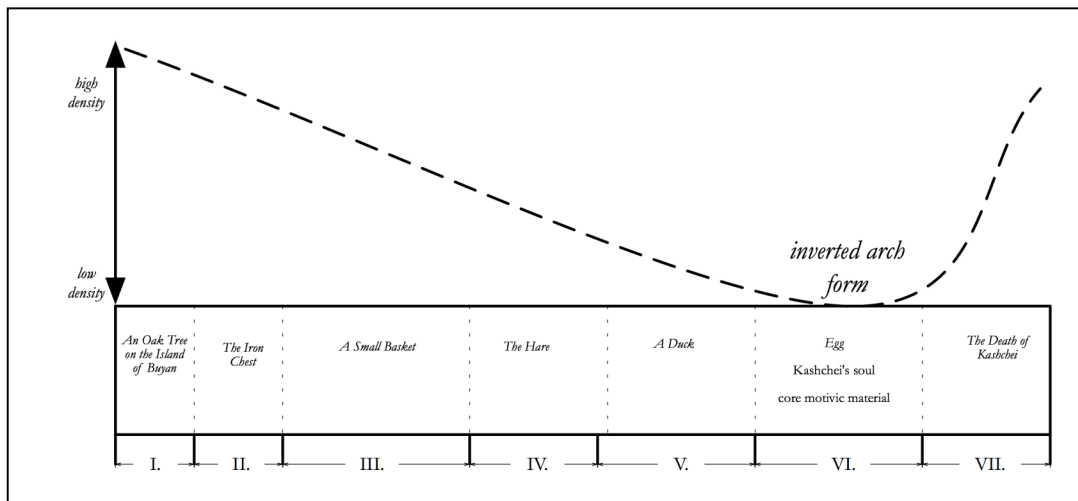


Figure 3: Form of *Kashchei*

The piece has an asymmetrical inverted arch form, beginning with a high density of notes, thick orchestration, heavy electronics, and a dense, microtonal harmonic language. Gradually, as each movement unfolds, a process of simplification occurs, reducing the textural density, orchestration, electronics, and harmonic complexity to unveil the core thematic material in its most basic form in movement VI. The music of this movement is characterized by a violin

and cello duet, with subtle electronics that eventually fade away, leaving movement VII as solely instrumental.

3.2 – Methods of delineating form

Since the piece is played without pause, it was important to construct audible elements that allow for a listener to easily grasp the distinction between movements. Each movement features its own unique orchestration and textural fabric whose function is to characterize a layer that conceals Kashchei’s soul. A distinct soundmark is placed between the end of one movement and the beginning of the next was placed to function as a formal separator. Within these confines, the methods of motivic development, harmony, and electronics also assist in defining one movement from another.

3.2.1 – Soundmark

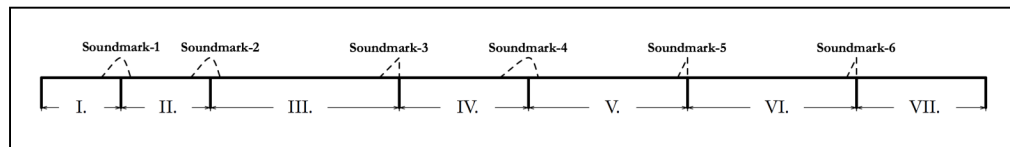


Figure 4: Soundmarks over time

I placed a distinct sound event, unique to the transition between each movement, to create formal separators without requiring a pause between movements. I will refer to these sound events as ‘soundmarks’. The soundmark is a term created by Murray Schaefer (in his 1969 text *The New Soundscape*) that is derived from the idea of a landmark. Thus a soundmark is unique to its own area and immediately gives context to the listener¹³. In today’s commercial industry, soundmarks are used as sound trademarks and can even be commercially registered.¹⁴ In the case of my own work, the soundmarks function as local landmarks that indicate the arrival at a new movement; there are six of

¹³

¹⁴

them. Poetically, these soundmarks represent breaking through one layer to reveal the next. The soundmarks are characterized by louder dynamics, distinct percussion writing, and often, electronics. Once the soundmark fade away, the new movement, that was theoretically already in motion, is revealed.

Soundmark-1 features an increase in dynamics as well as in rhythmic and textural density that begins building up in measure 23. This is accompanied by an electronic trigger (Cue 11 in measure 23) – a soundfile made of reversed bells that reach their loudest point on the downbeat of measure 29. The entire ensemble (with electronics) plays on the downbeat on measure 29, quickly fading out to give way to the new textural fabric. This change in texture is prepared by two loud bass drum hits on the upbeat of measure 29. Soundmark-2 is similarly characterized by a build-up and large, full ensemble attack on the downbeat of measure 64.

Soundmark-3 is characterized by a fade out in the pitched instrumental writing while a rolled crescendo is played on the suspended cymbal and thunder sheet, without electronic. Soundmark-4 begins with a tempo and textural change in measure 171, building up into a full ensemble (with electronics) attack on the downbeat of movement V. Soundmark-5 allows movement V to transition into VI with a full ensemble (and electronic) attack on the downbeat of movement VI. This then fades away to reveal a cello solo passage. Soundmark-6 features a rolled percussion crescendo (similar to Soundmark-3, but with different instrumentation) gesture that cuts the melodic duet and leads into the dense and loud seventh movement.

3.2.2 – Orchestration

In creating a musical narrative based on a fairytale, an orchestration with vivid colors and distinct timbres was a top priority. I desired the instrumental and electronic sounds to mimic the gestures and colors of Russian lacquer art, famous for its colorful and intricate designs. Fairytales are the basis of much of this art work, but the style is actually founded in the practice of icon painting.

With the collapse of Imperial Russia, and subsequently the Orthodox Church, icon painters, in need of income, developed a craft of lacquer art. Thus there is a marriage between realism in the technique composition of human characters and setting with that of mysticism. Within the lacquer art, the magical elements are emphasized using gold leaf and other shimmering substances. Similarly, within my own orchestration, the electronics are used to add an element of fantasy and magic to the work. Figure 5 shows the cover of a Russian lacquer box illustrating the tale of Kashchei.



Figure 5: A typical example of a Russian lacquer box cover. This one illustrates a scene for the tale of Kashchei.

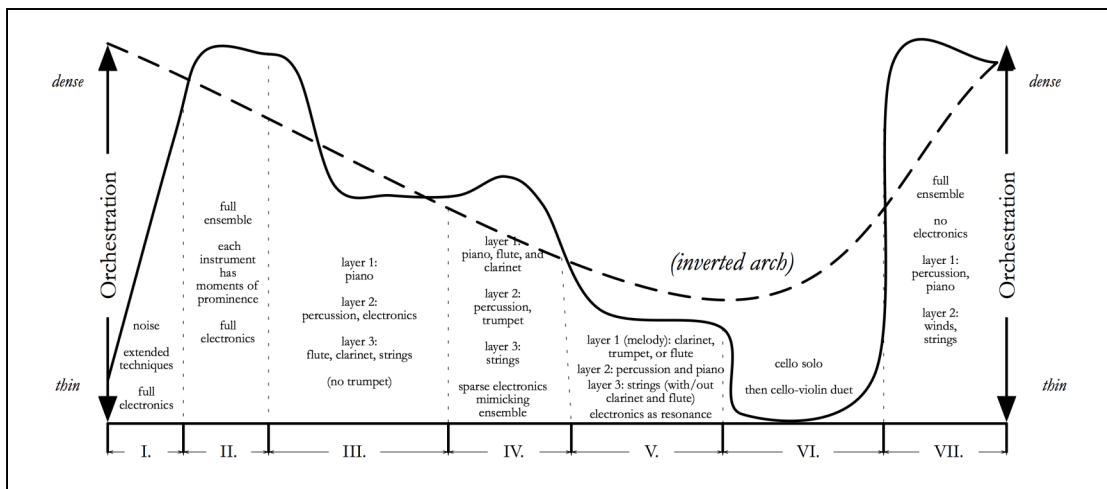


Figure 6: Orchestration (over time) as a method of delineating form

Each movement has a distinct approach to orchestration, with different instrumental voices in the foreground, middle ground, and background. The orchestration aids in creating the marco, inverted-arch form. The different orchestration layers are depicted in Figure 6.

3.2.3 – Textural fabric

There are several different musical textures found throughout *Kashchei*:

- monophonic
- homophonic
- polyphonic
- heterophonic
- homorhythmic
- polyrhythmic
- micropolyphonic/spectral
- holophonic

These textural types are woven together to create additive and compound textures unique to each movement. A general change in textural density from densely to loosely woven corresponds with the aforementioned inverted arch form.

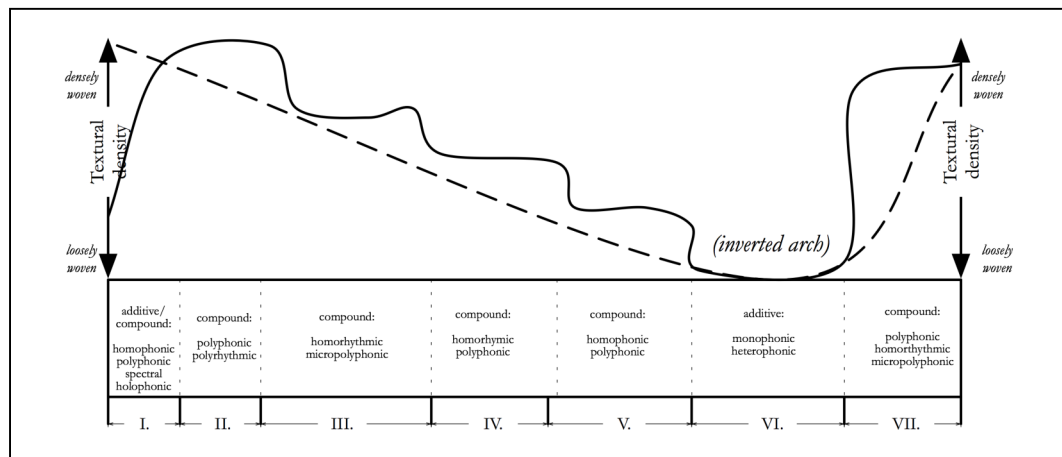


Figure 7: Texture (over time) as a method of delineating form

3.2.4 – Motivic development

The core motivic material of *Kashchei* pays homage to the motivic and harmonic construction of the character Kashchei, as depicted by Rimsky-Korsakov and Stravinsky. The main theme of *Kashchei*, fully revealed in movement VI, is derived from a simple melody sung by the Tzarevna in Rimsky-Korsakov's opera. The preceding movements obscure and develop this material. A more detailed description is discussed in Section 4.3.

3.2.5 – Harmony

The harmonic system of *Kashchei* is derived using an analysis-resynthesis of recordings of the seventeen Russian Danilov Bells found at the Lowell House of Harvard University. A general upward harmonic motion (emphasized through a registral shift from low to high) assists in creating a form that leads to movement VI. A more detailed description of the harmonic system is discussed in Section 4.2.

3.2.6 - Electronics

The electronic component of *Kashchei*, diffused in nine channels, subtly supports the form. The electronics are most prominent in both volume and spatial dispersion at the beginning of the work and slowly dissipate into the ensemble as each layer surrounding Kashchei's essence is removed. The electronics die away at the end of movement VI, so that during movement VII – *The Death of Kashchei*, the electronics are silent and only the instrumental ensemble prevails. Poetically, this loss of electronics at the end represents the demise of Kashchei and his magical powers. A more detailed description of the electronics is discussed in Section 5.

4 – PITCH MATERIAL AS NARRATIVE

4.1 – Introduction

In writing *Kashchei* I selected a harmonic language and a selection of motives rooted in the Russian tradition so as to make my interpretation of the narrative more convincing and to give a fully organic approach to the concept and realization of this work.

4.2 – Harmony – borrowing from Russian traditions

The harmony of *Kashchei* comes from seventeen chords that I derived from an analysis of recordings of the Danilov Bells. I chose to use Russian bells as the foundation of my harmony because of their particular sonic qualities, ease in blending with electronics, and for their cultural and historic implications.

Bell ringing developed in Russian soon after the conversion to Christianity in 988. From a religious standpoint, the bells were both functional and symbolic. Bell ringing was used to summon the congregation, underline important moments in the service, and to announce religious holidays and important events such as births, marriages, and deaths. Symbolically, bells were considered sonic icons and provided a soundscape that helped one better focus on the act of prayer. With church and state being near inseparable in pre-revolutionary Russia, bell ringing was not only used religiously, but also as a method of announcing community events, visits by royalty, or emergencies such as floods, fires, and wars.

Russian bells differ from Western bells in their construction, method of ringing, and sonic qualities. Russian bells are commonly cast from a mixture of bronze, tin with silver added later to produce unique overtone characteristics. Unlike Western bells, Russian bells have walls made of varying thicknesses that allow for unpredictable partials to resonate above the fundamental tone and are tolled rather than pealed. Traditionally, Russian bells were cast without even

having a specific pitch in mind – a practice that resulted in bells that sound very different from those of Europe. There was a great city/village-wide unveiling ceremony when a new bell was to be rung for the first time. If the sound was beautiful the bell master was rewarded with fortune; if the bell did not resonate well, he was punished and sometimes sentenced to death.

During the Russian revolution the persecution of Christianity led many Russian bells to be destroyed – their metal was used for tank building and artillery. However, their cultural importance was not forgotten as they played an influential role in Russian concert music. Some prominent examples include the *Slava* scene in the opera *Boris Godunov*, the end of Tchaikovsky's *1812 Overture*, the “Great Gate of Kiev” from *Pictures at an Exhibition*, and many of Rachmaninov's works. After the fall of the Iron Curtain, Russian bell ringing came back into fashion.

4.2.1 – The Danilov Bells

The Danilov Bells are a set of seventeen bells that were cast between the late 18th and early 20th centuries. They originally hung in St. Danilov's Monastery in Moscow. However, with the melting down of many bells after the 1917 revolution, it was decided, in 1930, to sell the bells to American industrialist Charles Crane, a rusafiler who promised to donate the bells to Harvard University. The bells hung in the Lowell House of Harvard for seventy-five years and were rung by a team of *klappermeisters* every Sunday and on high holidays. In 2008 the bells were returned to the Danilov Monastery. A set of replicas was cast and now hang in the Lowell House. In October of 2009 I traveled to the Lowell House to make recordings of the new Danilov Bells.

4.2.2 – Analysis-resynthesis

The harmonic system is derived using a method of analysis-resynthesis that combines microtones with equal temperament. This a method I have been

pursuing in my recent compositions that feature live instruments with electronics.

A spectral analysis focusing on the fifteen most prominent partials was performed on each bell. This yielded data on each partial that included the exact frequency, duration, and volume. I converted this data into seventeen harmonies, each with three different versions.

The first version is an exact resynthesis of the fifteen partials. It is used in the electronics as soundfile material and as detuned piano and vibraphone that play through the speakers situated within the ensemble. A detailed description of the electronic processes can be found in Section 5.

The second version, used in the electronics and by the performers, constructs harmonies with each frequency rounded to the nearest quarter tone. Figure 8 displays the microtonal version of the harmonies.

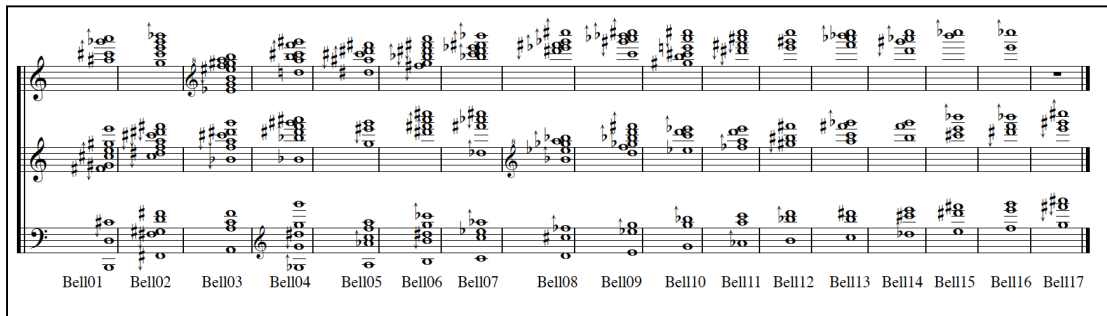


Figure 8: Analysis-Resynthesis of the 17 Danilov Bells (rounded to the nearest quarter-tone)

The third version, used by the performers throughout the work, constructs harmonies with each frequency rounded to the nearest semi-tone. Figure 9 displays the tempered version of the harmonies.

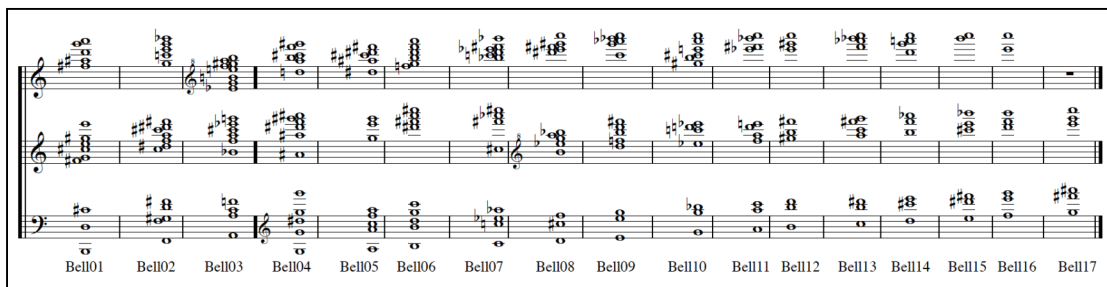


Figure 9: Analysis-Resynthesis of the 17 Danilov Bells (rounded to the nearest semi-tone)

Figure 10 shows the method of arriving at the three harmonic versions of Bell01, known as the *Mother Earth* bell. The same process was performed on each bell. Together, these three versions of the same harmony provide both tempered and microtonal possibilities; when used in combination they yield an effect with a rich and unique timbre.

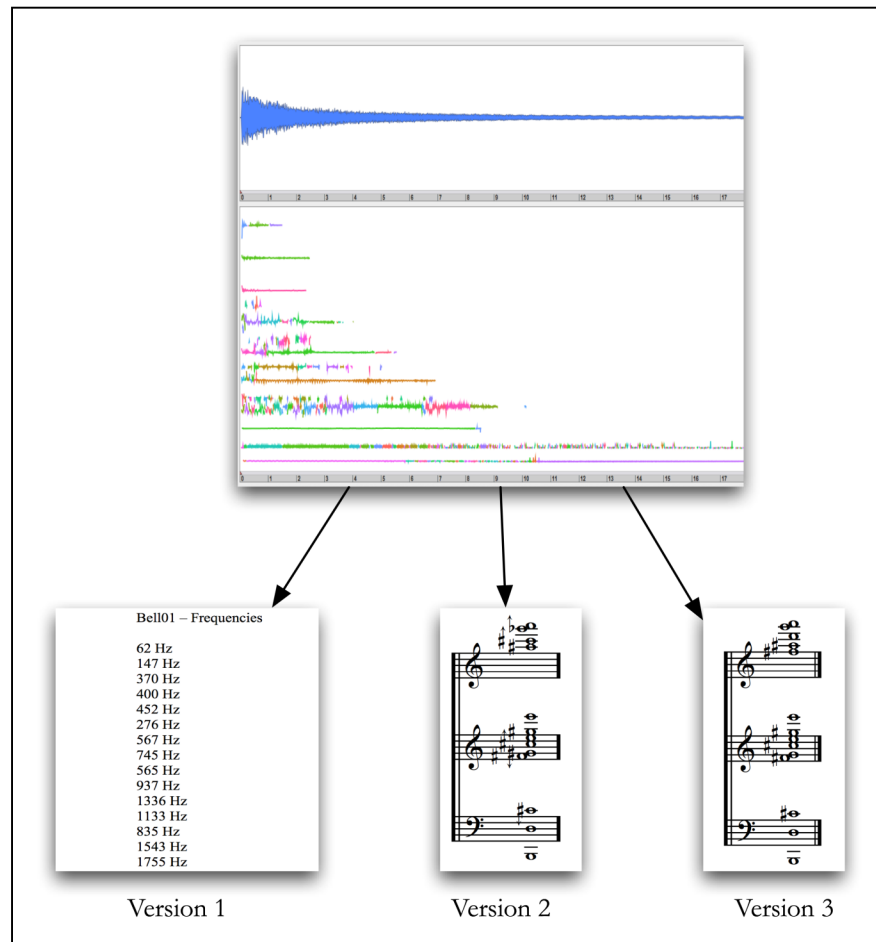


Figure 10: Analysis-resynthesis of Bell01

A further layer of harmonic variety was achieved by deconstructing each individual harmony based on its spectral volume and duration characteristics. In their raw form, the harmonies are quite dense, however, just as the partials of the bell slowly thin out over the course of time, the harmonies also have different

levels of density to choose from. Figure 11 shows the harmonic simplification of Bell01 – it slowly loses its upper partials until only the fundamental remains.

The figure illustrates the harmonic simplification of Bell01. On the left, the original Bell01 is shown in three staves (treble, alto, and bass clefs). Next to it is an approximation of Bell01, also in three staves, with an equals sign between them. To the right, a series of musical staves shows a trajectory of harmonic simplification, starting from a 'most dense' state at the top and moving downwards to a 'least dense' state at the bottom. A curved arrow labeled 'example of harmonic simplification as performed on Bell01' points from the 'most dense' state towards the 'least dense' state. The notation shows a progression from a complex, multi-note chord to a single note.

Figure 11: Harmonic simplification of Bell01 from most to least dense

4.2.3 – Danilov Bell harmonic trajectory

A macro rising harmony trajectory, from Bell01 to Bell17 is instantiated from the beginning of movement II and continues through the end movement V. Movement VI begins at the upper-most register, on imaginary Bell18. Over the course of the movement, the register slowly shifts downward, leading into the beginning of movement VII. As a form of variation that supports the narrative, a harmonic reduction is used in which the harmony transitions from dense and microtonal, to thin and diatonic, and finally monophonic over the course of the piece.

Prior to composing, I created a harmonic map (see Figures 12, 13, 14), outlining the macro harmonic motion that would take place from movements I to V. I used this as the basis for my harmonic writing. However, I composed with many micro harmonic changes and adjustments that veered away from the original harmonic structure, as I found them to better suit certain motivic choices. Movement VI is removed from the Danilov bell harmonic structure, and is rather modal in character. Movement VII is also removed from the harmonic structure, featuring chromatic writing that is based on a chord whose fundamental is E, with close minor second relationships to F.

Figure 12: Harmonic map for movements I through III

Figure 13: Harmonic map for movement IV

Figure 14: Harmonic map for movement V

4.3 – Motivic material as quotation

The basis of the motivic material for *Kashchei* comes from segments of Rimsky-Korsakov’s opera *Kashchei the Deathless* expanded with elements from Stravinsky’s ballet *The Firebird*. These materials are obscured and expanded using variation techniques in the harmonic, rhythmic, orchestral, and electronic domains.

4.3.1 – Rimsky-Korsakov’s *Kashchei the Deathless* – Tzarevna’s Theme

The core material of *Kashchei* pays homage to the motivic and harmonic construction of the character Kashchei from Rimsky-Korsakov’s opera *Kashchei the Deathless*. The main theme and unifying thread of my *Kashchei*, revealed in movement VI – *Egg*, is derived from a quotation of a simple melody sung by the Tzarevna in Rimsky-Korsakov’s opera:



Figure 15: Tzarevna’s theme from *Kashchei the Deathless*

In movement VI, the simplest exposure of the melody occurs from measure 257 to 264.

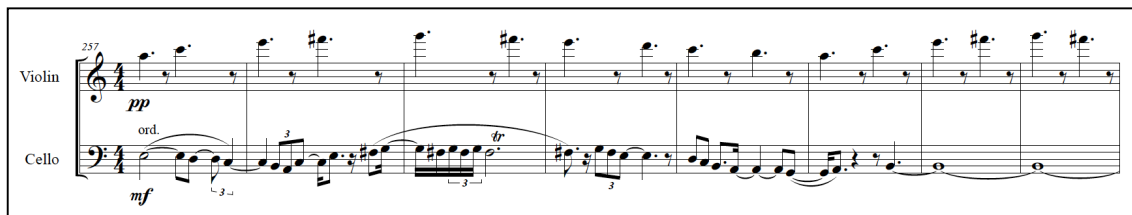
A musical score for two staves: Violin and Cello. The Violin staff is in treble clef, 4/4 time, starting at measure 257. It features a melody of eighth notes with a dynamic marking of *pp*. The Cello staff is in bass clef, 4/4 time, providing accompaniment with a dynamic marking of *mf*. The accompaniment includes triplets and a trill. The score ends at measure 264.

Figure 16: Movement VI – *Egg*, measures 257 - 264

From a narrative point of view, making this sweet and pining melody (originally sung by Kashchei’s captive) the focal point of Kashchei’s soul allowed me to show a softer, gentler side of the character. Within all the entangled layers of evil rests a man, who in his essence, simply wants to love.

The above melody is woven throughout the work. For example, the melodic line played by the winds in movement I are directly derived from it. Similarly, in movement III, the melody is hidden within the atmospheric texture that slowly floats around the piano chorale. The melody is directly played by the vibraphone (with xylophone mallets). The notes are then extended by the other instrumental players.

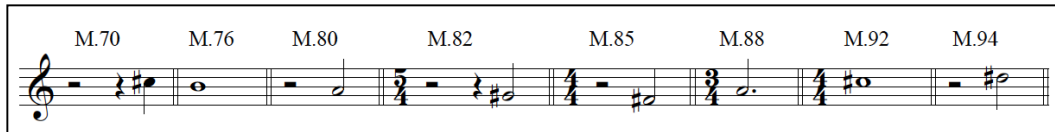


Figure 17: Tzarevna’s theme hidden in the vibraphone part (movement III, reduction)

The melody functions as basis for the harmonic progression present in movement IV.

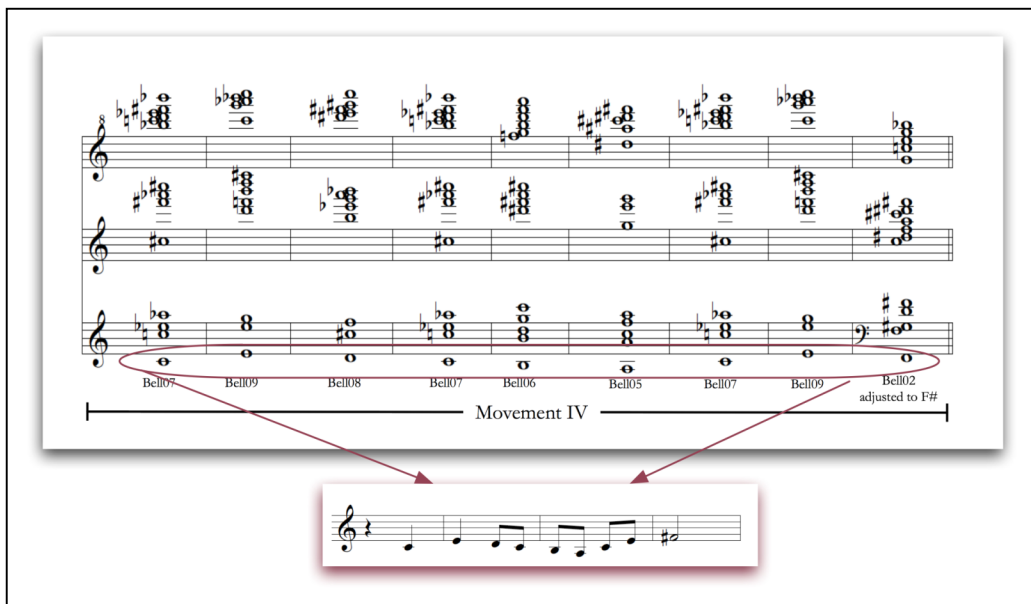


Figure 18: Tzarevna’s theme hidden harmonic contour of movement IV (reduction)

4.3.2 – Motivic quotations from Stravinsky and Rimsky-Korsakov

Other materials from Rimsky-Korsakov and Stravinsky also show up in my piece. Within his opera, Rimsky-Korsakov uses a *leitmotif* for Kashchei that

outlines major thirds, minor thirds, and tritones. These are then filled in with chromaticism. I took two examples of this, shown in Figure 18, to use within my own work.

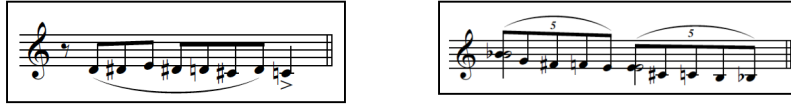


Figure 19: Kashchei leitmotifs used by Rimsky-Korsakov

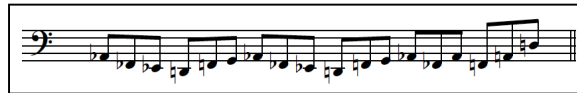


Figure 20: Quotation from Stravinsky's *The Firebird*

Similarly, I use some representative Kashchei material from Stravinsky's *The Firebird*. In fact, this quotation from the opening scene (Figure 20) shows emphasis placed on the minor third, major third, and tritone. Movement II – *The Iron Chest* uses these three motifs to create a dense texture.

Figure 20: Motivic ideas in an excerpt from movement II

5 – ELECTRONICS AS NARRATIVE

5.1 – Introduction

The electronic component of *Kashchei* consists of events containing pre-recorded soundfiles and live audio processing. Poetically, the electronics provide an otherworldly realm of enchantment and illusion that is naturally written into fairytales. The electronics function as an expansion of the instrumental ensemble, providing an immersive, microtonal environment that masks and expands the sounds of the acoustic instruments.

5.1.1 – Technical component

The electronic events (both soundfiles and real-time processing) are triggered in Max/MSP by an onstage performer with a MIDI keyboard. An additional technical assistant or sound engineer can be present to adjust levels, but is not necessary. The user interface is very simple and can be stored with presets that allows the onstage performer complete control.

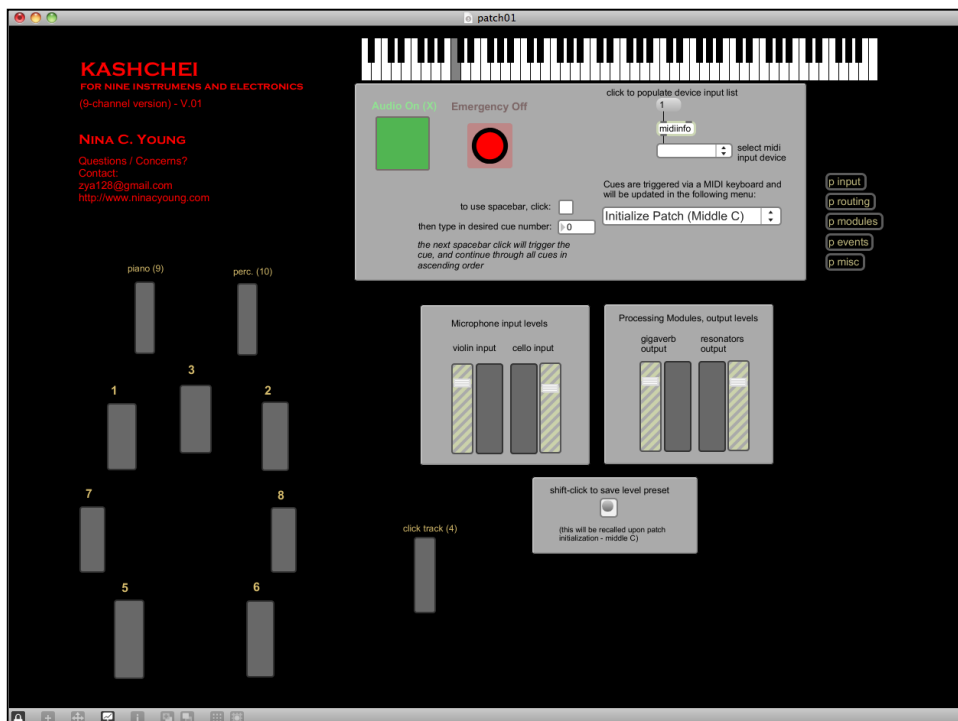


Figure 21: *Kashchei* user-interface – Max/MSP patch

The pieces is designed for playback through nine-speakers: a standard 7.1 surround set-up with two additional on-stage speakers situated within the ensemble. To achieve maximum flexibility, I have also designed a version for five-channel playback. The technical set-up diagram is shown in Figure 22 and the stage layout in Figure 23.

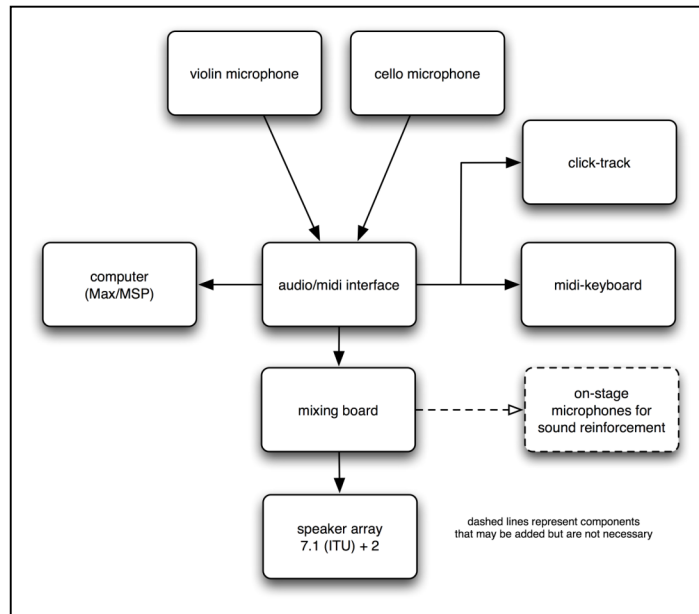


Figure 22: Technical set-up diagram

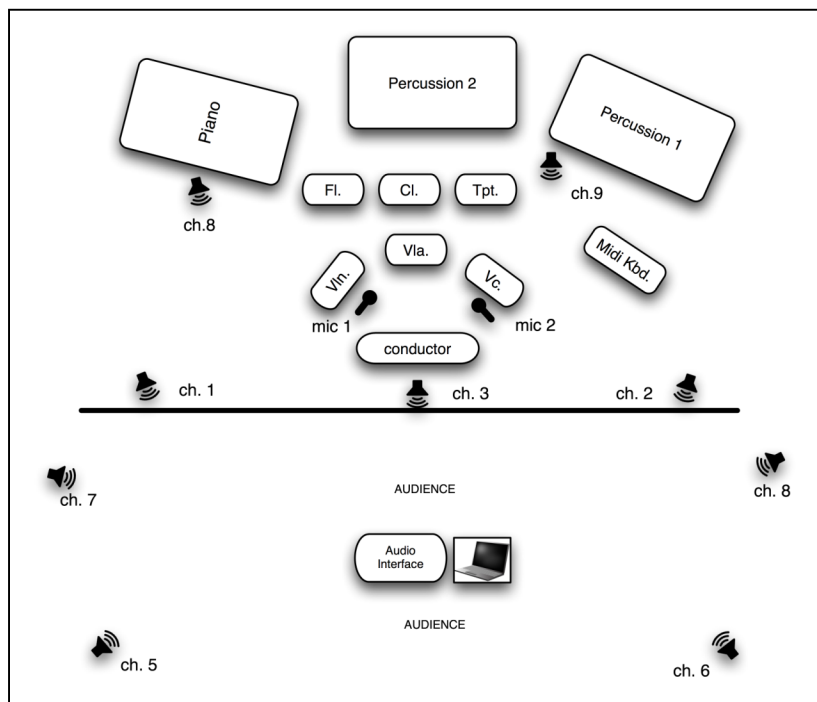


Figure 23: Stage set-up diagram

In preparing the electronic component of *Kashchei*, I chose to focus on triggered, pre-composed soundfiles and to keep live processing to a minimum. I made this decision in hopes of creating a simple, stream-lined set-up that eliminated as many technical risks as possible. Despite this decision, it is still possible to create the illusion of live-processing. For certain sections, I created simulations of the acoustic instruments and then ran those through processing modules in the studio. I recorded this material and used it as soundfiles. Movement IV is laden with examples of this method – the electronics consist of recordings of the flute and clarinet passages passed through filters and delay lines, then spatialized.

During the first rehearsals of the work I further reduced the live processing to only occur during movement VI, thus only two onstage microphones are now necessary in the final version. The instrumental writing of the piece is already so harmonically and texturally dense that more live processing proved superfluous.

5.2 – Spatialization as a method of delineating form

The narrative of *Kashchei*, particularly the concept of removing layers and transitioning from density to clarity over the course of the piece, played a large role in the spatialization of the electronics. The electronics are most prominent in volume, gestural activity, and spatial dispersion at the beginning of the piece. They slowly dissipate into the ensemble as each layer surrounding *Kashchei*'s soul is removed.

Movement I begins with electronics coming out of onstage speakers 8 and 9. During the course of the movement the electronic environment expands as the nine channels becomes saturated with electronic sound. Movement II features full saturation. During movement III the full nine-channel surround set-up is utilized, however, the listener can now localize distinct point sources that move through the speaker array. During Movement IV the rear speakers are silenced and speakers 6 and 7 grow less prominent. Movement V uses only the front three speakers and the two on-stage ones. The spatialization is further reduced

in movement VI where only the stereo speakers (channels 1 and 2) are heard and eventually fade away into silence.

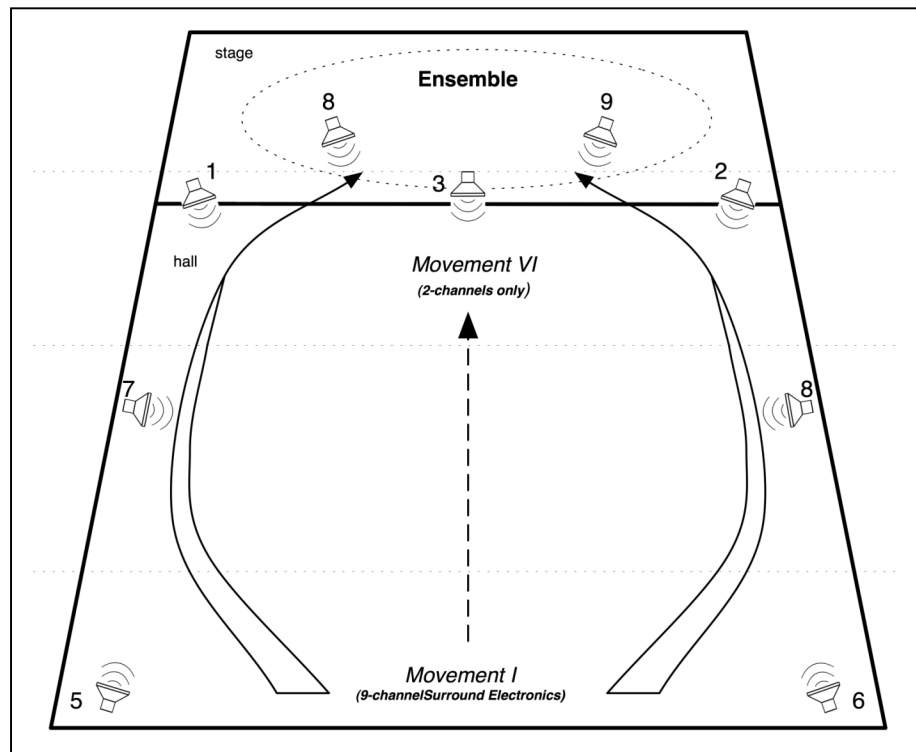


Figure 24: Spatialization as a method of defining form

After experiencing the premier of *Kashchei*, I must question whether this spatialization was perceivable to listeners. Despite working well in the studio, I think the effect is too subtle when placed against the natural reverberation characteristics of the ensemble in the hall. If this is the case, it does not bother me, as I do not think that the lack of spatialization perception detracts from the piece.

5.3 – Electronics as a method of expanding harmonic richness

As mentioned in Section 4.2.2, the electronics play an integral role in the harmonic structure of the piece. When working with instruments and electronics it is often difficult to find a way of blending the two together. By creating a harmonic language directly derived from recordings that are used in the electronics, an organic relationship is immediately established between the

instrumental and electronic sound worlds. In this way, I am able to orchestrate the instruments of the ensemble as timbres adding to the electronics, and at the same time the recorded sounds can function as additional instrumental performers.

5.3.1 – Expanding the piano and vibraphone

In addition to blending sounds together, I am also able to add to the harmonic richness of the ensemble with electronics by emphasizing microtones as the same time that instruments are playing in equal temperament. This is an idea that I first used in my piece *Kolokol* for two pianos and electronics.

When composing *Kashchei* I created seventeen virtual pianos and seventeen virtual vibraphones, each with a full range keyboard tuned to the harmonic characteristics of the seventeen Danilov bells. This was accomplished by converting the spectral data of each individual bell into scala tuning files. I placed these scala tuning files into the physical modeling program *Pianoteq*¹⁵ and created virtual instruments. I recorded different passages of my piece with these instruments, choosing the correct tuning depending on the harmonic needs of the section. When I desired an instrumental timbre that emphasized the clash between microtones and equal temperament in the harmony I created sound files that would be diffused through the two on-stage speakers. In essence, I had a method of creating different pianos and vibraphones within the fixed ensemble. One example of this process can be found in movement III. While the piano is playing the chorale, a virtual piano (tuned to the particular bell harmony being used) plays simultaneously, giving the piano a unique timbre for each of the four harmonic sections.

To further embellish the samples of these virtual instruments, I created processed electronics using the virtual instrument audio recordings as source material. I passed the desired recordings through processing units to create

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soundfiles I could later use for playback. An example of this can be found in the electronic component of movement IV. The transient of each event contains a detuned piano and vibraphone sample (speakers 8 and 9), but also contains filtered granular synthesis of the virtual instrumental sounds (this is the high-frequency, shimmering material).

5.3.2 – Speaker placement and spatialization as a method of suspending disbelief.

Despite *Kashchei* being for a nine-channel surround setup, the spatialization generally focuses on sounds from within the ensemble. This is achieved by utilizing the front three speakers of the 7.1 ITU setup as a source of direct sound and using the rear four speakers as means of portraying the reverberation characteristics.

More fundamental to this, however, is the use of speakers placed directly within the ensemble. I chose to create a nine-channel speaker system, that placed two speakers directly amongst the performers. These speakers were mostly responsible for diffusing the piano and vibraphone material discussed in Section 5.3.1. By doing so I was hoping to mask a listener’s ability to easily decipher the electronic from instrumental point sources. Poetically, I found this concept to coincide with the magic realism of the Russian lacquer art tradition discussed in Section 3.2.2. During a performance of *Kashchei*, the listener is immersed into a sonic fairytale where the line between reality (acoustic instruments) and fantasy (electronics) are blurred. Ideally I hope a listener would at times ask themselves, “was that an electronic or an instrumental sound?”

6 – OBSERVATIONS AND FURTHER DIRECTIONS

6.1 – Narrative as a method of composition

Most of my compositional ideas develop from some sort of internal narrative. I find this a useful means of developing form and inspiring the musical gestures of a piece. However, I often refrain from including the personal narratives in program notes for instrumental works as I somewhat fear repercussions from the battle of absolute verse program music. This composition is the first time I write a work directly inspired by a narrative and whose function is to create an auditory film that tells the listener a story.

Upon hearing the premier of the work and receiving some feedback, I find the depiction of the narrative in this composition to be very successful. However, I question whether or not the work is too cautious in carefully refraining from over telling the story. Are the program notes enough to guide the listener? What happens if the listener does not have time to read the narrative prior to being exposed to the work? I wonder if the work could benefit from having a secondary element built in to assist in telling the tale, for example, a narrator, visual or text imagery, dance, creative lighting, etc. Perhaps by doing so I could more directly state the narrative and allow the project to fully take on the role of narrative rather than just imply it.

I thoroughly enjoyed the working method that the narrative provided in *Kashchei*. Narrative is a method I plan to pursue in future compositions, but perhaps more directly by means of ballet/dance or opera.

6.2 – The concept of *reverse variations*

When I first decided to write *Kashchei*, I decided to use the concept of reverse variations to unveil the different layers of Kashchei's soul. However, when it came to composing the piece, I only loosely used this concept. My

compositional method relied on layering motivic material to create a particular texture and musical gesture for each movement rather than sticking to variation, in the stricter sense. While I think my choice for this work was a wise one, I would be interested in further pursuing this concept in a stricter manner, but perhaps in a work with more limited instrumentation.

6.3 – Unique speaker placement in works with electronics

In my view, the most unfulfilling element of mixed electro-acoustic performances occurs at the moment of sound diffusion. Composers are blessed with ever faster computers, advanced processing modules, and good performers enthusiastic about the genre. Nevertheless, despite working in facilities with excellent speakers, the concert hall experience is hardly similar to that of the studio, leaving performances too often falling short of listeners' expectations. A great deal of current spatialization research addresses this: the construction of speaker domes, new software, innovative recording techniques, etc. However, all of these solutions require arrays of speakers that recreate the sound characteristics of one space within a hall that already has its own unique properties. When live performers are added, their natural sound diffusion clashes with the characteristics established by the electronics. While there may be artistic occasions for such disparity, it need not be the default.

I am very interested in finding ways to deal with this issue. When working with mixed electro-acoustic music, I am trying to identify methods of speaker placement and electronic sound projection that mask the listener's ability to distinguish "real" (instrumental) sounds from electronic ones. I believe that by placing the point sources of electronic sounds directly within the performing ensemble (rather than speaker arrays throughout the hall), all sound will naturally diffuse through the space, creating a more realistic sound environment using the hall's inherent reverberation characteristics. This idea hopes to solve the aforementioned "hall within a hall" problem while helping to suspend the

audience's disbelief when listening to works that use both live performers and electronics.

Within *Kashchei* I attempted to reduce the “hall within a hall” effect by localizing most electronic sounds to the front (stage side) of the speaker array and by placing additional speakers within the ensemble. After witnessing the premier, I found the speakers within the ensemble to be particularly effective and would consider making an arch around the ensemble to accommodate the other seven channels in a more similar fashion. In future projects I plan to use more unique speaker configurations to better achieve an organically mixed acoustic and electronic sonic environment.

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NEED TO ADD: Grove entries, Australian PhD thesis on Russian bells....if I can find it in my apartment.....

and I have several parts in the text that require footnotes (those books are in Montreal, so I will have to wait until Saturday for that).