Orchestral Arranging Manual

For the Gamer Symphony Orchestra
At the University of Maryland

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Contents

Introduction

The Gamer Symphony Orchestra consists of the standard symphonic orchestra instrumentation, with the addition of electric guitars, saxophone section, piano, harp, drum set, and choir.

This manual aims to help Gamer Symphony Orchestra (GSO) arrangers by giving them the foundational and assistive information required to arrange orchestral music. In addition to providing arrangement techniques and information about orchestral instruments, the manual includes background discussion about the video game soundtrack as a musical genre in its own right. I assume that the reader already has a basic understanding of music theory, such as general knowledge of key signatures, time signatures, the musical staff, and melody. The idea is that interested members who only have expertise on their individual instrument can use this manual as a guide to write better parts for the other instruments in the orchestra. For example, I will explain the different clefs and their uses, but not how to read music in general.

There are a variety of music notation programs available on the market; some are free, and some require payment. **MuseScore** is the most popular free music notation software and has an extensive tutorial, as well as a thriving online community of music composers and arrangers. Some of the most popular paid options are **Sibelius** and **Finale.** Both of these programs offer more options than MuseScore and can make your music look more professional and polished overall. However, it's important to note that most arrangers can accomplish everything they need to with MuseScore.

How to Use this Manual

This manual is intended to be used both before and during the arranging process, as a source of background and supporting information about orchestral arranging of video game music. Thus, I encourage aspiring arrangers to read the manual before starting the arrangement process, to learn about the history and background of both video game music and orchestral arranging more broadly. Then, arrangers can refer back to this manual throughout their process to find helpful information about arranging techniques for specific instruments and situations. I also encourage students to submit their arrangements in progress to the GSO arranger's listserv for feedback and helpful advice throughout their process.

Submitting Your Arrangement

In order to **submit an arrangement** to the GSO music committee, the process is as follows:

1. **Contact** the Orchestra Manager (orchestra.manager@umd.gamersymphony.org) to get on the GSO arranger's listserv.
2. *(optional)* **Send** your arrangements in progress to the listserv for advice and tips from other arrangers and the music committee.

3.   **Attend** to the emails sent through the listserv to ensure you don't miss any important dates and deadlines.
4.   **Submit** your final arrangement by emailing a pdf file, mp3 file, and music notation software file of it to the Music Committee (gsomc.umd@gmail.com) before the final deadline (usually the start of the semester you want your arrangement performed).
5.   *(optional)* **Attend** the music selection process to make your case for your arrangement and discuss submissions with other arrangers and the music committee.

Video Game Music

According to Karen Collins in her book "Game Sound: An Introduction to the History, Theory, and Practice of Video Game Music and Sound Design," video game music represents a "radical revision of older theories and approaches toward sound in media" (1-2). Throughout her book she speaks about the depth that comes with the interactivity of video games, namely the property of audience agency in media. Audience agency refers to the fact that in a video game, the user has the power to affect the outcome. This concept of audience agency is **unique** to video games and demonstrates the fact that each player's experience of any given game will be different.

The role that music plays in video games can vary dramatically depending on player actions and the genre of game in question. For example, Ubisoft's *Assassin's Creed* franchise frequently employs cinematic sequences that treat music very similarly to traditional film formats. Yet games without heavy use of cutscenes lack this comparison and implement music in very diverse ways. In some games, like Nintendo's *The Legend of Zelda* series, the music provides clear mood shifts to denote geographic changes, while in others like Giant Squid Studio's *Abzu*, the music acts as a centerpiece of the player's experience throughout the entire game. Relatedly, recent innovations in the industry like Ninja Theory's *Hellblade: Senua's Sacrifice* use the musical soundtrack and voice acting as a central plot device to convey the protagonist's thoughts, emotions, and inner conflict. Some games like Toby Fox's *Undertale* take this idea even further: the team developed the soundtrack so that the music changes depending on the player's actions and choices throughout the main story (Collins, 1-6).

The music that accompanies video games has changed tremendously as an **art form** since its earliest days in the 1980s. As technology has changed, so has the music that accompanies it. It is important to note that this relationship between technology and music is one of mutual influence, not one-sided dominance. Long-standing video game franchises such as Pokémon, Mario, and the Legend of Zelda provide plenty of examples of this transition in instrumentation. Even as these series have evolved from simple chiptune beats to sweeping orchestral scores, many of the iconic melodies and themes have remained the same. The main themes of these

franchises have proven them to be mainstays of the global zeitgeist - as much as any of their film industry counterparts like *Star Wars*.

Music Theory

The most commonly used clefs in modern western music are the:

- **Bass clef**
  - For bass clef notation, remember that the dots frame the note F, which is why the bass clef is also sometimes referred to as the F clef

- **Treble clef**
  - For treble clef notation, remember that the curl of the clef frames the note G, which is why the treble clef is also sometimes referred to as the G clef
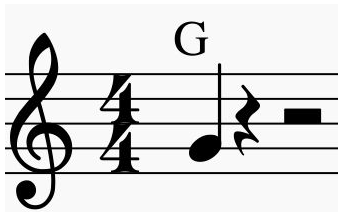

- **Alto clef**
  - For alto clef notation, remember that the center of the design frames the note C
  - The range of the alto clef falls between those of the treble and bass clefs, and the C pictured here, also called middle C or C4, is directly between the two

- **Tenor Clef**
  - The tenor clef follows similar notation rules as the alto clef, just displaced upwards one whole step
  - The tenor clef is only used in cases where a bass clef instrument is going very high in its range for an extended period of time (fairly rare practice)

- This technique is most commonly used with cello, bassoon, or trombone
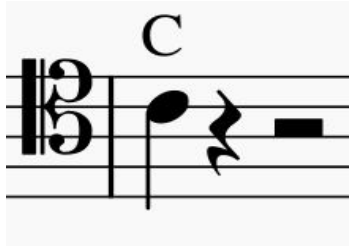
Concert Pitch

Many instruments, including all the strings, flutes, oboes, piano, and more, play in "concert pitch." When one plays a note on these instruments, the sound one hears will be identical to the pitch notated on the sheet music. This may seem intuitive, but it is not the case for instruments made in other keys. For example, the B♭ clarinet plays in the key of B♭, meaning that any note it plays on the staff will sound one whole step lower (because B♭ is one whole step below C). Therefore, if we want a flute and a B♭ clarinet to play the note "C" in unison, we will have to write a C in the flute part and a D in the clarinet part. Throughout the instrumental sections of this manual, I refer to individual instrument ranges in the key they play in (how they will appear in the individual player's part in the final product), not in concert pitch.

Luckily, almost all modern music notation software, including **MuseScore** (which is free) and Sibelius, have an option to automatically **transpose all the parts for you**, allowing you to see everything in concert pitch throughout the arrangement process. Just remember to change it back before you print out the parts! Regardless, here are the instruments that do not play in concert pitch, along with the key they do play in:

Clarinet	B♭	Bass Clarinet	B♭
English Horn	F	Bass Trombone	B♭
Alto Saxophone	E♭	Tenor Saxophone	B♭
Baritone Saxophone	E♭	French Horn	F
Trumpet	B♭		

Guitar Tabs vs. Musical Staff

Tablature is a style of music notation used by guitar players which shows the actual fingerings required, not the objective pitches and rhythms. Many guitar players do not use typical musical staff notation, instead relying completely on tablature. For this reason, it may be useful for arrangers to provide tablature for the electric guitar section in addition to the musical staff notation. Most all modern music notation software, including the free program MuseScore, offers tablature. If you are an arranger who is a guitar and does not know how to read and/or write musical staff notation, the truth of the matter is that you will need to learn to do so (or

co-arrange with somebody who already does) in order to arrange your own piece for the orchestra.

Orchestral Arranging

Texture

In music, the term **texture** is typically used to refer to the density, range, and rhythmic complexity of a given piece of music. **Density** refers to the amount of different people playing at any given time, and **range** refers to the distance between the lowest and highest pitches in the piece. When all the instruments are playing the same rhythm, it is called **homophonic** texture. When many different rhythms are happening, it is called **polyphonic** texture (for example, a Bach fugue).

For example, a music with a **thick** texture might have the entire orchestra playing different notes at the same time. In contrast, an example of **thin** textured music would be only the violins playing close in range to each other and in the same rhythm.

Changing the texture is a **very important tool** that composers and arrangers use to make their music varied and interesting to listen to. Beginning a piece with only one section, for example, is a great way to convey a specific mood and set the stage for your piece before adding other instruments in. Or, you can go the opposite route: surprise the audience in the middle of the piece by cutting it down to only one section. Relatedly, if a particular melody or phrase is repeated often in your piece, a perfect way to maintain interest is by passing it around to different sections.

Dynamic Range

Dynamic range simply refers to the changes in volume that occur throughout a piece – specifically, how soft and how loud a piece gets throughout its time. **Varying the dynamic range** is another crucial part of writing engaging orchestral music, and often goes hand in hand with changing the texture. For example, creating a thin texture by having only a few sections playing creates a soft dynamic level; and as more instruments come in, the texture changes and the dynamic level naturally grows without having to specifically mark it in. Alternatively, arrangers can change the texture and keep the dynamic level the same, or vice versa.

Balance

In an orchestral setting, it's crucial to make sure that **every important part can be heard** by the audience. This is what is meant by **balance:** the dynamic level of each section and how they all blend together to form the ensemble. The first pillar of good balance is making sure that the melody can be easily heard by the audience. This can be achieved through two ways: **dynamics** or **orchestration.** For example, if the violins have the melody, we can make sure they are heard by having everyone else play very quietly **or** by having less pesevople playing in the first place. This problem can also happen in reverse: if not enough people are playing the bass line or harmony, the orchestra will sound too simple and plain, and there will not be enough added interest.

Voice Leading

One very important thing to avoid when it comes to arranging harmonies is **voice crossings.** An accepted convention in music is the idea that different parts in music (e.g. melody, harmony, bass, etc.) should remain distinct in range. For example, if the melody part begins the piece at a higher pitch than the harmony, it should remain so throughout that phrase or musical idea. If the two voices cross, and the melody goes lower in pitch than the harmony, it can create a muddled, confused sound quality to the listener.

General Style and Formatting Guidelines

Just as with writing an essay, there are guidelines for formatting and style that apply to arranging music as well. Generally speaking, one can let the music notation software automatically decide spacing for things like crescendos, articulation markings, and tempo markings.

However, there are still a few important things to note when formatting your music. One is notation of soloistic passages. If you have a solo in your music, be sure to note it by **writing "solo"** above the part – and don't forget to **write "tutti"** after the solo is over so that the rest of the section knows when to come back in. This will also make solos clear to the conductors, so they know who to pay special attention to during rehearsals.

Another important component of music formatting is **rehearsal letters** (or numbers). By marking the different sections of your piece with rehearsal letters, you will make rehearsal much smoother for all the orchestra members and the conductors.

Suggested Examples for Study

- *Prélude* from *Le Tombeau de Couperin,* by Maurice Ravel (https://www.youtube.com/watch?v=Wkt8T38aaMw)
    - o This piece begins with just oboe and strings, and expertly uses the other woodwinds and strings to build stunning and dramatic swells, before ending with only woodwinds.

- o This is also a great example because it was originally written by Ravel for solo piano, and he later re-arranged it for orchestra. Comparing the two teaches one a lot about arranging.
- *The Moldau* from *Ma Vlast (My Country)* by Bedrich Smetana (https://www.youtube.com/watch?v=3G4NKzmfC-Q)
  - o Beginning with only pizzicato strings and flute, this piece creates an incredibly compelling, beautiful, and mysterious opening before slowly trickling in clarinets, other woodwinds, and then the rest of the orchestra.
- *Fountain of Dreams,* arranged by Tadashi Ikegami for Super Smash Brothers Melee (https://www.youtube.com/watch?v=pz3BQFXjEOI&t=)
  - o Although this piece features only a few different melodies with simple harmonies, it is so compelling because it frenetically passes around the main melody, switching between strings, woodwinds, brass, and percussion.
- *Main Theme* from *The Legend of Zelda: The Breath of the Wild* by Manaka Kataoka (https://www.youtube.com/watch?v=WdGJBRxuIlc)
  - o This piece expertly uses solo piano, clarinet, flute, accordion, and even erhu to vary the texture and color of the melody as it is passed around the orchestra. It also varies the number of instruments playing to complement the dramatic dynamic swells that happen throughout the piece.

Strings

Introduction

Generally speaking, string instruments blend well with each other, are very well equipped to handle both technical and melodic passages, and can sustain notes easily, thus establishing their essential role as the foundation of the symphony orchestra. The strings are so good at blending sound quality because they all have essentially the same mechanism of sound production: plucking or bowing a string, changing pitches through use of a fingerboard. String instruments also possess an equality of tone across their range that can be difficult for wind instruments to achieve.

Many techniques and performance directions are unique to string instruments:

- *Pizzicato:* plucking the string
- *Arco:* bowing the string
- *Flautando:* playing close to the fingerboard, creating a dull, veiled tone
- *Sul ponticello:* playing close to the bridge, creating a slightly metallic tone quality
- *Con legno:* playing with the back of the bow, creating a hollow, eerie sound quality

- o A good example of *con legno* playing can be found in the violin 1 part of movement 5 of *Symphonie Fantastique* by Hector Berlioz
- **Tremolo:** a very commonly used effect in orchestral literature, this technique literally translates from Italian as "trembling" and refers to the rapid repetition of a note or notes
  - o A tremolo is a great way to build energy, tension, or suspense through the string section

Violin
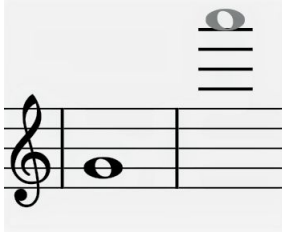
- The range of the violin goes roughly from G4 to A6, pictured to the left:
- the violins are typically split into two parts: violin 1 and 2
  - o Violin 1 very often plays the melody and/or ornamental and technically challenging sections
  - o Violin 2 usually plays a more supportive role and may double the viola

Viola
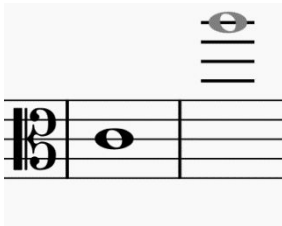
- The range of the viola goes roughly from C4 to A5, pictured to the left:
- The viola typically plays a supportive role in the orchestra, and often doubles either violin 2 or cello
- Viola also commonly plays unique countermelody or bass lines

Cello
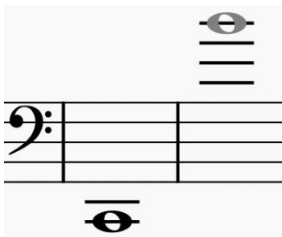
- The range of the cello goes roughly from C2 to B4, pictured to the left:
- The cello has a beautiful, rich tone which is ideal for both melodic and supportive lines
- The cello typically plays the bass line but occasionally can have shining moments

Contrabass (String Bass)
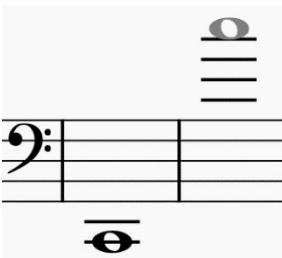
- The range of the contrabass goes from C1 to C4, shown on the left:
- It is important to note that the contrabass plays one octave below what is typically notated on the bass clef
  - o In this case, the pictured notes are C2 and C5, but the sound that the contrabass produces would be C1 and C4

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- The contrabass typically doubles the cellos, bassoons, or other bass clef instrument; contrabass is also ideal to provide a pedal tone

Introduction: Wind Instruments

The group of wind instruments includes the woodwinds and brass. The qualifying feature of a wind instrument is simply the fact that the player uses their own breath to create sound. One necessary consideration when writing music for any wind instrument is that long, sustained passages can be difficult due the players' need to breathe. Thus, if such an effect is desired, one should be sure to double among parts or instruments to ensure the players can stagger-breathe.

Some techniques unique to winds include:

- ***Slur:*** playing different notes in succession with a continuous airstream, without rearticulating with the mouthpiece (on the staff this is notated like a phrasing line above the notes); this effect completely eliminates space between notes
    - o This is often necessary when performing technical passages at very fast tempos
    - o The opposite of slurring is ***tonguing:*** individually articulating each note
        - · Tonguing is the standard articulation wind players will perform when there is nothing specified
- ***Stagger-breathing*** is a technique used by wind players trading off playing one sustained note so that the sound is uninterrupted.
- ***Flutter tongue:*** the technique of "rolling the r" while playing a wind instrument
    - o This creates a very particular, almost sinister effect
    - o Note: only performable on brass instruments and the flute
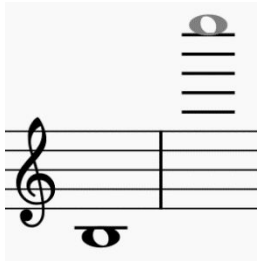
Woodwinds

Introduction

One of the greatest strengths of the woodwinds is surely their uniqueness and variety of tone. Each woodwind instrument produces a tone so different from its siblings that it is almost striking. Because of this, woodwinds are the perfect section to provide **variety of sound and**

color; a good composer or arranger strategically uses specific instruments for their unique tone quality. Another strength of the woodwinds is their superior ability, relative to the brass, to play fast, technical sections. Typically, one individual woodwind section is **not loud enough** to be able to hold the melody against the rest of the orchestra. For example, if an arranger wants just the oboes to have the melody, they should have relatively few other instruments playing.

One can divide the woodwinds into **three major groups**: those of nasal tone and dark resonance (oboe and bassoon), those of "chest-voice-quality" tone and brighter resonance (flute and clarinet), and the saxophone family, which falls somewhat between these two groups due to its unique conical, metal construction and single-reed mouthpiece. It is important to mention that wind instruments are typically divided into **two or more parts per instrument**.

Additionally, almost every woodwind instrument has one or more variants that can be strategically employed to provide unique color. There are actually many other variants of the standard B♭ clarinet, such as E♭ clarinet and A clarinet, but they are not included in this manual due to their rarity of use. Another instrument not listed in this manual is the contrabassoon, simply because it has not been used in the GSO thus far and most likely will not be used in the future due to its rarity and difficulty of acquisition.

Flute

- The range of the flute goes from B3 to C7, as pictured to the left:
- The flute is the only woodwind capable of double tonguing, which allows it to play articulated passages faster
- The flute is ideal for melodic lines as well as light-hearted ornamental passages, and often doubles with the oboe or clarinet
- In the **low register**, the flute is exceedingly quiet and has a rounder, darker tone quality, while in the **mid register** it is better able to project and blend; in the **upper register**, it has a brilliant, sparkling quality and projects very easily
- The flute blend well with oboes or clarinets and often doubles various string instruments to lend its refreshing and light tone quality.

Piccolo
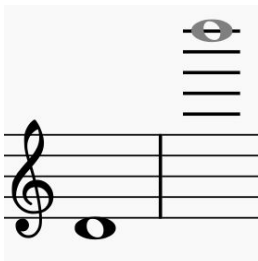
- The range of the piccolo goes from D4 to B6, as pictured to the left:
- The piccolo sounds one octave above what is written on the treble staff
  · For example, the notes written on the left are D4 and B6 but the sounds that the piccolo produces will be D5 and B7
- The piccolo has a bright, whistling, piercing tone quality that is perfect for ornamental purposes, but is less suited to more moderate melodic lines

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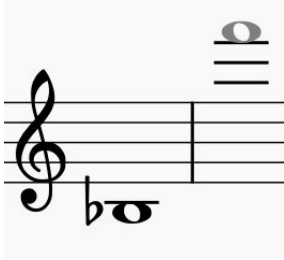
Oboe

- The range of the oboe goes from B♭3 to F6, as pictured to the left:
- The oboe has a thick, haunting tone quality in the **low register**, but can be honky and is very difficult to keep quiet
- In the **middle register**, the tone is warmer and more controlled
- The oboe is at its most piercing and bright in its **high register**, and also tends to have a drier, more thin tone quality
- The oboe is ideal for both melodic and supporting lines and often doubles the flute; it also plays with other woodwinds, violins, and trumpets: the nasal quality of the oboe tone blends well with the brassy, projecting quality of the trumpet

English Horn
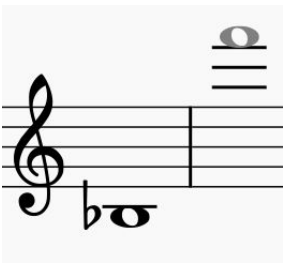
- The English horn's range goes from B♭3 to F6 (as written in the English horn part – the English horn plays in F, not concert pitch)
- The English horn is in the oboe family
- The English horn has a much softer, warmer tone quality than the oboe and is commonly used for supporting or soloistic lines
- In the **low register** it is more nasal and penetrating, and in the **mid-high** register it takes on a more dreamy, light, and sweet tonality

B♭ Clarinet
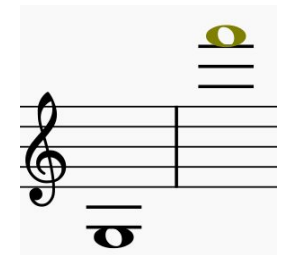
- The range of the clarinet goes from G3 to F6 (as written in the clarinet part – the clarinet plays in B♭, not concert pitch) `
- Due to its construction, clarinets are less suited to sudden large-interval jumps than other woodwind instruments
- Clarinets are exceedingly skilled at playing at very quiet dynamics
- The clarinet is a very versatile instrument, sounding rich and round in the **low register**, smooth and velvety in the **middle register**, and piercing and thin in the **high register**

Bass Clarinet
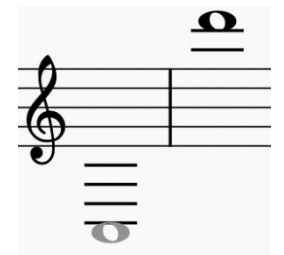
- The range of the bass clarinet goes from C3 to D5 (as written in the bass clarinet part – the bass clarinet plays in B♭ and an octave down from the clarinet – not in concert pitch)

- Bass clarinets typically play a bass line, often supporting the clarinets, supporting the whole woodwind section, or doubling with low brass or low strings
- They have a rounder, thicker tone than the standard clarinet

Bassoon

- The range of the bassoon goes from B♭1 to A4, pictured to the left:
- The bassoon can have a playful tone quality in fast-paced passages; but it can also convey a deep sorrow in more melodic, soloistic sections
- The bassoon's tone is round and warm in the **low register,** and thinner and more mysterious in the **high register**
- The bassoon typically plays the bass line or supporting roles, often doubling with cellos or contrabasses and when it has the melody it is usually soloistic
- The bassoon often plays with the oboe, flute, or other woodwinds.

Notes on the saxophone family

- Generally speaking, the alto saxophone is often used for soloistic and/or more melodic passages, while the rest of the saxophone section plays a more supporting role in the orchestra, often playing countermelodies and bass lines
- The saxophone family all has the same range as it is written in their part (B♭3 to F6); however, they play in different keys, which provides the difference in register and timbre
- The soprano saxophone is not included in this manual, due to its rarity
  - At any rate it has a silky-smooth tone which blends well with both woodwinds and brass, especially English horn
- The whole saxophone family observes similar rules surrounding range and tone quality, outlined here:
  - The **low register** has a round tone, but can be honky and hard to play softly
  - The **mid register** is darker in tone and more stable and controllable
  - In the **high register** the tone becomes brighter, thinner, and more piercing

Alto Saxophone
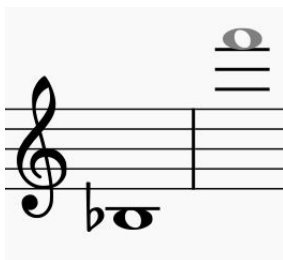
- The range of the alto saxophone goes roughly from B♭3 to F6, pictured to the left (as written in the alto sax part; it plays in E♭, not concert pitch)
- It is good for melodies, supporting lines, and countermelodies, and is the highest pitched of the commonly used saxophones

Tenor Saxophone

- The range of the tenor saxophone goes roughly from B♭3 to F6 (as written in the tenor sax part – the tenor sax plays in B♭, not concert pitch)
- It plays a similar role in the orchestra as trombone and cello, mostly playing supporting parts
- It has a smoother, less piercing tone than the alto saxophone, but otherwise behaves similarly to the alto saxophone throughout its range

Baritone Saxophone

- The range of the tenor saxophone goes roughly from B♭3 to F6 (as written in the tenor sax part – the tenor sax plays in E♭ and down an octave from the alto, not concert pitch)
- It is the lowest pitch saxophone that is commonly used, thus it plays mostly supporting and bass parts
- Its high register is harder to achieve and somewhat rarely used

Brass

The group of brass instruments is without doubt more uniform than that of the woodwinds. Like the strings, the brass instruments all have essentially the same mechanism of sound production; they all are made out of metal and produce sound by buzzing on a metal mouthpiece. As a general rule, brass instruments are the best in the orchestra at **projecting** and **cutting through the ensemble** to make their voices heard. As such, they are particularly skilled at performing fanfares and chorales, and they are very effective at adding heightened power to an orchestra. This can give the orchestra an exciting kick that is often needed when a bombastic, heroic conclusion is desired.

French Horn

- The range of the French horn goes from C2 to C6 (as written in the French horn part – the instrument plays in F, not concert pitch)
- Traditionally known as a hunting horn, the French horn is perfect for brave, soaring melodies as well as more tender, emotive passages
- Due to its somewhat softer tone quality it is worse at projecting through the orchestra than other brass instruments like the trumpet
- It blends beautifully with the trombone and euphonium

B♭ Trumpet

- The range of the trumpet goes from F#3 to E6 (as written in the trumpet part – it actually plays in B♭, not in concert pitch)
- The trumpet has a proud, triumphant tone **when forte** and a powerful ability to project over the orchestra -this makes it a great melody and solo instrument; its tone can also be tense and troubled **when at piano** dynamics
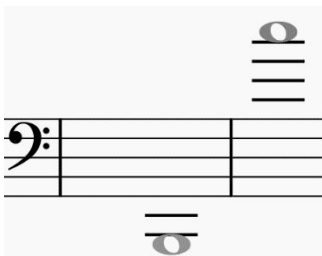
Trombone
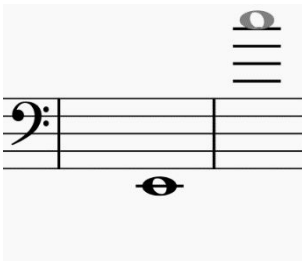
- The tone of the trombone can be equally dark and threatening as it can be brilliant and brave; they are well suited for both noble, heroic themes and jazzy melodies
- The standard trombone is the tenor voice of the brass section
- In the **low register** it has a wider tone and is hard to play softly
- In the **mid register** its tone is more melodic, round, and controllable
- In the **high register** its tone is thinner, and it is also hard to play softly
- Trombones are known for their ability to perform *glissandos* – "sliding" from one note to the next; these should be considered for their playability on a case-by-case basis
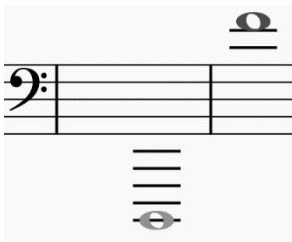
Bass Trombone

- Near-identical in construction and sound mechanism as a standard trombone, the bass trombone has the same upper limit to its range but can extend down to B1
- The Bass Trombone part can also be played by a standard trombone, which is what has historically happened in the GSO
- It has a somewhat darker, heavier tone than the standard trombone

Euphonium
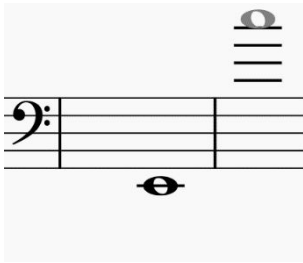
- The euphonium has the same range as the trombone
- The euphonium has a warm, velvety tone
- It can be used like a more melodic trombone; its softer tone quality makes it better suited to melody lines
- Its tone blends very well with other brass instruments, especially the French horn

Tuba

- The range of the tuba goes from D1 to D4 as pictured to the left:
- The tuba has a deep, dark, rich tone and typically plays the bass line in the brass section, or doubles the trombones or euphoniums
- It also commonly doubles the contrabass (provided the part is less technical)

Percussion

Mallet Instruments

- The most popular mallet percussion instruments are the:
  - **Glockenspiel**, with steel bars and hard mallets that create a brilliant and penetrating tone
  - **Vibraphone**, with metal bars and soft mallets that create a mysterious, almost sci-fi-like tone quality
  - **Xylophone**, with wooden bars and hard mallets that create a powerful and piercing sound
  - **Marimba**, with wooden bars and soft mallets that create a tropical-sounding and friendly tone
- These are the best suited percussion instruments for melodic lines, and of course are great for providing rhythmic interest and playing supplemental roles as well

Timpani

- The timpani are iconic orchestral instruments and the most common drums typically found in orchestral settings
- They are ideal to build drama, awe, and grandiosity, particularly in the ending sections of a piece of music
- There are four drums, played with two mallets, that can be tuned to various notes as needed by the percussionist

- The range of the timpani runs roughly along the bass clef staff

Drum Set

- The drum set is a part of what makes the GSO special, because it – along with the electric guitars – is one of the instruments unique to our ensemble (especially when compared to typical symphonic orchestras)
- Perfect for more pop-rock oriented arrangements, this instrument is often used in video game music but rarely used in orchestral settings (until the GSO came along that is)
- It provides great rhythmic interest and can easily project over the orchestra

Ancillary Percussion

The category of ancillary percussion instruments is exceedingly long, and mainly exist to provide ornamental, situational, and rhythmic interest – not comprehensive melodic or harmonic lines. As such I will not attempt to list all of them here. Instead, some of the most common ones are as follows:

- **Triangle** – creates a very bright and piercing bell tone
- **Castanets** – clicking, wooden instruments used in a variety of cultures to provide rhythmic interest
- **Tambourine** – a hand drum with small metal jingles
- **Snare drum** – traditionally used in military settings and great for rhythmic intensity and interest
- **Bass drum** – has a very deep, low-pitched, almost thunderous tone
- **Bells** – a large set of bells, struck with a hammer, which creates a celestial tone

Other Instruments

These three instrument families have grouped together due to their uniqueness, both in terms of their role in the orchestra and their sound production. These instruments all have strings but make sound with them in relatively novel ways: the electric guitar uses an amp, the piano whacks the strings with a hammer, and the harp can only pluck its strings and can't bow them.

Generally speaking, these instruments are great for soloistic lines because of the color and mood they bring to the orchestra's sound. When not being featured, they play much more supporting roles in the orchestra. That is to say they quite rarely play the melody while doubling with another section – they often play supporting lines, and if they do have the melody, it's typically a solo or feature.

Electric Guitar

- The electric guitar is one of the instruments unique to the GSO, relative to what is typical of a symphonic orchestra
- The GSO has both standard electric guitars, bass guitars, and acoustic electric guitars (that is, an acoustic guitar that can be amplified)
- The main difference between electric and acoustic electric is of course tone
- Between electric and electric bass, the former typically plays more melodic lines and the latter is most often relegated to backing and/or rhythmic parts
- For information about guitar tablature and its role as opposed to traditional musical staff notation, check the "Music Theory Basics" section of the manual

Piano

- The piano has an exceedingly large range, extending approximately an octave beneath the bass clef staff and roughly two octaves above the treble clef staff
- Piano is usually used as a soloistic, featured instrument or to provide some of its unique color and tone
  - Commonly used playing the melody over the strings or in conjunction with winds or brass
  - It provides an interesting blend of tone quality with the other instruments of the orchestra
- The piano is ideal for both melodic and technical sections

Harp

- Similar to the piano, the harp has an impressively large range, extending roughly an octave below the bass clef staff and roughly an octave above the treble clef staff
- Harp typically plays more harmonic, supporting roles in the orchestra, except for very soloistic sections, which are somewhat rare
- In general, there is only one harp part, but occasionally there can be two or even three
- It is difficult for the harp to project well through the orchestra, and thus should be treated delicately, and if the arranger wants the harp to feature, they should write it as a solo and have relatively little other instruments playing
- It has a beautiful, tender tone quality that conveys a very ethereal feeling

Choir

The choir is typically divided into Soprano, Alto, Tenor, and Bass voice parts (which can also each be divided into two parts), going in that order from highest-pitch to lowest-pitch. Soprano and Alto sing in treble clef, and Tenor and Bass sing in bass clef. The two next-most common parts are mezzo-soprano (between soprano and alto) and baritone (between tenor and bass). Each singer will have individual variations in tone, register, and performance; but when the choir is operating as a whole, it is generally consistent and flexible.

Below is table F on page 135 from Nikolai Rimsky-Korsakov's manual *Principles of Orchestration*, which shows the **typical range** of each vocal part (with Alto written as Contralto
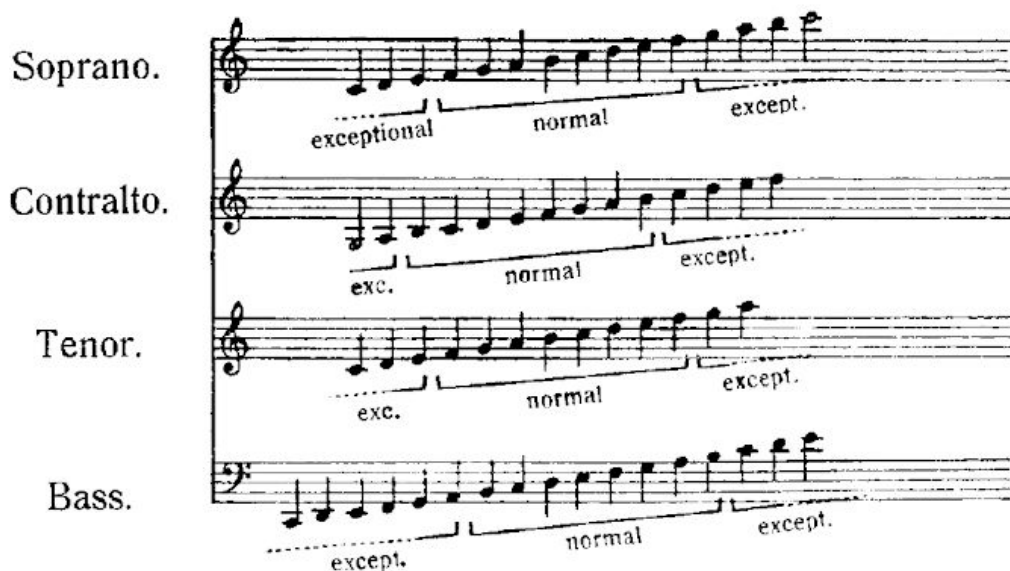
here):

  The remarks for the wind instruments about breathing apply with at least equal force for the choir, and doubly so for any vocal soloists; so, the arranger should be sure to include sufficient breath marks, rests, and/or pauses. When more technical, fast-paced passages are desired, it's important to note that arpeggios and diatonic (scaled-based) runs are the most doable for the choir. In contrast, chromatic movement and large interval jumps can be quite difficult to perform.

  When singing in unison, the sopranos blend well with the altos, and the tenor with the basses. However, the sopranos and tenors often sing in octaves – this is true for the altos and basses as well. The sopranos and tenors most commonly sing the melody, but it is true that any

of the four parts can execute a melody line well. In any case the soprano and alto most often form harmonies with each other; the same can be said for the tenors and basses.

The choir as a unit is very well suited to be both featured in its own right and play a supplemental role for the orchestra. That said, its balance with the orchestra must be determined on a case-by-case basis, since they are so flexible and variable as a musical group.

Suggested Further Readings

- *Principles of Orchestration,* by Nikolai Rimsky-Korskaov, famous 19th century composer
    - This in-depth guide to orchestration is a lengthy and fairly dense text but is nonetheless very useful to those interested in arranging, and is available on imslp.org

- *Arranging by Examples: The Practical Guide to Jazz and Pop Orchestra* by Frans Absil, professor at the Royal Conservatory in the Netherlands
    - This guide features arranging techniques unique to popular and jazz music in an orchestral setting, and is available on his website at fransabsil.nl
- *Music in the Western World* by Piero Weiss and Richard Taruskin
    - This informational book discusses the history and methodology of music, including information about notation methods such as tablature and musical staff notation.
- *Game Sound* by Karen Collins, professor at the University of Waterloo
    - This book discusses video game music critically as an art form and its differences from genres like film music and traditional orchestral music.
- *The Cambridge Guide to Orchestration* by Ertugrul Sevsay
    - This book discusses orchestration, arranging techniques, and instrumentation at length; it also includes exercises such as reduced scores to be re-orchestrated

References

Absil, Frans. *Arranging by Examples: The Practical Guide to Jazz and Pop Orchestra Arranging.* F.G.J. Absil, The Netherlands, 2016.
The book primarily discusses arranging techniques for orchestra, and also has sections on pop music form and general orchestral instrumentation.

Benward, Bruce and Saker, Marilyn Nadine. *Music: In Theory and Practice.* McGraw-Hill, 2003.
This informational text discusses various aspects of orchestral music and concepts central to arranging music.

Collins, Karen. *Game Sound.* The MIT Press, 2008.
This book discusses the history of video games music and sound design, and critically analyzes it as an art form.

Harley, Samuel (Co-conductor of the Gamer Symphony Orchestra). Personal Interview. April 28, 2019.
This interview provided valuable information about the brass section of the orchestra.

Herman, Cassondra (Flute Section Leader of the Gamer Symphony Orchestra). Personal Interview. April 10, 2019.
This interview provided information about the woodwind section, particularly the flutes, and their specific tendencies and roles in the orchestra.

Rimsky-Korsakov, Nikolai. *Principles of Orchestration.* CreateSpace Independent Publishing Platform, 2013.
This lengthy manual by the famous composer provided a lot of useful information about the different instrumental sections that make up an orchestra and their roles.

Sevsay, Ertugrul. *The Cambridge Guide to Orchestration.* Cambridge University Press, 2013.
This text overviews orchestration in music and describes the different instrumental sections' roles in-depth; I found it particularly useful for the harp section.

Weiss, Piero and Taruskin, Richard. *Music in the Western World.* Cengage Learning, 2007.
This text primarily discusses the history of music, ranging from orchestration and arranging to music notation itself.

Yoon, Hojin (Vice President of the Gamer Symphony Orchestra). Personal Interview. April 27, 2019.
This interview provided invaluable information about the specifics of the saxophone section of the GSO, as Mr. Yoon is the saxophone section leader.