**Part Two - Texture making**

**Chapter 1. Orchestral devices**

**Lecture 1a.**

**Making Orchestral Devices**

**(monophonic texture)**

Hello and nice to see you.

In our previous lecture, we discovered possible unison and octave doublings and prepared them as a midi sketch.

Now is the time to make some orchestral devices using this sketch.

It should be noted that orchestral devices can be used in various types of textures, like monophonic, homophonic, polyphonic, and so on.

Let’s start with the monophonic texture.

Monophonic means “single-voiced”.

This texture lies in the fact that the melodic line is performed by different orchestral instruments in unison or octave doubling without any harmonic or polyphonic background and pitched percussion.

Let’s make the first orchestral device.

As you can see, there are a lot of instruments and combinations, you can select any one you want.

For instance, you can get more than 100 devices, if choose just the combinations of the flute with the different instruments.

Five unison devices are played at the same register:

Flute and Oboe; Flute and clarinet; Flute and trumpet; Flute and Violins; Flute and Violas.

There are seven possible octave doublings of the flute with different instruments:

Flute and piccolo (piccolo sounds an octave higher than written, even in C score);

Flute and English horn; Flute and clarinet; Flute and French horn; Flute and Trumpet; Flute and Violins; Flute and Violas.

As you observed, I have used just unison and octave doublings.

I can make a lot of devices using different registers and instruments, like these: Flute, English horn, violas; Flute, clarinet, oboe, violins; and etc.

Hence I am going to make just a tutti device.

The Italian word “tutti” refers to the simultaneous use of most or all orchestral instruments.

There are two kinds of tutti sections: (1) the partial tutti, using only some of the instruments at hand; and (2) the full tutti, using every (or almost every) orchestral instrument simultaneously.

Before starting to make devices, let’s discover the balance.

This is obvious that a perfect balance is not always possible.

Because a balanced orchestration depends on the attitude of the conductor who will direct it, and at the same time on the feeling of the performers.

You can listen to the same piece in different orchestras with a different balance.

The perfect balance depends on what you want to present in the score.

If the lead oboe plays a melody at ***mf*** and the strings play a sustained chord at ***p***, that means the melodic line is an essential one.

Sometimes, the harmonic line is performed one dynamic less than the melody. This means that the harmonic line is also enhanced to make the melodic line more dramatic.

As you can see, both options are correct. Depending on the intention and desire of the composer, a different balance can be established.

Accordingly, it is not possible to approach one aspect by consulting on balance.

A very interesting point is that long notes can overpower short notes.

As you can see, it is impossible to get a specific balance formula.

Therefore we can get only a roughly balanced orchestration.

This chart is an excerpt from “The Principles of Orchestration” book by Rimsky-Korsakov.

To fast calculate, I will use the balance ratios of each section or instrument, which is based on this chart.

Considering the registers, the ratio will be as follows:

One woodwind instrument is equal to “1”.

1 department of the string section will be indicated with “2”.

1 French horn is also equal to “2”.

1 trumpet will be indicated with “4”.

I want to remind you that this calculation does not aim to get a perfect balance between registers.

On the contrary, the presented calculation model will help you to hear which instruments or registers are strong or weak before their live performance.

I will explain this during the lesson.

**Device no.1**

Let’s make the first orchestral device within the woodwind section.

If you look at the sketch, you can see that woodwinds are possible in four different registers: **B6, B5, B4, and B3.**

I am going to use all of these.

Regardless of the dynamic, soft or strong, all woodwind instruments are equal to each other, if the instruments are in their strong register.

The piccolo starts the melody from the **B6**.

Two flutes and two oboes start the melody at **B5.**

The English horn takes the **B4.**

The clarinet can play the melody in both **B5** and **B4.**

Since the **B5** register is already used by two flutes and two oboes, it would be better to use the clarinets below them to get a balance between registers.

The **B3** will be played by two bassoons.

So, the balance of the registers will be as follows: 1, 4, 3, and 2.

There is only one piccolo here. However, this is not a problem, since the piccolo is in its strong register and will shine even without doubling.

The **B5** register is most strong as it is played by four instruments.

You can reduce this register by using a single oboe or a flute instead of *a2*.

But this is not necessary to do it.

I want to explain this slur, as it does not have the same meaning on all instruments.

Generally, a slur is a mark indicating that two or more notes are to be played without separation.

The slur marking in bowed string instruments, like the violin, viola, cello, and contrabass, means that the notes should be played in one bow stroke.

So, the player change notes with his left hand but his right hand (bow hand) doesn't change direction.

In this example, the **D** and **E** should be played with one bow stroke. No, matter, It can be down or up bow.

The next three notes should start with the next bow stroke.

In wind instruments, regardless of the brass or woodwind, slurred notes should be played in one breathing and without re-articulating each note.

In this example, the **D** and **E** should be played with one breathing, while the next three notes with another breathing.

**Device no.2**

Let's move on to the next device.

The **B3** is also can be reinforced by a single horn.

As you know, in soft dynamics, all wind instruments are equal to each other.

However, at strong dynamics, the French horn is twice as strong as the woodwind instrument.

So, one horn is equal to two woodwind instruments.

Considering this, it will be enough to double the bassoon's part with the single horn.

The horn should be counted with “2” as it is equal to two woodwinds.

Now the power of the **B3** register will be “4”.

Of course, other woodwind devices also can be made as you want.

**Device no.3**

Now, let’s make the monophonic texture for the brass instruments.

If you look at the sketch, you can see that brass instruments are possible in three different registers: **B5, B4,** and **B3.**

Let’s arrange the brass according to these registers.

At soft and medium dynamics all brass instruments are equal to each other.

This means that each brass instrument can be assigned a separate pitch, depending on the register placement.

For example, if the dynamic is ***mp,*** one trumpet is equal to one horn.

However, when the dynamic is louder than ***mf****,* it is advisable to double the horns, which when played in unison will roughly equal the sound of other brass instruments. This is due to the weakness of the horn.

For example, if one trumpet is at ***f***, two horns should be used to maintain the balance.

I am going to make a strong and thick timbre within the brass section.

Therefore, I will use all instruments.

As you can see, only the trumpet can play the melody which starts from **B5**.

The 1st trumpet will play the upper octave.

Since this instrument is in the strong register, it will sound powerful.

That’s why it can be used alone.

In addition, because of their high frequencies, the top instruments always shine in the orchestra even without unison doubling.

Hence its register score should be marked with “4”.

As I mentioned, I want to make a strong and thick timbre in the following device.

So I have to double either **B5** or **B4,** as I have two free trumpets.

So the question is which register to double in unison.

As you can see, the melody starting with **B4** is placed in the 2nd register of the trumpet.

This register has medium power and is not as strong as the 3rd register.

We can maintain the balance between two registers by assigning the lower melody to two trumpets.

It is not necessary to do this, but I want to strengthen the weak register against the strong one.

Thus, this register can be indicated with the number "4", since it has gained power.

What about the horns?

As you can see, horns can play in both **B4** and **B3** registers.

Considering making the device in three registers, we should start making the **B3** first.

So the question is how many instruments should be involved.

As you know, two horns can be used to maintain the balance against one trumpet.

This means that **B3** must be played with at least two horns in unison.

What about the other horns?

As you observed, the melody is placed between 1st and 2nd registers of the horn.

This range of the horn is not strong as the 2nd and 3rd registers.

In addition, considering the medium register of the trumpet has been doubled by two trumpets, the horn parts also can be reinforced against them.

So, the **B5** is in the strong register of the 1st trumpet. This register has been marked with “4”.

The **B4** is played by two trumpets in their medium power. Both trumpets are roughly equal to the 1st trumpet.

Considering that four French horns with their medium power are equal to the medium power of two trumpets, estimating the count of the horns will be “4”.

Thus, we get a roughly balanced device, due to the doubled instruments.

All registers will sound clear and powerful.

You can make a new device using this kind of calculation.

This calculation system simply notifies you in advance which registers or sections will sound stronger.

Stay safe. Goodby.