Colors in Scriabin's Sonata No.8: Exploring the relation between color and harmony in Scriabin's music

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Abstract

Alexander Scriabin is a composer known to have had synaesthesia, however only one work exists with a documented color accompaniment, namely his 5th Symphony. It was valuable for multiple reasons to explore this system and apply it to a different piece of his, to the 8th Piano Sonata, with the ultimate goal of performing this sonata with a color accompaniment worked out according to the schemata Scriabin applied to the 5th symphony. The central goal is the element of historical performance practice - to create a performance practice with colours that is historically informed by Scriabin's system as derived from the 5th symphony. The values presented by this research cover a deeper understanding of Scriabin's harmony, such as his reliance on dominant 7 chords, and motific work, such as the importance of augmented motifs, his synaesthesia, very deeply interconnected with the latter, as well as practical aspects that come with performing a Scriabin piece with a color accompaniment. The latter aspects include discovering ways to choose appropriate colors and synchronize the switching of colours with a live piano performance, as well as detecting noticeable changes in my own piano performance, i.e. how the process of adding colors to the 8th sonata significantly influenced my way of interpreting the work.

Keywords: Scriabin; Prometheus; Symphony; Synaesthesia; Sonata; Piano; Analysis; Harmony; Chord; Color.

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This research was made with a clear conscience and the best intentions. Good care was taken to be as consistently precise as possible. If there are any imprecisions in regard to scientific and academic methods, they were not intended.

Introduction

Among the range of artistic performances of music by the composer Alexander Nikolayevich Scriabin (6 Jan 1872 - 27 Apr 1915) in combination with a color component, there exist only a very limited amount of performances, that try to take the actual approach into account, which Scriabin took, when he composed his only composition with a colour "accompaniment", his Symphony No.5, Op.60 "Prometheus: The Poem of Fire" (hereafter to be referred to as *Prometheus*). With my research I would like to fill this gap and discover a way to find a system which would allow one to formalize Scriabin's way of assigning colours to music and map it to a piano composition of his, the Piano Sonata No.8 Op.66. This will lay the groundwork for a performance of this composition with a color accompaniment, to as close as possible Scriabin himself might have created, if he had applied the same system used for the clavier a lumieres part (part in the orchestra score which contains information on colors that should appear on any given moment, with notes corresponding to colors[1], hereafter to be referred to as *Luce*) in his 5th symphony. In other words, the goal of my research is a performance practice with colors that is historically informed by Scriabin's system as derived from the 5th symphony. A part of this was also the observation of changes that happened in my own piano practice in the context of adding colours according to the previously mentioned formalized system.

Thinking beyond the scope of this research, understanding and interpreting the way Scriabin perceived music in combination with color can potentially be valuable to our society as this might open up new possibilities of experiencing music: Audiences could acquire a better intuition of the undoubtedly complex music of Scriabin, whilst new possibilities of more engaging performances and presentations could be discovered. For performers of primarily music by Scriabin (although findings from this research may very well be extended to music by other composers) the combination of music and color could also add valuable layers to their practice, such as discoveries of easier ways to approach Scriabin's music (sight reading, memorization) or refinement of musical and interpretative choices.

Scriabin's annotations in music already include words that allude to a connection to light and color[2], using these light/color annotations in a musical-theoretical context would only increase the awareness of such a context.

Hence we see clearly that my research has multiple warrants, ranging from pianistic reasons (technical aspects of a performance with added color lighting, observable differences in interpretation and musical approach that adding colors yields) to musicological and historically informed reasons (in-depth understanding of Scriabin's harmonic language especially in the context of their conceiving in association with color).

[1] Dorothee Eberlein, *Russische Musikanschauung um 1900* (Regensburg: Gustav Bosse Verlag, 1978), 88.

[2] Lincoln Ballard and Matthew Bengtson, *The Alexander Scriabin Companion: History, Performance, and Lore* (Rowman & Littlefield, 2017), 153.

From a personal viewpoint, the music of Scriabin, especially his later period (starting from Opus 30), is very dear to me. Having experience presenting these works, as an active and performing classical pianist, I know that audiences often refer to these later works as *complicated*. Hence, I have a personal motivation to potentially discover new ways to approach and present Scriabin's music. And of course this has the ultimate goal to help my own piano practice: A historically informed performance practice might bring valuable discoveries with it.

My research in the context of my Master's study at the Fontys FHK, was closely connected to my main subject, which is piano (classical music). During this research, my goal was to thoroughly understand the relation between Scriabin's music and colors, so as to be able to apply colors, as close to as possible in line with the composer's own vision for combining color with performance as revealed in his 5th symphony, to his Sonata No.8, Op.66. Hence, the goal of my research was to ultimately perform this sonata myself on the piano, with the knowledge and awareness of the colors of each moment in the music. I would like to emphasise, that it was important for the context of this research, to be able to precisely understand and depict (analysis) these relationships between music and color.

Context

According to Scriabin's contemporaries, biographies, composition (Prometheus) and other material documenting Scriabin's life, he openly displayed his sense of synaesthesia and how he associated music/harmony with colors. However, the only (finished) composition which he produced with a well-documented color "accompaniment" was the Prometheus (Poem of Fire) Op.60. Due to the fact that Scriabin often talked about colors in his piano music (especially his later music, after Op.30), it is absolutely within boundaries of reason to assume, that his piano music can be enriched with a color component, albeit not notated by the composer himself, but still as much as possible informed in a historic as well as musicological sense.

This is a problem, because even though Scriabin is often referred to as a synaesthete, we don't have a tangible basis to "decode" his synaesthesia, in part because only one of his works exists with a documented color accompaniment. Often, projects, that aim to combine the music of Scriabin with color or other forms of visuals, take a very free and artistic approach, that have very little connection to the factual basis of our knowledge of Scriabin's synaesthetic color perception.[3] [4] [5] My research aims to provide a more factual analysis and argumentation for Scriabin's colour perception, whilst practically applying it to a piano composition

[3] "LUISTERTIP: HELENA BASILOVA – SEE SCRAIBIN", Ingelise, accessed 2 Jan 2022, https://blog.ingelisedevries.nl/2016/02/15/luistertip-helena-basilova-see-scraibin/ . https://www.youtube.com/watch?v=D5KmVH2WC2g, visited both on 2 Jan 2022.

[4] "scriabin plays scriabin with scriabin's colors - etude op 8 n 12", accessed 4 Mar 2022, https://www.youtube.com/watch?v=R-v0yDiG7W4 .

[5] "SCRIABIN piano sonatas with AMAZING colour projection!", accessed 4 Mar 2022, https://www.youtube.com/watch?v=7yEaoC2shlY .

of his, that was composed in the same time period, namely Scriabin's **Sonata No.8 Op.66**. Moreover, my research will attempt to answer if adding colours to this Sonata, according to these principles, will yield a change in the approach of my interpretation of this work as a pianist. I deem it important to be precise in regard to the combination between music and colors: e.g. if there were to be found a repetition in the musical piece, which combines a known harmony with a known color (meaning that it has been seen before in the same context), that would bring structure to the same way to colors as it does to a musical compositions. Adding visuals with little historic or any other factual connection to music can, in my opinion, not be more than just a "nice addition".

There are multiple reasons that I have chosen the 8th Piano Sonata as a composition to apply colors to: As a pianist it is most practical to perform a solo piece, as a demonstration of Scriabin's music together with color. Moreover, the 8th sonata (opus 66) is quite close to Scriabin's Prometheus (opus 60) in terms of opus numbers. They also feature very similar harmonic languages, especially in connection to the *Mystic Chord/Promethean harmony* [6] [7] (quartal chord, used for thematic material in Prometheus), which would make the process of applying colors similar.

This exact problem has not been tackled before. However, there do exist a wide variety of researches on very closely related topics, such as harmonic analyses of Scriabin's works, Scriabin's general style and philosophy and Scriabin's synaesthesia.

I believe that following Scriabin's approach to harmony and colour when designing performances of his music that utilize colours is very important, because it (attempts to) honors the vision of the composer as closely as possible. Moreover, I believe that understanding these relationships between harmony and colour will deepen our understanding of his music, in any case for the performing artist, and potentially also the audiences.

There are also artists who have done similar projects. For example, there is Helena Basilova, who is a dutch pianist and teacher at the ArtEZ conservatory in Zwolle, The Netherlands. She has worked extensively on projects, while performing music by Scriabin to combine his music artistically with colors/visuals[8]. Another artist, who did similar things, is pianist Hakon Austbo[9]. A project by the Yale University did a lot of work on reconstructing the Prometheus together with

[6] Dorothee Eberlein, *Russische Musikanschauung um 1900* (Regensburg: Gustav Bosse Verlag, 1978), 88.

[7] "Scriabin's Eighth Sonata: the composer's last word on sonata form.", Simon Nicolls, Scriabin Association, accessed on 30 Jan 2022 http://www.scriabin-association.com/skryabins-eighth-sonata-composers-last-word-sonata-form-simon-nicholls/.

[8] "LUISTERTIP: HELENA BASILOVA – SEE SCRAIBIN", Ingelise, accessed 2 Jan 2022, https://blog.ingelisedevries.nl/2016/02/15/luistertip-helena-basilova-see-scraibin/ . https://www.youtube.com/watch?v=D5KmVH2WC2g, visited both on 2 Jan 2022.

[9] "Håkon Austbø", Charles Downey, accessed on 2 Jan 2022, https://dcist.com/story/05/09/12/hakon-austbo/ .

visuals following Scriabin's notated score closely[10].

My research not only aims to create just a visually pleasing performance, but improve our understanding of Scriabin's thinking and reasoning behind his music-color associations, and then to apply this in a structured and reasoned way to one of his piano sonata's. As we have seen, there are enough artistically-visually pleasing ideas and concepts, but not as many theoretical explorations into the music of Scriabin in regards to his synaesthesia. This is the main argument for my research.

Research question and structure

Wanting to improve the understanding of Scriabin's practice, with the goal of potentially leading to new discoveries, such as new ways of interpretation of Scriabin's music, I am formulating my precise research question in the following format:

How can the synaesthetic music-color perception of Alexander Scriabin, as presented in his symphonic work "Prometheus: The poem of Fire", Op.60, be applied to his Piano Sonata No.8 Op.66?

In order to find an answer to this question I have divided my research into six stages:

- Stage 1: Determining relevant musical elements (such as harmony, motifs, phrases etc.)
- Stage 2: Analysing relevant elements in Prometheus
- Stage 3: Analysing relevant elements in the Sonata No.8
- Stage 4: Creating the color scheme for the 8th sonata
- Stage 5: Performing the sonata with the color scheme
- Stage 6: Observing resulting changes to performance practice

These six stages have guided this research in a structurally logical way, in order to aid me as the researcher as well as help me present the discovered material in a clear way. These stages correspond to the following guiding sub questions:

- What are the relevant musical elements to analyse in order to understand Scriabin's music-color perception in Prometheus?
- How do the colors, as notated in the "Luce" part, relate to the harmonic construct of Prometheus?
- What are the harmonies of the 8th Sonata when analysed in the same way as "Prometheus"?
- What are the colours of these harmonies?
- How to perform the 8th sonata with light?
- How does performing the sonata with the colour scheme change one's interpretation?

[10] "Scriabin's Prometheus: Poem of Fire", Yale Campus YouTube channel, accessed on June 14th 2021, https://www.youtube.com/watch?v=V3B7uQ5K0IU .

Before starting to analyse anything at all, it was necessary to understand what I am looking for in the analytical part of my research, hence the importance of *Stage 1.* My research thus contains two types of research methods: The main type is analysis/desk research, of relevant literature (to be defined in the next chapter) and other types of sources, such as recordings, but primarily the Scores of the relevant pieces (stages 1-5). This lead to discovering the relationships between music and color. The second type of my research had an artistic component: This component played a role when I decided on how to practically combine a performance of Scriabin's 8th sonata together with color (stage 4 and 5), by method of experimentation: e.g. which actual colors corresponded to Scriabin's descriptions of colours and how my interpretation of the 8th sonata changed after applying the colour scheme.

Literature review and positioning

In the following I would like to provide a short overview of sources, which my research relied upon, as well as my own position within this discourse. One of the main primary sources of literature was a book by Scriabin's close friend, L.Sabaneev (Pianist, Music Critic), *Reminiscences of Scriabin* (Russian). A different source is a very handy overview of Russian Music around 1900 (Eberlein, Dorothee. *Russische Musikanschauung um 1900.* Regensburg: Gustav Bosse Verlag, 1978.) which contains valuable insight into Scriabin's synaesthesia. More sources I used include the *Alexander Scriabin Companion* and in-depth harmonic analyses of Scriabin's works by Peter Sabbagh (see bilbiography). Of course I am heavily relying on the Scores of the two relevant works (Prometheus and 8th sonata). Other sources include recordings, mainly the recording of the Yale Orchestra of Prometheus, which is also very valuable because of their technical choices around lighting and colours.

In the process of my research I made two recordings myself, of the 8th Piano Sonata, one before discovering the colour scheme of the piece, and one after. This is done to verify changes that occurred to my interpretation of this piece.

My initial position is that many projects (such as the afore mentioned project by Basilova [11] or many more (examples [12] [13])) are not using Scriabin's colour theory, as presented by the composer in Prometheus. Exceptions of this are performances of Prometheus, which take the composer remarks into account [14]. In this position I am arguing that it is possible to approximate a connection between the colours in Prometheus and other piano works, like the 8th Sonata,

[11] "LUISTERTIP: HELENA BASILOVA – SEE SCRAIBIN", Ingelise, accessed 2 Jan 2022, https://blog.ingelisedevries.nl/2016/02/15/luistertip-helena-basilova-see-scraibin/ . https://www.youtube.com/watch?v=D5KmVH2WC2g, visited both on 2 Jan 2022.

[12] "scriabin plays scriabin with scriabin's colors - etude op 8 n 12", accessed 4 Mar 2022, https://www.youtube.com/watch?v=R-v0yDiG7W4 .

[13] "SCRIABIN piano sonatas with AMAZING colour projection!", accessed 4 Mar 2022, https://www.youtube.com/watch?v=7yEaoC2shlY .

[14] "Scriabin's Prometheus: Poem of Fire", Yale Campus YouTube channel, accessed on June 14th 2021, https://www.youtube.com/watch?v=V3B7uQ5K0IU .

and thus create performances closely connected with Scriabin's own vision with regard to the connections between music and color as demonstrated in the 5th symphony .

There is research which explains the colours in Prometheus as well as a wide variety of analyses (Sabbagh). However, there is no research that attempt to apply the colours from Prometheus to a different work of Scriabin.

Research Documentation

Stage 1: Determining relevant musical elements

The most important element to be analysed was the harmonic aspect, especially the interpretation of the harmonies in the Prometheus as Dominant 7th chords.[15] The same applies also to the 8th Piano Sonata. In the following sections I will elaborate on that, and explain the journey towards this conclusion.

Before starting to analyse anything at all, it was necessary to know exactly what I was looking for in my research, in terms of analysis. As my goal was to understand in the first place the relation between the music and color in Scriabin's Prometheus, that was the place I started with. In the following I'd like to elaborate on how I determined that harmony would become the most important aspect of the analytical part of my research.

Determining the analysis of Prometheus

In the Prometheus the colors are notated with the help of a so called *Luce Clavier*. This instrument, which in the times of Scriabin wasn't invented yet can play one tone or several notes at once, each note corresponding to a color. The *Luce Clavier* also referred to as *Clavier à lumières*, was an instrument, which was constructed specifically for the Prometheus. Basically it consisted of a small keyboard, with lights lighting up when pressing a specific key.[16] This can be one key (with one corresponding color) but also just as well multiple colors at the same time, but still being separate (e.g. a blue and green color lighting up at the same time).[17]

In the preface of the score of Prometheus, we find the notes of the Luce, corresponding to colors [18]. Color table, with colors corresponding to each note:

Note	Color, Character
C	Red, Intense
G	Orange, Creative Play
D	Yellow, Joy
A	Green, Matter
E	Sky Blue, Dreams, Moonshine, Frost
B, C flat	Blue or Pearly Blue, Contemplation

[15] Specific form of chord, usually having a dominant function, usually has a base of a major, minor and another minor third interval stacked on top of each other, can have further additions in the forms of more thirds stacked on top. Usually the fifth can be omitted, as the dominant function will remain. Hereafter I will refer to these chords as *Dom 7*.

[16] Alexander Scriabin, *Prometheus. Poem of Fire. Symphony No.5 Op.60* (Berlin: Editions Russes de Musique, 1911), preface.

[17] Rolf Kuehni, *Color: An introduction to Practice and Principles* (John Wiley & Sons, 2012), 249.

[18] Alexander Scriabin, *Prometheus. Poem of Fire. Symphony No.5 Op.60* (Berlin: Editions Russes de Musique, 1911), preface.

Note	Color, Character
F sharp, G flat	Bright Blue or Violet, Creativity
C sharp, D flat	Violet or purple, Will of the Creative Spirit
A flat	Violet or Lilac, Movement of Spirit into Matter
E flat	Steel color, Humanity
B flat	Rose or steel, Lust or Passion
F	Deep Red, Diversification of Will

Thus, it is clear, that the part of the Luce is one of very high importance. However, it only gave me colors, but I needed to "reverse-engineer" the reasons for these colors, hence this research. The Luce was useful to me in so far, that it clearly states the desired color in the Score.[19] This was hence the starting point of the analytical part of my research.

The elements I initially focused on while searching for relevant patterns were:

- Harmony/chords.
- Phrases.
- Motifs.
- Rhythms.

These were indeed a lot of elements. From contemporaries of Scriabin, however, we know that Scriabin placed a high importance specifically on **harmony**.[20] Hence, *harmony* was an element which had the highest priority during my research, whilst being scrutinized against possible connections with colors. As a matter of fact, my research was indeed focused on connecting harmony specifically with colors. The other previously mentioned musical elements have also been taken into consideration, but secondary to the harmonic importance.

Another demonstration of this reason is the so-called *mystic chord* or *prometheus chord* (sometimes also called Scriabin Chord) [21] which is often interpreted as a quartal harmony, and appears in various transpositions[22] throughout the symphony. This harmony embodies a tonality, which is why the colors from the preface of Prometheus [23] correspond to this *mystic chord* which has a role of a tonality instead of the usual major and minor tonalities.[24] This is another argument for why I have decided to put the harmonic aspect of my analysis front and center in my research.

[19] Scriabin, *Prometheus.*

[20] Leonid Sabaneev, *Vospominaniya o Skryabine* (English: *Reminiscences of Scriabin*) (Moscow: Klassika XXI, 2014), 160.

[21] Peter Sabbagh, *The Development of Harmony in Scriabin's Works* (Universal-Publishers, 2003), 21.

[22] Dorothee Eberlein, *Russische Musikanschauung um 1900* (Regensburg: Gustav Bosse Verlag, 1978), 88.

[23] Alexander Scriabin, *Prometheus. Poem of Fire. Symphony No.5 Op.60* (Berlin: Editions Russes de Musique, 1911), preface.

[24] Dorothee Eberlein, *Russische Musikanschauung um 1900* (Regensburg: Gustav Bosse Verlag, 1978), 88.

Hence, as root tones of harmonies were most important, I was paying attention whilst analysing specifically to bass voices (the lowest parts, e.g. the double basses), and instruments carrying the bulk of the harmony. As Scriabin assigned a high importance to 7th chords (especially Dom 7)[25], which is another interpretation of the *mystic chord* and which I will elaborate on further in my research documentation, the instruments performing the 3rd and 7th of the chord tones will need to be analysed as well. Thus a glance over all instruments in the orchestra score was needed, especially vertically (from top to bottom - determining the harmony).

8th Sonata

Previously I have determined that harmony will be one of the most important musical elements which I used in order to argue for a connection between a musical element (harmony) and color. Logically, the 8th sonata of Scriabin had also needed to be analysed in this way, first harmonically, and then double-check using other musical elements, like motifs. As motifs are often cross-referenced in Scriabin later works,[26] it was not unthinkable that along harmonic similarities I would discover similarities in motifs, which will in a way be a "backup"-check, whether the music indeed presents a connection with a color.

To sum up, the 8th sonata has been analysed in a very similar way to the Prometheus, especially focusing on determining 7th chords (especially Dom 7 chords). This is the case because the Prometheus Chord can also be interpreted as a Dom 7 as my own research will show, and as has been shown before by other researchers[27].

Stage 2: Analysing relevant elements in Prometheus

The most important finding of this analysis was that the root color of the harmony always changes synchronously with one color [28]. The challenge was to identify this "Promethean" harmony as (mostly Dom 7-) seventh chords, which lead to the discovery of its root tone, which isn't necessarily always the lowest/bass note. Concerning the second color of the Luce, it was more of a mystery, which I will elaborate later on. In Prometheus, there continuously appear two instances (polyphonic) of a note played by the Luce [29].

In the following I will demonstrate my analysis of the previously mentioned musical elements in the Prometheus.

Let me start by analysing the first bars of Prometheus (Figure 1, Figure 2).

[25]Sabbagh, *Development of Harmony*, 49.
[26]Sabbagh, *Development of Harmony*, 47.
[27]Sabbagh, *Development of Harmony*, 49.
[28]Sabbagh, *Development of Harmony*, 52.
[29]Dorothee Eberlein, *Russische Musikanschauung um 1900* (Regensburg: Gustav Bosse Verlag, 1978), 88.

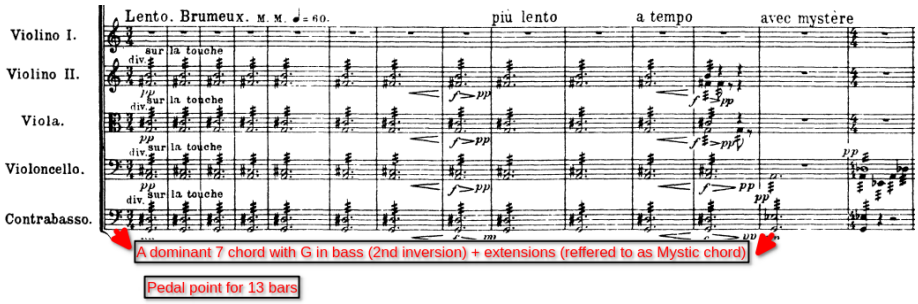

Figure 1: Figure 1, Scriabin Prometheus String section first 13 Bars with Harmony analysis

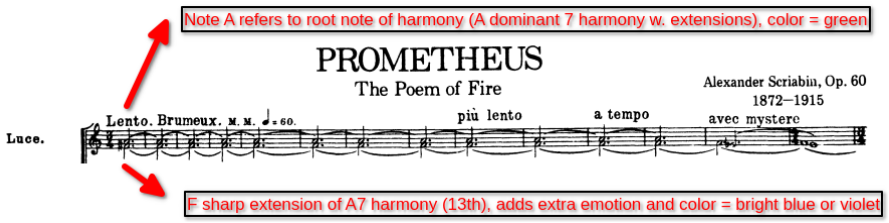

Figure 2: Figure 2, Scriabin Prometheus Luce first 13 Bars with annotations

From the analysis of the first 13 Bars of Prometheus, I was able to deduce that one of the (sometimes multiple) colors (which is notated in the part of the "Luce") always refers to the root note of the harmony (which is not necessarily the bass tone), as depicted by analysing the string section. In this case this is *A*, which refers to the color green. Thanks to the analysis of the beginning of Prometheus, we also see that the note F sharp on the Luce, which corresponds to the color bright blue is used.

In this case F sharp would be a 13th note of A Dom 7, most likely used as a color addition, which is also part of the Mystic Chord.

Moving on to the next significant moment, we have the moment at repetition mark 4 [30] (or Bar 87). For visual reference for my readers, in the video of the Yale Campus channel on YouTube [31] with light references, performed by the Yale Symphony Orchestra, this moments starts around 13:16.

This moment features an addition of a new color, namely F natural. Whilst the color character still remains relatively similar to the beginning, this is the first perceived (and also objectively justifiable) moment, at which there is a first bigger color change in this work.

[30] Scriabin, *Prometheus*.

[31] "Scriabin's Prometheus: Poem of Fire", Yale Campus YouTube channel, accessed on June 14th 2021, https://www.youtube.com/watch?v=V3B7uQ5K0IU .

So, at this moment the Luce features a completely new, and not seen until now, F natural, which according to the previously presented color table [32] corresponds to Deep Red (character: Diversification of Will).

At this point the piano enters with a solo, featuring a very clearly distinguishable F Dom 7 (13) chord. Hence, we see again that one of the colors always follows the root of the currently used chord. In this section this is very easy to say, because in contrast to the beginning of this piece, the root of the chord is actually the lowest note in the orchestra score, hence making my previous assumptions even clearer (Figure 3).

Going on through to the next moment we have the moment at rehearsal mark 9 in the score (Bar 131 or 14:22 in the previously referenced video). This moment features some completely new colors, most notably yellow. Until this moment we have mainly seen colors such as red, blue and violet, from which yellow is surprisingly far away in the circle of fifth [33]. Again, we have a clear entrance by the piano, however it is not completely alone this time.

At the moment the Luce has the note D, which corresponds according to Scriabin's scheme to the color corresponding to the note D and the character of joy, in combination with the note B flat (Rose/Steel, Lust or Passion), the full orchestra, including the piano, present a very clear D Dom 7 harmony. What is interesting that in the following 2 bars the harmony changes very quickly (as if indeed adhering to the character of *Joy and Lust*) to an A flat 7 Harmony in Bar 132 and F7 in Bar 133. Very clearly we see that the Luce, whilst holding the B flat "color" synchronizes with the appropriate "color" of the root note of the Harmony (D to A flat to F).

By the way, the movement from D7 to Aflat7, strange as it seems, is very typical for Scriabin. In the following figure I have referred to it as *tritone substitution*. These two harmonies are on the opposite side of each other in the circle of fifth, but share a very important feature: The 3rd and the 7th chord tone of the dominant harmony is the same, but in reverse order (Figure 4).

The conclusion of this is the insight, that one of the colors always moves with the root note of the Harmony, even when changes happen very quickly (once every bar). When applying colors later to the 8th sonata of Scriabin, this was be useful to keep in mind. As further analysis and research confirms the fact that indeed one note of the Luce always moves with the root note of the harmony, I will dedicate the following paragraph to the other color.

As best as I tried, I couldn't find a connection between the 'secondary' color (and from Bars 305 until 308 even three colors) and harmony. It was questionable if for the sake of this research it would be feasible to 'guess' the functions of the other colors. In any case it would add to the 'artistic freedom' which I wanted to

[32] Alexander Scriabin, *Prometheus. Poem of Fire. Symphony No.5 Op.60* (Berlin: Editions Russes de Musique, 1911), preface.

[33] Eberlein, Russische Musikanschauung, 87.

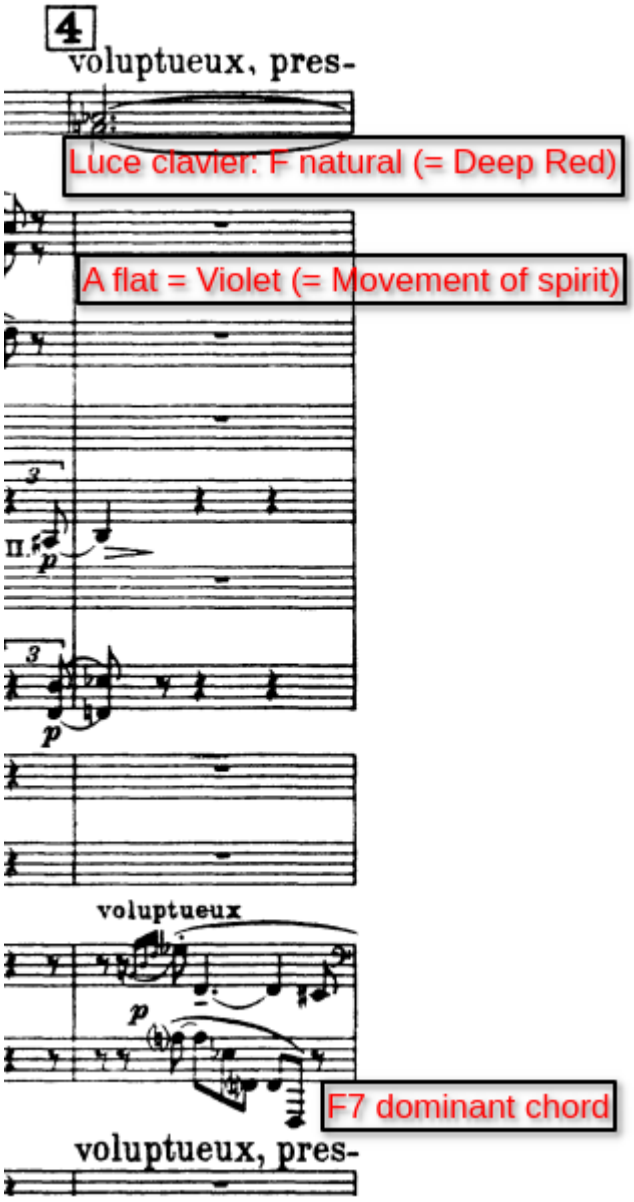

Figure 3: Figure 3, Harmony and color change at rehearsal mark 4

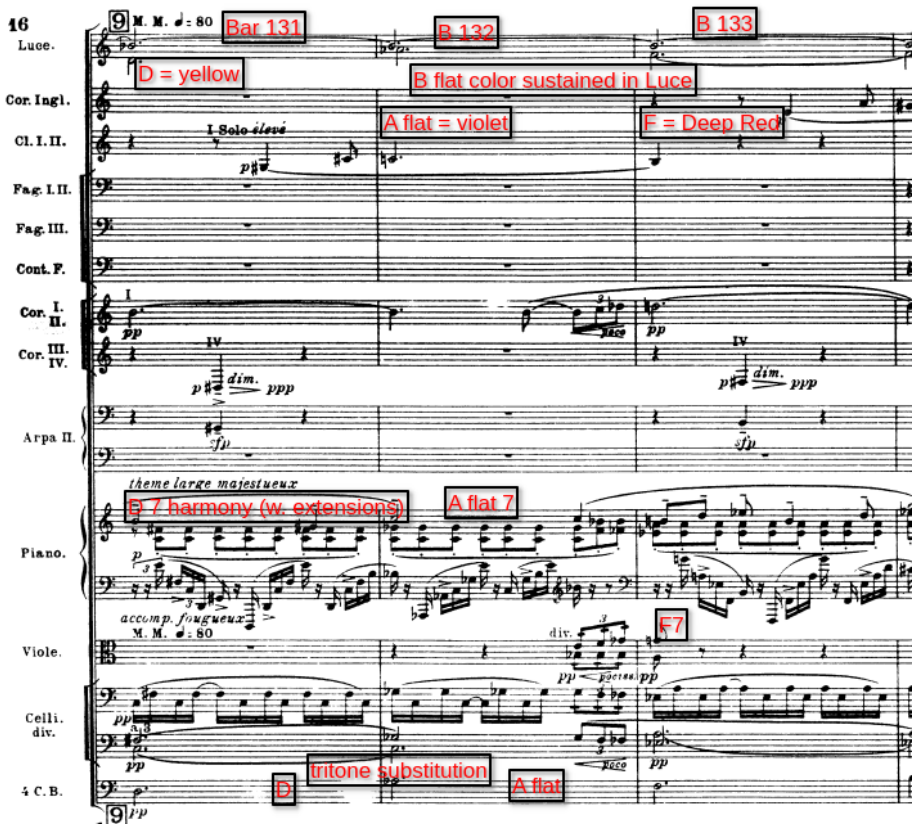

Figure 4: Figure 4, Quick changing of colors at rehearsal mark 9

avoid in the scope of the analysis. The most likely scenario and explanation for the other color, also supported by literature, is the theory that the second voice independently of the transpositions of the root harmony traverses the symphony and colors as an organ point/pedal point, slowly in the order: Fsharp, Aflat, B, C, D, E and Fsharp.[34]

It is not unthinkable that this voice has more of a storyline, and hence cannot directly copied over to other works by Scriabin without risking losing the original vision the composer had.

After all, while similar in many aspects, the Prometheus and the 8th Sonata are still different works.

Stage 3: Analysing relevant elements in the 8th Sonata

Based on the previously presented analysis I knew that at least one of the colors always follows the root note of the current dominant 7 harmony. In the 8th sonata the harmonic principles are indeed very much comparable to the Prometheus, hence it was very realistic to analyse harmony in the same way in order to be able to add colors to it.

Hereby a comprehensive overviews of the root notes of each harmony, per bar. After this I will present analyses of key parts of the eight sonata, showing especially on moments where it might be more problematic to interpret a dominant harmony (Dom 7) at first sight.

By *Bar* I am depicting the moment the root note of the harmony appears in the score.[35] The duration of this harmony is always until the next change. When performing later with colors, it would mean that the color would need to be held until the next color appears. E.g. *Bar 41 5/8* means that the new root note appears on the 5th *8th* note of this Bar, thus the new color needs to appear at this exact moment.

Bar	Root Note
1	A
22	E flat
34	F sharp
40	A
41 5/8	C
45 5/8	A
65 6/8	G
73 3/8	F sharp
73 5/8	B
79 2/8	F
96	B

[34]Dorothee Eberlein, *Russische Musikanschauung um 1900* (Regensburg: Gustav Bosse Verlag, 1978), 88.
[35]Alexander Scriabin, *Sonata No.8 Op.66* (Leipzig: Edition Peters, 1972).

Bar	Root Note
100	F
106	B
114 2/8	F
121 5/8	A flat
135 6/8	F sharp
153 6/8	E
166	B flat
170	E
173 6/8	B flat
179 5/8	G
183	B
186	C
208	E
210	B flat
212	E
217 6/8	G
220	E
221 6/8	G
241 3/8	D flat
247 5/8	B flat
251 5/8	D
257 5/8	B
258 3/8	D
260	B
260 3/8	D
262	B
262 3/8	D
264	E flat
286	G
288	D flat
290	G
331 4/8	B flat
337 4/8	D flat
339 4/8	G
343 4/8	D flat
363 6/8	B
371 3/8	A sharp/B flat
377	A
394	E flat
398	A
404	E flat
412	A
415 5/8	C

Bar	Root Note
429	A

In the following I will present parts of my analysis of the 8th sonata, which led me to these findings.

Let's have a look at the first bars of the 8th sonata (Figure 5).

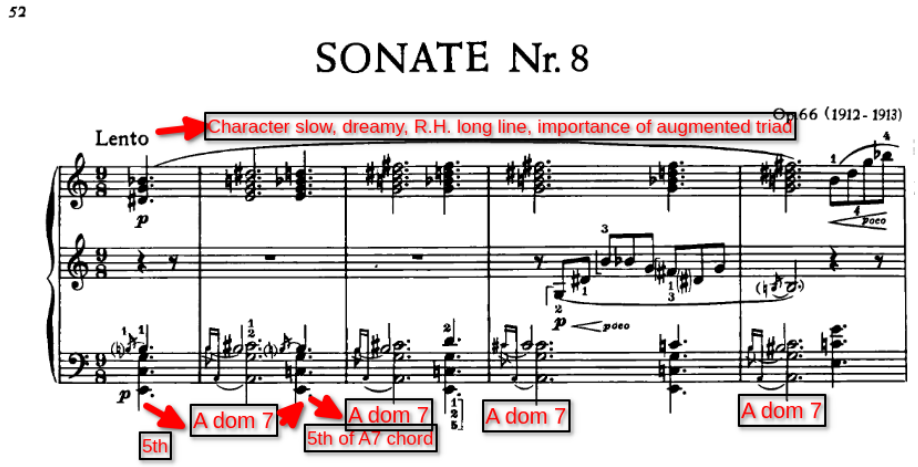

Figure 5: Figure 5, Scriabin Piano Sonata Op.66 first bars with annotations

Here we see clearly see use of the same dominant harmony we often see in later works by Scriabin. In fact, very similarly to the first Bars of the Prometheus, it is an A7 chord, just in a different inversion and with less "additions", (such as a 9th or 13th). Hence, it is not the famous mystic chord, but the underlying idea is very similar. Not only the underlying idea is similar, but this piece would also begin at least with the same color A/Green (symbolising human matter).

This opens up a very interesting insight, because whilst not explicitly searching for it, we already start to recognize the **philosophical** similarities in the beginnings of both works. In a way it seems to suggest that the "journey's" of both works (the Prometheus as well as the 8th piano sonata) start from "Human Matter" symbolized by the color green. This first harmony continues throughout the full introduction (Bar 1 until Bar 21). Whilst having alternating bass notes, between E, A and D sharp, the harmony stays the same. The added tritone from the bottom (D sharp below A), will continue be an important point of interest in this piece.

The idea that the root note of the starting section of the sonata (until Bar 21) is indeed A is confirmed by the fact that some editions/recording companies refer

to this sonata has being in A major[36].

After the *Lento* introduction, we come to the beginning of the *Allegro agitato* (Figure 6).

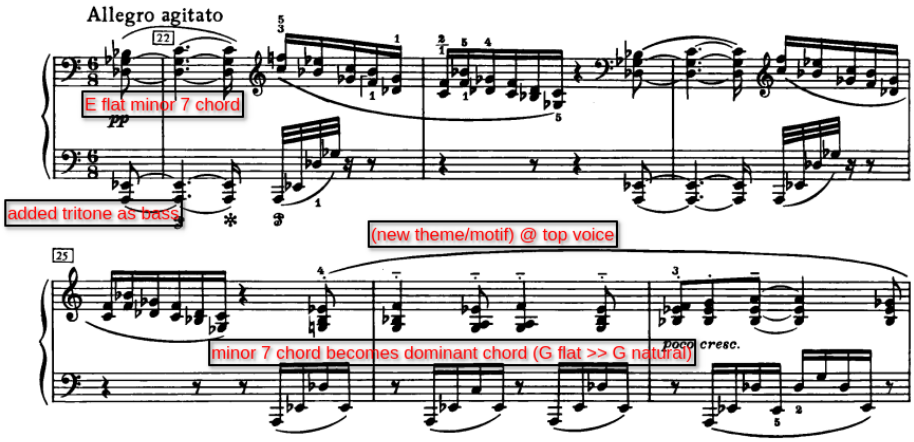

Figure 6: Figure 6, Scriabin Sonata 8 Allegro agitato

Here we see a new harmony, which is very hard to interpret as a Dom 7 chord. It much more resembles a minor 7 chord with an added tritone below.

By the way, in the 8th sonata the minor 7th chord in its 'pure' form, meaning it don't has a conflicting tritone in the bass only appears two times in the whole sonata, both times in the beginning of the development section (Bar 125 and Bar 143). This section shall be mentioned later during my research.

However, we see that this minor 7th chord in the beginning of the *Allegro agitato* very quickly transitions into an 'usual' (for Scriabin) Dom 7 chord. This transition from a minor or *pseudo minor 7 chord* into a Dom 7 chord happens every time in this sonata when such a chord appears.

Thus, we can interpret this chord as a precursor to a Dom 7 chord, and with high certainty give it the root chord 'color'. In the beginning of the *Allegro agitato* this would be the color E-flat/Flesh, Glint of Steel. Interestingly this corresponds to the previous color Green/A (in the *Lento* section) in a philosophical sense: In a way, we transition from (human-) matter into the color of humanity, from green to steel. And from one side of the circle of fifth, directly into the other (like the previously mentioned tritone substitution).

In Bar 65 (Figure 7) we can see clearly how a Dom 7 chord (G7) transitions into a chord without a clear root. However, the character of this harmony is

[36]"SCRIABIN, A.: Piano Sonatas Nos. 1-10 (Trotta)", Naxos Records, accessed on 2 Feb 2022, https://www.naxos.com/catalogue/item.asp?item_code=CDS7864.02 .

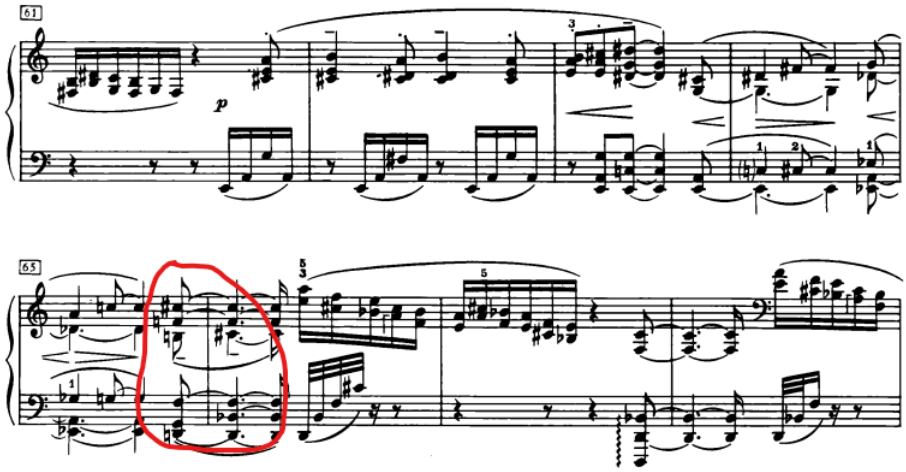

Figure 7: Figure 7, Bar 65

maintained, even without this clear root, until the next color change. This is often the case for later music by Scriabin.

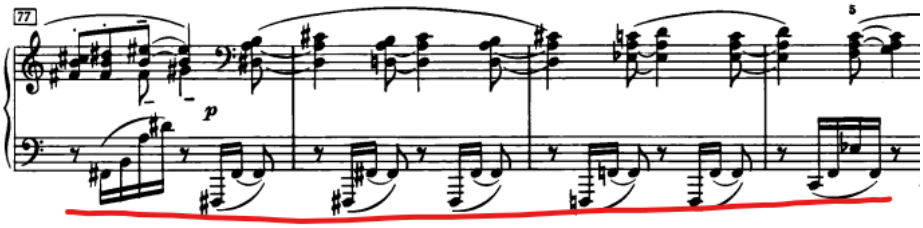

Figure 8: Figure 8, Bar 78

The transition between Bar 77 and 79 (Figure 8) shows a clear transition between a B7 harmony to a F7 harmony, which could be compared to a tritone substitution which I have earlier observed in the Prometheus.

An interesting challenge is presented in Bar 99 (Figure 9) and similar moments. Briefly we can discern in the part of the left hand the harmony of an inverted A flat major 9 chord. In the context of the surrounding tonalities (Bar 98 B7 and Bar 100 F7) the idea of an A flat chord is interesting: A flat, together with B and F forms a diminished triad which is the same as a point halfway in between a tritone (the outer notes of a diminished triad form a tritone/augmented 4th/diminished 5th, the middle note is symmetrically in between.). Hence, this A flat harmony is very clearly related to the surrounding tonalities. But I wouldn't go as far as arguing that A flat would be a new tonality on it's own. Most likely, for Scriabin it functions as a pivot chord, but definitely not as a standalone "key".

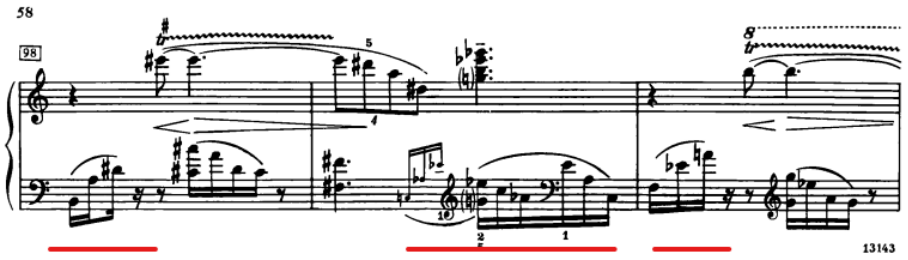

Figure 9: Figure 9, Bar 99

A supporting reason is that it isn't a dominant chord on it's own. Hence, this quick pivot has not been assigned a color. This also applies for similar moments further on in the 8th sonata, and will not be mentioned in the scope of this documentation.

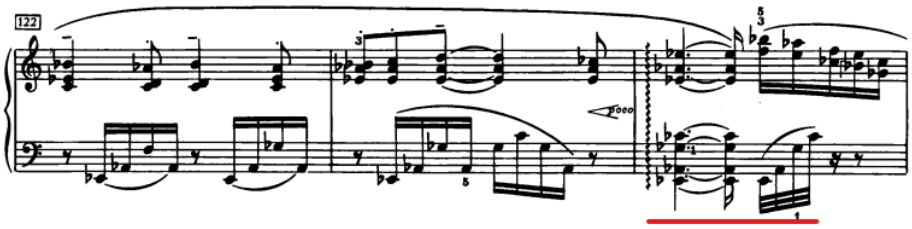

Figure 10: Figure 10, Bar 124

The previously mentioned exceptional case of the appearance of a minor 7th chord can be found in Bar 124 (Figure 10, and one more case in the next modulation to F sharp 7). This moment has been interpreted by me as a precursor/preparation to an "actual" dominant harmony (which appears in Bar 127).

In the transition to bar 154 we see another case of a Dom 7 chord appearing very shortly, whilst switching to a different chord, yet retaining the same characteristics as a dominant chord, meaning it is a dominant chord without a root note (=rootless). This situation is very similar to Bar 65. But in this Bar we have another confirmation, namely the augmented triad (marked by a circle). The importance of this augmented triad while determining the harmony will become clear later. As we have seen in Prometheus this is a normal situation in the perception of Scriabin, warranting the continued use of the same color of the root (even if the root note isn't present). However, it should be noted that the 8th sonata is much more complex rather than Prometheus. In the following paragraph I will elaborate on the latter.

The beginning of the *Tragique* section at Bar 186 shows a very interesting problem: Almost for the duration of the whole section there is no discernible dominant harmony. However, when taking a look at **motifs** a different picture

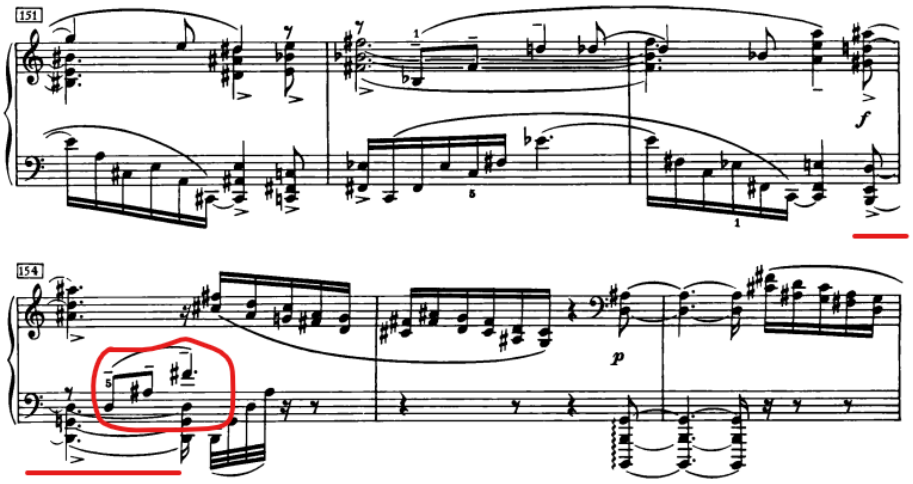

Figure 11: Figure 11, Transition to Bar 154

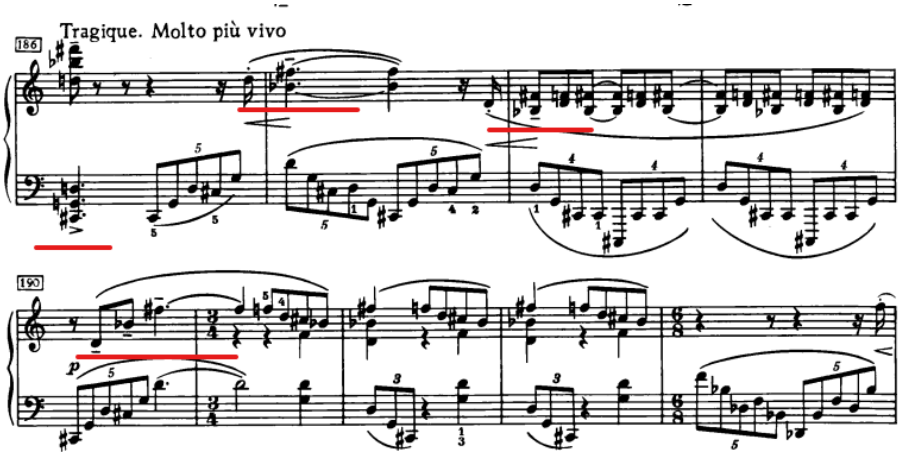

Figure 12: Figure 12, Bar 186, Tragique, augmented chords and motifs marked

is presented, that finds its proofs throughout this sonata:

This section features an augmented chord, sometimes played as a chord (Bar 186) and sometime as a motif (Bar 190, right hand, starting from the second 8th note). As it turns out, this augmented chord/motif is very useful in determining the root note of the harmony, and by extension, the harmony. In this case it is a B flat augmented chord. This can be deduced by its enharmonic spelling: Because augmented chords are symmetrical (just like diminished chords), the way it is notated is very important. This is also something, Scriabin's contemporaries noticed him taking very good care of, when writing his pieces (the way something was notated was indeed very important to Scriabin)[37]. The root note relative to the augmented triad is not necessarily always the lowest note, at least not in this work.

We find similar "augmented" motifs throughout the piece. An example is the beginning of the piece (see Figure 5, Bar 4, middle staff). This starts with a G augmented harmony, whilst the root note of the harmony is A. G is the minor 7th of A, hence a G augmented triad above A (7) can be perceived as an "altered" Dom 7 chord. The core of this argument is that, every time this augmented motif appears in this sonata, it is based on the minor 7th of the root harmony. With a very high certainty we can therefore reverse this assumption and assume the root note of the harmony, even if it hasn't appeared (yet).

With this I would like to conclude the analysis I am presenting within the scope of this research, as it demonstrates enough tools to be able to reliably and reproducibly determine the root note of the present harmony, and thus by extension also the color. An interesting observation is that the 8th sonata shows a certain symmetry in colors (e.g. it ends with the reverse order of the root notes/colors it starts with). In the end of the piece we arrive at the same point that we started on, and end on a very clear A Dom 7 (9) chord.

Here is a link to the full score of the 8th sonata with annotations, which cover many more details:

https://drive.google.com/file/d/1P1tjWW4_V9QRvNmcTRMgu55C5o-UC3Ip/view?usp=sharing [38]

As all of this painted a clear picture how analysing the 8th Sonata in terms of determining root notes of its harmonies was accomplished, I can present my findings in the final stage of my research.

Stage 4: Creating the color scheme for the 8th sonata

Based on the previously presented analyses I can say with very high certainty that the color distribution in the 8th sonata as implied by analysing the Prometheus and then analysing the 8th sonata would be based exactly on the root notes of the currently present harmony, and would be as following:

[37] Sabaneev, *Reminicences of Scriabin*, 258.
[38] Mirror of file: https://odysee.com/@martinkaptein/scriabin-8-score-analysis

Bar	Root Note	Color
1	A	Green
22	E flat	Flesh (Glint of Steel)
34	F sharp	Bright Blue / Violet
40	A	Green
41 5/8	C	Red (Intense)
45 5/8	A	Green
65 6/8	G	Orange
73 3/8	F sharp	Bright Blue / Violet
73 5/8	B	Blue (/Pearly Blue)
79 2/8	F	Deep Red
96	B	Blue (/Pearly Blue)
100	F	Deep Red
106	B	Blue (/Pearly Blue)
114 2/8	F	Deep Red
121 5/8	A flat	Violet or Lilac
135 6/8	F sharp	Bright Blue / Violet
153 6/8	E	Sky Blue (Moonshine or Frost)
166	B flat	Rose (or Steel)
170	E	Sky Blue (Moonshine or Frost)
173 6/8	B flat	Rose (or Steel)
179 5/8	G	Orange
183	B	Blue (/Pearly Blue)
186	C	Red (Intense)
208	E	Sky Blue (Moonshine or Frost)
210	B flat	Rose (or Steel)
212	E	Sky Blue (Moonshine or Frost)
217 6/8	G	Orange
220	E	Sky Blue (Moonshine or Frost)
221 6/8	G	Orange
241 3/8	D flat	Violet or Purple
247 5/8	B flat	Rose (or Steel)
251 5/8	D	Yellow
257 5/8	B	Blue (/Pearly Blue)
258 3/8	D	Yellow
260	B	Blue (/Pearly Blue)
260 3/8	D	Yellow
262	B	Blue (/Pearly Blue)
262 3/8	D	Yellow
264	E flat	Flesh (Glint of Steel)
286	G	Orange
288	D flat	Violet or Purple
290	G	Orange
331 4/8	B flat	Rose (or Steel)
337 4/8	D flat	Violet or Purple

Bar	Root Note	Color
339 4/8	G	Orange
343 4/8	D flat	Violet or Purple
363 6/8	B	Blue (/Pearly Blue)
371 3/8	A sharp/B flat	Rose (or Steel)
377	A	Green
394	E flat	Flesh (Glint of Steel)
398	A	Green
404	E flat	Flesh (Glint of Steel)
412	A	Green
415 5/8	C	Red (Intense)
429	A	Green

By the same logic deducted from analysing the Prometheus, each color should be present until the next color "enters". It should be noted again that this only constitutes the addition of one color, as adding multiple colors (like in the Luce Part of the Prometheus) would be difficult to account for in a sufficiently objective and analytical way.

A very important point of attention is the actual choosing of the colors: In Scriabin's overview of colors[39] we see that there is no precise definition of each color. While the addition of a "character" to a color helps, there would still be an aspect of freedom when deciding e.g. which type of Green corresponds to which HEX color code value exactly.

I have opted to rely on HEX color codes [40], because they clearly define a color and precisely tell the display and computer which color to use. These codes are also supported by the Light Controller (FLX S24), which I will ultimately use on my exam to perform the 8th sonata with lights.

While there is no precise definition in the preface of the score of Prometheus, what each color means, next to my own artistic vision, I have relied on following sources to compile a table of colors, corresponding to each note, which are most likely accurate:

- Yale Symphony Orchestra, video from the performance from February 13 2010 of Prometheus. [41] [42]
- Color Table in *Russische Musikanschauung um 2019.* [43]

[39] Alexander Scriabin, *Prometheus. Poem of Fire. Symphony No.5 Op.60* (Berlin: Editions Russes de Musique, 1911), preface.

[40] "The Ultimate Guide to Hex Colors", iStock, accessed 3 Mar 2022, https://marketing.istockphoto.com/blog/hex-colors-guide/ .

[41] "Scriabin's Prometheus: Poem of Fire", Yale Campus YouTube channel, accessed on June 14th 2021, https://www.youtube.com/watch?v=V3B7uQ5K0IU .

[42] "Scriabin's"Prometheus" To Be Performed at Yale in Living Color", YaleNews, accessed 3 Mar 2022, https://news.yale.edu/2010/01/15/scriabin-s-prometheus-be-performed-yale-living-color .

[43] Eberlein, Russische Musikanschauung, 87.

- Comparison of different sources of Scriabin's perceptions of actual colors in *Music and Modern Art*.[44]
- Overview of colors in the Bowsers Biography of Scriabin. [45]
- Color Table in *Synethesia and the Arts*. [46]

The colors I have compiled, with the help of above mentioned sources were assigned in the following way to notes:

Note	Color
F sharp	#695AE9
B	#6E9AD2
E	#55D1CB
A	#36C14E
D	#DFFF0E
G	#FFBA54
C	#E00404
F	#DC143C
B flat	#5A5A63
E flat	#60608C
A flat	#953553
D flat	#6B2594

Visually, these color values look like this (Figure 13):

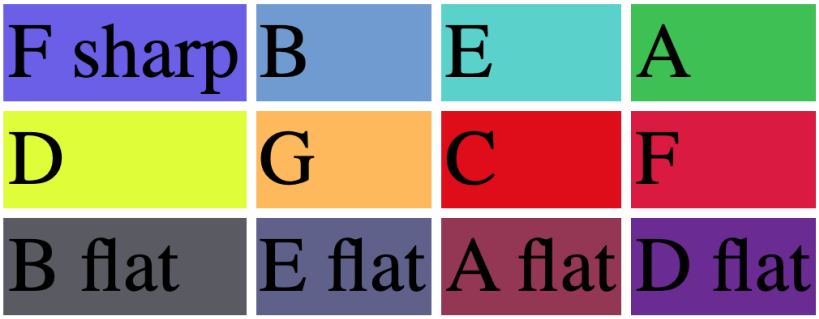

Figure 13: Figure 13, Notes with corresponding colors, according to compilation following sources.

During the course of determining these colors my artistic expertise played a big role: In the sources there were partially discrepancies in colors, if one source

[44] James Leggio, *Music and Modern Art* (Routledge, 2014), 76.
[45] Faubion Bowers, *Scriabin, a Biography* (Courier Corporation, 1996), 205.
[46] Dani Cavalarro, *Synesthesia and the Arts* (McFarland, 2013), 64.

referred to D as yellow[47] a different source referred to it as orange-yellow [48]. Ultimately, there can be endless debate about which Red has to be which exact shade of Red, which Green, Green, etc.. Still, my choices of colors were as closely possible based on my sources, taking in mind all of the sources combined: All the sources featured only written descriptions of colors, from which it is arguably impossible to determine the exact color which Scriabin would have had in mind. That is why I placed emphasis on referring to note-names instead of color (-names), as it will be a more generic version, which could give a basis for further research.

Stage 5: Performing the sonata with the color scheme

Now that I come closer to the end of my research documentation, there are some open questions as to the practical implications of a performance with colors. The first question being how I want to practically achieve that. I have discovered that the school at which I am accomplishing my master's degree, offers a great opportunity for exactly that: The room A0.16 at the main building of the FHK Conservatory in Tilburg, offers a great Steinway D grand-piano as well as a sophisticated light-installation (more on that later).

Figure 14: Figure 14, Light Controller FLX S24, Picture from FLX S24 manual (Fontys FHK)

Hence, it would be easiest to ask a colleague who would, at the right moment, switch the colors, while observing the sheet music during my own playing/performance. The switching of the colors itself would be achieved every time through a simple press of a button: The room A.016 features an advanced light controller (FLX S24, see Figure 14), that allows for a preprogrammed order of colors to be set (and saved on a USB thumb drive). Also colors in HEX format are supported, which is the reason I have outlined the HEX codes in the previous chapter. The next color can be set with a simple flick of a switch.

As this has to happen and a precise timing, it should be done by a human, who

[47] Eberlein, Russische Musikanschauung, 87.
[48] James Leggio, *Music and Modern Art* (Routledge, 2014), 76.

knows the piece. Hence it is important to practise the "switching of colors" in advance, so any possible colleague is familiar with the piece, by hearing and reading the score. As the 8th sonata by Scriabin can readily be described as complicated music, when listening but also when reading the score, this step of building familiarity is important.

Because I will be performing the piece live, this is not something that can be achieved by a simple timer, but has to be done by a human, who is familiar with the material and piece.

As to the practical programming of the lights, speed is very important: The light system in the hall A.016 allows for 'fancy' effects, such as rotating lights. However, as we have seen, sometimes the harmony and color switch at quite a rapid pace, hence the lights have to be programmed in a way, that the switching of colors occurs sufficiently quickly.

My vision is that the coloring system should be as simple as possible: The lighting should not distract from the music, but should serve as more of a supporting addition. After all, the performance still will be about the musical piece, not a light show. Another reason is that harmonies are already precisely synchronized with colors, so according to my vision no special additions in the form of light effects, strobe lights, moving lights should be necessary in the scope of this research and my performance.

In fact, if my performance, or generically speaking *any* performance would take place, instead of a sophisticated lighting system, a beamer projection of a single plain color would be sufficient. This allows for more practicability of performing a piece with colors, specifically the 8th sonata in this case.

Because I was unable to get hold of the actual room, I have compiled a recording of the 8th sonata, synchronized with colors, as presented in the previous chapters:

https://www.youtube.com/watch?v=oT5jOBXDwME [49]

This recording was done with a score containing annotations, hence I was mentally fully aware of the color that should be present at the moment. Moreover, this video can serve as a demonstration of a performance, with a lighting system, or beamer, which color would be projected at precisely what moment.

Stage 6: Changes to performance practice

An interesting point remains: How did all of the discoveries I made within the scope of my research change my approach to performance practice? This is an important point to analyse, as it presents a point at which I can verify if my findings have practical effects and consequences. In order to analyse that I have relied on a different recording of the 8th sonata, which I made before my research, and before being aware which harmonies yield which colors:

[49] Mirror of file: https://odysee.com/@martinkaptein/scriabin-sonata-8-colors

https://www.youtube.com/watch?v=S7jiSdswdfM [50]

In my perception (as that is all I can rely on in this question), my view of this sonata changed completely: The first effect was my mental awareness of colors and therefore also harmonies. So, when listening and comparing both recordings it is clear that I take much better care of the bass voices and that I listen more to harmonies. An example when this becomes clear is the simple fact that I tend to take much more time in general to perform the full piece: The performance with colors is about a full minute longer than the recording without colors.

Another difference is that I noticed that I tend to listen more to the harmony tone colour changes, and perform them very differently now, especially in moments when colors change relatively quickly: Comparing the time mark 10:10 on the "before" recording and 10:13 on the "after" recording, shows that I now build the harmony up from the bottom to top in a pianistic sense.

Not only my attention to harmonies changed but also my perception of character: For example, during the non-color recording I play the passage marked *Tragique* (7:42) quite relaxed, whereas during the color recording (8:09) I play it much more ferociously as it is very clear for me that it is a "red" passage. This shows, that the awareness of colors change my perception in a very noticeable way. For me red color in this musical context has an almost angry connotation, which is clearly audible in the recording. Interestingly enough, I did not think to play "angrily" during the performance, just listened to the music and had the awareness of the color red.

A mental aspect, which I would like to report on is that I found it much easier to feel myself more comfortable in the piece (in the sense of memorization), when I would think about colors. Before, I was often nervous about forgetting notes or harmonies during performances, but this way it was much more comfortable. As if the complex music of the 8th sonata now indeed makes much more sense. Interestingly enough the changes of colors correspond very precisely with Scriabin's markings for dynamics.

Conclusion and Discussion

I argue that in the scope of this research documentation I have answered my original question, namely how the synaesthetic color perception of Scriabin (...) can be applied to his 8th piano sonata, as precisely and far as possible. Now I have presented a precise and as objective of a way as possible to create a color mapping system, that allows argumentatively and historically informed to apply colors to other pieces of Scriabin, as closely as he himself might have done. The sub questions that were presented in stages 1 through 6 have guided my research in a structurally logical and helpful way, whilst giving answers to each of those questions.

[50] Mirror of file: https://odysee.com/@martinkaptein/sonata-8-raw

The value which this research offered was quite far reaching: Starting from analysis of relevant literature, an in-depth analysis of two major works by Scriabin with findings that, according to my own research, were not yet publicly stated in a clear way. Scriabin's theory and system of composition has long been seen as a mysterious and highly complicated ordeal, to the solving of which my research offers a valuable addition. An example of this, is the usage and applying of analysis which is more often used in the Jazz world, such as quartal harmonies, dominant 7th chords with additions and upper structures. Scriabin is a composer where traditional attempts of analysis often fall short, and rarely contribute in practical ways to the process of deciphering of Scriabin's compositional process. In the following I would like to take a more critical look at things which could have been done differently, or elements that still present a certain degree of uncertainty.

First of all, each analysis will inevitably contain things which are subjective. After all, it is impossible to actually look into the head of Scriabin and understand how he dealt with his technique of composing. However, I argue that the analysis which I used in the scope of my research, was as close to objective and historically informed as possible: Most of my analysis focused on harmonic elements (such as discovering Dom 7 chords), and whilst the dominant function of these chords can be debated, its structure is very clear in most cases (root, 3rd and 7th of harmony, whilst paying attention to its enharmonic spelling).

Secondly, in my research I managed to only understand one of the colors in the Prometheus. Most likely, discovering the explanation of the missing color will warrant its very own research. And, as I have argued earlier, in the scope of this research, it was not responsible enough to argue for a possible explanation of this second color in a sufficiently objective way, hence I left it out. Of course, for a full Scriabin experience this system of color should be explained and understood, but that would have most likely to happen from a more philosophical point of view, as far as I can tell now.

Another point is the fact that it is impossible to know for certain if the colors I am actually going to use in the practical performance will match the colors Scriabin thought of precisely enough. Again, this is a point which could warrant its very own research, and could potentially lead to even more interesting findings. After all, how do we know what exactly is Green or Blue, in terms of their precise electro-magnetic wavelength?

One more thing that could have been dealt with differently is that I have chosen one piece to apply colors to, namely the 8th sonata. It could just as well have been a very different piece indeed, although preferably from the same compositional period of Scriabin. In fact, it would be an interesting addition to this research, to apply colors with the same system, as deducted from *Prometheus* to other piano pieces, perhaps shorter pieces (such as Preludes or Poems) or different Sonata's.

Last but not least, several more elements of my practical presentation can be

done different, e.g. I could control the lights with the addition of a foot pedal myself. But as I have argued before, I am confident that the methods I have chosen are still the most practical ones.

My research allows for different possibilities of technical performances (using the lights): It is possible to use sophisticated light installations, or just a beamer projection onto a flat surface. Light effects can be endlessly complicated, which would clearly go beyond the scope of this research. Scriabin himself has been known to wish for very sophisticated light effects, which my research wouldn't offer. However, as it is impossible to look into Scriabin's thoughts, that would probably become a very difficult ordeal.

The 6th stage of my research showed enormous potential of improvements of my piano performance practice (obviously I can only speak for myself). Of course every human being will ultimately perceive the complicated relationship between color and music in a different way. As I saw very big improvements and positive changes in my practice, especially in mental aspects, I would be convinced that the method of adding colors to music could prove to be very beneficial to people who struggle to memorize music, or are more prone to nervousness during performances. Using colors in practice or performance can therefore have a lot of uses. Ultimately, colors might be able to convey something, that spoken (by a teacher) or written words (in the score) might struggle to do (see how my performance changed in the "red" passage). As such, this can have a lot of implications, for future performance or even teaching practices.

To conclude: My research makes several connections, combining theoretical research with very practical implications, that undoubtedly presents value in the field of music and beyond. This research presented a historically informed way to add colors to a composition of Scriabin, as derived from Prometheus. My performance with colors presents only a starting point as further application with regard to accessibility of audiences can be done using the analyses and outcomes I have created.

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