CHAPTER ONE
Paint Splatters and Ocular Harpsichords: the Metaphor of Color in Musical Discourse

The monochrome beam of sound has been broken up into a bright, sparkling fire of art, in which all colors of the rainbow glitter…¹

---Wilhelm Wackenroder, “Das eigenthümliche innere Wesen der Tonkunst”

In his unabashedly romantic prose, philosopher Wilhelm Wackenroder set forth a history of musical sound. Nature, he claimed, first unveiled a crude sonic substance that mimicked the primitive cries of early man. Over the centuries, as humanity progressed and developed, this substance became increasingly refined, turning into “a comprehensive and flexible mechanism for the portrayal of human emotions.”²

Wackenroder’s metaphorical, and extremely Newtonian, description of this development of musical sound—a monochrome beam refracting into a Technicolor rainbow—refers, in part, to the emergence of the art of orchestration and its new status as an integral part of musical composition.

Today it seems unremarkable that Wackenroder thought to describe this development by recourse to an explicitly visual vocabulary: we routinely refer to timbre—and sometimes harmony—as “musical color.” The descriptions by musicians and non-musicians alike of Debussy’s or Wagner’s orchestration as “colorful” or as

² Ibid., p. 188.
employing a “rich palette” are commonplace, while the German term for timbre, Klangfarbe, reflects the easy equation of tone quality with color. In the first half of the 18th century, however, before the birth of the modern concept of orchestration, “color” signified other things within musical discourse: those influenced by Newtonian theories of light (including of course, Newton himself) conceived of the spectrum as equivalent to the seven pitches of the musical scale, thus equating pitch class—and not tone quality—with color; others, entrenched in debates over the primacy of melody or harmony, frequently used language borrowed from discussions of painting to show how either melody or harmony (depending on the particular author’s view) was equivalent to design, the other a mere color. Others yet, distressed by wordless instrumental music that included bold contrasts and sudden changes of mood, invoked the metaphor of color as an act of criticism, declaring such music analogous to random paint splatters thrown upon a canvas. These varied ways of conceptualizing musical color influenced and transformed 18th-century musical vocabulary, discourse, and aesthetics. Indeed, the notion that timbre constitutes musical color both depends upon and contains the remnants of the earlier applications of the color metaphor. To understand timbre necessarily involves the exploration of the many other modes of conceiving of musical color.

Musical aesthetics in the 18th century: music’s flexible identity

The many ways the color metaphor was deployed reflects the complexity and richness of 18th century musical culture and
aesthetics. The century encompassed a labyrinth of conflicting and at times contradictory notions over music’s place in respect to mimesis, nature, the other arts, and expression. The rapid evolution of stylistic and aesthetic movements created a world in which the baroque doctrine of the affects mingled freely with emerging notions of musical expression, and where older mathematical approaches fused with a new, explicitly sensual, understanding of music.

The doctrine of imitation dominated the aesthetics of the period, but even here, we can find no clear consensus or uniformity: every 18th-century author seems to attribute differing imitative abilities to music: Dubos attributed both instrumental and vocal music with mimetic powers: instrumental portions of operas could directly imitate tempests, while operatic recitative imitated the sentiments of the words.3 Charles Batteux also stressed the importance of musical imitation, which he divided into two categories:

There are two kinds of music. The one merely imitates unimpassioned sounds and noises and is equivalent to landscape painting. The other expresses animated sounds and relates to the feelings. This corresponds to portrait painting.4

Unlike Dubos, Batteux ranks purely instrumental music lower than vocal music, owing to its only partial ability to imitate the outside

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world. Engel, in his famous essay on musical painting, embraces a spectrum that credits music with imitative powers ranging from the reproduction of nature sounds to the imitation of the impression that a given object makes upon the listener.\(^5\) Chabanon, Boyé, and English critics like Charles Avison seemingly dismiss musical imitation altogether, arguing for musical “expression,” while Rousseau argued that music imitated not nature, but impassioned speech.\(^6\) When music was limited to literal imitation (such as bird songs), it often seemed trivial; but its attempts to imitate more profound subjects were just as often criticized for being vague.

These difficulties are reflected in the secondary literature, especially in accounts of the development of musical aesthetics in the 18th century and the so-called rise of instrumental music. The complexity of the issue has led occasionally to dismissive attitudes towards musical mimesis. John W. Draper, for example, concluded that musical imitation was “interpreted in any way that the ignorance or ingenuity of the writer might suggest.”\(^7\) Some scholars cast the rise of instrumental music as a process of shedding dependence on imitative theories of art, following themes laid out in M. H. Abrams,

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The Mirror and Lamp, which charts the emergence of expressive theories of art.\textsuperscript{8} Maria Rika Maniates, in her study of imitation in France, surveys the myriad, often conflicting, views that circulated in France during this period. Like Draper, she sees a certain element of randomness in the ways imitative theories were applied to music, and concludes that “The writers of the later 18\textsuperscript{th} century do recognize that musical meaning must be liberated from the arbitrary demands of imitative aesthetics and that absolute music must find philosophical understanding.”\textsuperscript{9} John Neubauer explicitly casts the rise of instrumental music as a “departure from mimesis,” and Bellamy Hosler stresses that romantic aesthetics shed Enlightenment attitudes towards representation and imitation.\textsuperscript{10}

Yet this history was far from being as clear or straightforward as these narratives imply, especially since notions of musical imitation remained in place long after “romanticism” had taken hold in musical aesthetics. In fact, both 18\textsuperscript{th}- and 19\textsuperscript{th}-century authors were suspicious of straightforward tone painting that did not seem integral to the musical composition: Johann Georg Sulzer distinguished between “musical painting” and “tone painting” in the Allgemeine Theorie der schönen Künste. The former category, to which Couperin and C.P.E. Bach’s character pieces belong, “entails painting those

\textsuperscript{9} Maria Rika Maniates, “Sonata, que me veux-tu?” The Enigma of French musical aesthetics in the 18\textsuperscript{th} century,” Current Musicology; Vol. 9 (1969), pp. 117-40; here p. 136, italics mine.
emotions that stir our soul through specific sentiments.” Tone painting, on the other hand—musical gurgling brooks and lightning flashes—“violate the spirit of the music.” Sulzer wrote:

It is unconceivable to me how a man of Handel’s taste and talent could sink so low in his art by trying in an oratorio about the plague in Egypt to paint the jumping of locusts and other tasteless things. A more nonsensical perversion of art can scarcely be imagined.¹¹

In his 1837 essay on musical imitation, Berlioz made a similar distinction between kinds of musical mimesis. He distinguished between musical imitation as an end and as a means, arguing that the latter added to music’s “independent power and nobleness,” while the former detracted from it. After praising Beethoven’s Pastoral symphony, he complains that in the graveside duet in Fidelio Beethoven imitated “the dull sound of the rolling stone.” He goes on:

Now this imitation [i.e., the rolling stone], being in no way necessary to the drama or the effectiveness of the music, is really an end in itself for the composer: he imitates in order to imitate—and at once he falls into error.... The same could be said for Handel, if it be true—as is commonly said—that in his oratorio Israel in Egypt he tried to reproduce the flight of locusts, and this to the point of shaping accordingly the rhythmic figure of the

vocal parts. Surely that is a regrettable imitation of a subject even more regrettable—unworthy of music in general and of the noble and elevated style of the oratorio.\textsuperscript{12}

Here Sulzer and Berlioz inhabit strikingly similar aesthetic worlds. Musical imitation seems to harbor as much positive potential for Berlioz as it did for Sulzer, while both agree that the depiction of locusts within an oratorio constitutes a debased form of imitation. Given this connection, it is difficult to cast the development of 18\textsuperscript{th}-century aesthetics purely as a departure from mimesis. Neubauer attempts to resolve this contradiction by briefly introducing the idea that imitation was “internalized” during the second half of the century: looking towards Engel’s three modes of imitation, he sees the last category—the imitation of “the impression which the object makes upon the soul”—as a form of internalization, since it “portrays psychic events rather than the external world.”\textsuperscript{13} The brevity of his discussion, however, leaves many questions about the nature of this internalization unanswered, and it does not figure in later arguments in his study.

It would be foolish to attempt either to resolve the inconsistencies between differing mimetic theories or to construct a clean narrative of music’s departure from these theories. Indeed, rather than using imitative theories as a starting point for our understanding of 18\textsuperscript{th}-century aesthetics, I would like to explore how


\textsuperscript{13} See Neubauer, The Emancipation of Music from Language, pp. 74-75.
music was conceived and discussed in order to explain why so many thinkers of the time thought it necessary to impose mimetic theories onto musical aesthetics.

_Criticisms of instrumental music_

In the first part of the 18th century, music, especially wordless music, had no clear aesthetic identity and lacked a cohesive vocabulary for discussing musical practice. Many of the criticisms of instrumental music in the 18th century appear doubly revealing. French critic Noël Pluche, for example, claimed that wordless music attempted “solely to amuse the ear without presenting any thought to the mind” and pretended “to please the listener by means of a long series of sounds devoid of sense”, while J. A. P. Schulz declared that all pieces in the “Italian style” amounted to “a cacophony of arbitrarily connected tones without any further purpose than that of pleasing the ears of insensible amateurs, bizarre and sudden changes in character from joy to despair, from the pathetic to the trivial, without one knowing what the composer has in mind.” These writers were not simply complaining about music that seemed superficial or overly concerned with immediate sensation without any real content: these statements testify to a general frustration over an insufficient vocabulary and aesthetic system for discussing instrumental music.

By tracing the use of the color metaphor in music, we can begin to understand the varied ways that 18th century thinkers conceived of

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music and its capacity for expression. The metaphor is helpful in part because it was used ubiquitously in 18th century culture. Since music was difficult to comprehend, writers welcomed the use of metaphors and analogies that could potentially illuminate its dark secrets by showing how it resembled less obscure arts. Charles Avison, in his essay on musical expression, explicitly included an extended analogy between music and painting as a hermeneutic aid:

... as musical composition is known to a very few besides the professors and composers of music themselves, and as there are several resemblances or analogies between this art and that of painting which is an art much more obvious in its principles and therefore more generally known, it may not be amiss to draw out some of the most striking of these analogies, and by this means, in some degree at least, give the common reader an idea of musical composition.15

Rather than attempting to understand the development of 18th-century musical aesthetics by delving into the thicket of imitative theories, one can follow the use of the metaphor of color and thereby chart the birth of a fundamentally new concept of the musical medium and its capacity for expression.

**Musical science and the ocular harpsichord**

Color and tone have been associated since antiquity, and each has been used to explain and understand the other throughout history, from introduction of the term “chromatic” in music by Plato’s contemporary Archytas of Tarentum, to the use of musical language by 20th century painters to elucidate abstract painting. Thinkers have drawn analogies between the rainbow and the musical scale, and suggested that color and tone shared basic underlying scientific principles. Aristotle, for example, speculated that colors “were determined like musical intervals,” i.e., that pleasing colors, just like consonant intervals, arose from simple ratios, and that there might be a color scale analogous to the musical scale.\(^\text{16}\) Similarly, the discourses of music and painting were closely intertwined during the 18th century; theorists debated what “musical painting” might be, how painting and music related to one another. All aspects of painting seemed to be drawn upon in discussion of music: the idea of the sketch, as Annette Richards has shown, was frequently invoked in relation to improvisation and the free fantasia.\(^\text{17}\)

Though many scholars made speculations concerning the connections between color and tone, it was not until Louis Bertrand Castel conceived of an “ocular harpsichord” in the early 18th century that a practical application of the analogy was attempted. Castel, a


Jesuit who taught mathematics, physics, pyrotechnics, and mechanics at the Collège Louis-le-Grand in Paris, had closely studied the work of both Athanuious Kircher and Newton, and was powerfully struck by their equation of tone with light and color. Kircher’s massive *Musurgia Universalis*, published in 1650, traversed diverse aspects of music and included discussions of celestial harmony, acoustics, and musical instruments. At several places, he touched on the connection between color and music. He believed, for instance, that color affected the mind in a manner similar to sound, writing, “the colors also have their harmony, which pleases no less than music, and this analogous harmony even has a very strong power to excite the affects of the mind.” Even more striking is Kircher’s synesthetic conception of the propagation of sound: “If, when a musical instrument sounds, someone could perceive the finest movements of the air, he certainly would see nothing but a painting with an extraordinary variety of colors.”

![Figure 1.1: Newton’s color wheel with musical pitches](image)

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Newton, in his *Opticks* of 1704, not only equated the seven colors of the rainbow with the seven pitches of the musical scale, but also argued that widths of the colors in the spectrum, as refracted through a prism, had the same relative lengths as the strings that gave the pitches of the musical scale. Using a Dorian scale with D as the root, he equated red—the color with the lowest frequency—with D (which, in this case, is the note with the lowest frequency), and moved note by note, color by color, up the scale. [fig 2] Thus, the primary colors red, yellow, and blue are equivalent to the tonic triad, D-F-A.\(^{19}\) [fig. 3] In order for his color-tone equation to fit, Newton was forced to add a color to match the number of tones in the musical scale; he invented indigo for this purpose.

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\(^{19}\) Sir Isaac Newton, *Opticks or a Treatise of the Reflections, Refractions, Inflections & Colors of Light* (New York: Dover, 1953 [based on 4th ed. Of 1730]).
Fascinated by Kircher and Newton’s work, Castel published an article in the *Mercure de France* in 1725 describing his idea for “harpsichord for the eyes” that would render sounds as colors, thus painting music. He felt no obligation to retain Newton’s own equation of the colors and tones, basing his correspondence less on mathematics and analogous frequencies and more on his own taste. Blue he assigned to C, the tonic, and red to G, the dominant (which he saw as a logical association), and yellow, to E, the mediant, and spreading the spectrum over the rest of the musical scale. (fig. 4) This of course, only accounts for a single color-octave, but Castel imagined an instrument with a greater range than simply the 12 notes of the chromatic scale. Equating darkness with low pitches, and lightness with high ones, Castel imagined an instrument that moved through progressively lighter shades with each higher octave.

![Figure 1.4: Castel's color-scale](image)

In his article, he explained the aesthetic basis for the instrument, arguing that a color-keyboard would have the potential to please a listener just as much as a musical one. In order to explain why, he first revealingly deconstructed the source of music’s beauty.

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20 Castel, “Clavecin pour les yeux, avec l’art de Peindre les sons, & toutes sorts de Pièces de Musique,” *Mercure de France* November 1725, pp. 2552-2577.
Like many other 18th-century thinkers, he believed that music’s sounds, when considered in isolation, contained no beauty whatsoever:

... considering each of the sounds that compose the most beautiful musical air individually, nothing is more insipid than these isolated sounds: what is more sour or flatter than the sound of a drum, bassoon, serpent, or even a trombone, and the diverse stops of the organ and harpsichord? Do you find the sound of a bell or a piece of wood or even a cauldron charming?21

Musical beauty only arises through the combination of sounds into harmony and melody:

... however a melodic and harmonic sequence played on all these instruments, and in particular, the drums, the bells, the woodwinds, never ceases to please the ear greatly.22

To illustrate the necessity for sounds to be combined into melody and harmony in order to have effect, Castel invoked the cat harpsichord. The cat harpsichord was an instrument with an ordinary keyboard, but instead of strings and plectrums, it contained cats of varied sizes, ages, and voices that were poked in the bottom when keys are

21 “En effet prenez en particulier chacun des sons qui composent le plus bel air de Musique; rien n’est plus insipide que ces sons isolez, souvent même rien n’est plus aigre; quoi de plus aigre ou de plus plat que le son d‘une Timballe, d’un Basson, d’un Serpent, d’une Trombone même, & de divers jeux de l’Orgue & du Clavecin ? trouvez-vous bien charmant de soi le son d’un Cloche, ou d’un morceau de bois, ou même d’un chaudron ?” Ibid. p. 2570.

22 “… cependant une suite melodieuse ou harmonique de sons sur tous ces instrumens, & en particulier sur des Timballes, des Cloches, des morceaux de bois, ne laisse pas de plaire beaucoup à l’oreille...” Ibid., p. 2570-1.
struck. Thus, a music of meows was made by the different cats’ sequential cries of pain. Legend had it that the instrument cured a melancholic prince for whom everything had become disgusting, since the instrument induced irrepressible laughter. Castel continued,

... I do not tell you [about the cat-harpsichord] except to make you realize that sounds on their own possess no beauty, and that all the beauties of music come not from sound, but from the melodic sequence and the harmonic combination of these sounds, multiplied and varied in proportion.

In other words, a single cat’s plaintive meow could not cure melancholy, but the collective cries of many would. Likewise, the ocular harpsichord, in Castel’s mind, would have aesthetic effect, because it would combine and set colors in motion, which, on their own, are more beautiful than isolated musical sounds.

... I conclude that the same sequence and the same combinations being given to colors would bestow upon them the same beauty and charms, which is so much the more true given that colors on their own are infinitely more pleasing and agreeable for the eyes than [isolated] sounds are for the ears. Such is the power of harmony

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24 “...je ne vous cite que pour faire remarquer, qu’en effet les sons n’ont d’eux-mêmes aucune beauté, & que toutes les beautez de la Musique viennent non du son, mais de la suite melodieuse, & de la combination harmonique de ce son multiplié & varié à propos.” Ibid., p. 2571. I am currently making an e-cat harpsichord that I hope will help provide a cruelty-free way of exploring historical cat performance.
and melody that even though single colors please more than simple sounds; it is nevertheless true that beautiful music produces more pleasure, and has something more gripping than the most beautiful painting, which consequently must be regarded as so far very imperfect; given that with a richer foundation, its effect is much smaller than music’s.  

In these remarks, Castel touched on many issues that were central to 18th-century musical aesthetics at large; his thinking appears both of its time and strangely progressive. Like many other early 18th-century thinkers, he believed that isolated sounds were meaningless, indeed displeasing, and that it was only when sounds were combined that they produced something pleasurable. Castel, however, foreshadowed later musical thinking when he argued that the instruments that sound most pleasing in combination were the winds and drums. As we shall see in later chapters, it was precisely these instruments that later thinkers argued had the clearest and most well-defined characters, and therefore the strongest effect (even in isolation). And though Castel believed that isolated colors were more beautiful than isolated sounds, he also believed, as Rousseau would argue later, that music as a whole had a much more powerful effect than painting. In other words, though music’s medium was inferior to that of painting,  

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25 “...je conclude que la même suite, & les même combinaisons étant données aux couleurs, leur procureront les mêmes beautez & les mêmes charmes; ce qui est d’autant plus vrai que les couleurs sont par elles-mêmes infiniment plus riantes & plus agréables pour les yeux, que les sons ne le sont pour les oreilles. Tel est ce pouvoir de l’harmonie & de la melodie, que quoique de soi les couleurs plaisent plus que les sons; il est vrai neanmoins qu’une belle Musique fait plus de plaisir, & a quelque chose de plus saisissant que la plus belle Peinture, laquelle est par consequent jusqu’ici fort imparfaite, puisqu’avec un fonds plus riche, elle fait de moindres effets que la Musique.” Ibid., p. 2571-2.
the process of turning sounds into music involved a greater aesthetic transformation than the process of using colors to create a painting.

The ocular harpsichord, in Castel’s mind, potentially combined the most powerful elements of the two arts: replacing the dull sounds of music with the “infinitely more beautiful” colors, the ocular harpsichord harnessed music’s dynamism so that colors might achieve the same accumulated effect as sounds do when arranged into melodies and harmonies. Castel built a small model of his ocular harpsichord that used colored strips of paper, and later demonstrated an incomplete version of what he had hoped would someday be a perfected instrument for the eyes. This project was to occupy him with only partial success until his death in 1757. It mattered little, however, whether or not he completed the instrument. The very idea of the instrument galvanized fruitful debate and discussion all over Europe until the end of the century. A number of thinkers were intrigued by the concept of music for the eyes, since it suggested that other new art forms were waiting to be discovered and harnessed. Voltaire was initially intrigued by the idea, and included an extended discussion of the analogy between color and light in his *Elémens de la philosophie de Neuton* (1744).
He laid extensive mathematical foundations for the analogy, and praised Castel for his daring invention of a new art form: 26

An ingenious philosopher wished to push the connection between sound and light, perhaps further than seems allowable for the human understanding to go. He imagined an Ocular Harpsichord, which would make harmonic colors appear successively, as our harpsichords propagate sounds to the ear. He worked at it with his own hands; in short, he intends to play tunes with his eyes. One cannot but thank a man who seeks to give others new arts and new pleasure. This idea has not been executed;

and the author did not follow Newton’s discoveries. In the meantime it seems to me that all fair-minded souls cannot but praise the effort and the genius of someone who seeks to enlarge the course of the arts and nature.\(^{27}\)

Another supporter, M. Rondet, eagerly made suggestions for executing the construction of the ocular harpsichord, while a number of other 18\(^{th}\)-century thinkers praised the instrument: a Mr. Descazeaux published an ecstatic poem, “Stances sur le merveilleux Clavecin Oculair:\(^{28}\)

\begin{quote}
Muses, échauffez mon génie,
Sortez avec lui du cahos;
Du tendre Amant de l’harmonie
Je vais célébrer les travaux;
D’une gloire qui m’est offerte
Je franchis la barriere ouverte,
Je veux unir ton nom au mien,
Ç[astel] si j’obtiens la victoire,
J’éterni erai ta mémoire,
Mon triomphe sera la tien.

Joûissez d’un nouveau Spectacle,
Habitans du vaste Univers,
Un Mortel a levé l’obstacle
Qui tenoit votre esprit aux fers.
Le préjugé vif & timide,
\end{quote}

\(^{27}\) Ibid., p. 227-28. “Un Philosophe ingénieux a voulu pousser ce rapport des Sons & de la lumière peut-être plus loin qu’il ne semble permis aux hommes d’aller. Il a imaginé un Clavessin oculaire, qui doit faire paraître successivement des couleurs harmoniques, comme nos Clavessins nous font entendre des sons ; il y a travaillé de ses mains, il prétend enfin qu’on jouerait des airs aux yeux. On ne peut que remercier un homme qui cherche à donner aux autres nouveaux Arts & de nouveaux plaisirs. Au reste cette idée n’a point encore été exécutée & l’Auteur ne suivoit pas les découvertes de Newton. En attendant il me paraît que tout esprit équitable ne peut que louer l’effort & le genie de quiconque cherche à agrandir la Carrière des Arts & de la Nature.”

\(^{28}\) Descazeaux, “Stances sur le merveilleux Clavecin Oculaire,” Mercure de France April 1739, pp. 768-9. The ocular harpsichord seems to have attracted poetry: the painter Lemierre published a poem on the ocular harpsichord in 1769 entitled, “La peinture,” which explained the instrument’s principle. For a more extended discussion of the praise of the instrument, see Maarten Fransen.
Sous les coups du nouvel Alcide,
Frémit & succombe abattu ;
Un calcul exact le désarme,
Du son la couleur prend le charme,
Et, des tons amis la vertu.

Quel torrent inonde mon ame
Des plus légitimes plaisirs !
Le transport excité, l’enflame,
Je ne forme plus de désirs.
Quel rapide cours de nuances !
Quel accord dans leurs différences !
Pour mes yeux charmés quelle voix !
Le Défenseur de Siracuse
Renaît-il ? Oùy. Volez, ma Muse,
Le dire au plus puissamt des Rois.

The idea of color-music was, for Castel, merely the beginning of the harpsichord’s potential. He imagined instruments for each of the senses, so that one could make music for the nose, mouth, and even the hand:

1. Take some forty scent bottles filled with different perfumes, cover them with valves, and arrange them so that the pressing of the keys open these valves: there you are for the nose. 2. On a board arrange objects that can make different impressions on the hand, and then let the hand come down on each of them: there you are for the touch. 3. Arrange some objects that taste fine, interspersed with bitter objects. But am I talking to people who have to be told everything? 29

29 Castel, *Mercure de France*, March 1726, p. 439. Though Castel never took his idea of a Nose Harpsichord any further, Polycarpe Poncelet published his *Chimie due goût et de l’odorat* (1755) in which he put forth his notion of the “taste scale” (sour, bland, sweet, bitter, sweet-and-sour, tart, and hot).
Castel, thankfully, never attempted to build a harpsichord for the nose or mouth.

Georg Philipp Telemann saw Castel’s model during his stay in Paris in 1737-38, and was so taken with the idea of the ocular harpsichord that he published a pamphlet on the instrument upon his return to Hamburg in 1739. Telemann’s description reveals that he conceived of music in the same manner as Castel, i.e., that the heart of music lay in the process of bestowing motion onto raw materials. Telemann, believing that the instrument produced a “new, truly chromatic music,” began his description by carefully explaining how each tone corresponded to a different hue. He then continued:

But in this [i.e., the tones] we have here only half of the music. Its soul is movement. This is based in the following: different tones must be heard at different times, which are, one after another, longer or shorter, and governed by the time signature.

He went on to defend the instrument against the criticism that color-harmony did not exist. Believing that the connection between tone and color in Castel’s instrument bound the two media together such that color could rise and fall just as tones do, he concluded that “… a fugue in tones would be a fugue in colors... the fugue is nothing other than

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30Georg Philipp Telemann, Beschreibung der Augenorgel, oder des Augenclavicimbels, so der berühmte Mathematicus und Jesuit zu Paris, Herr Pater Castel, erfunden und ins Werck gerichtet hat. (1739)
the bringing together of similar colors at different times in the measure.\textsuperscript{32} Both Castel and Telemann, in order to explain how the ocular harpsichord functioned, had to explain the relationship between tone and music. It becomes clear that both believed that isolated tones have no aesthetic value; indeed, for Castel, they were closer to being repulsive than attractive.

Throughout the century, numerous other thinkers took up the idea of color harmony and the ocular harpsichord: Euler discussed it, and defended its scientific basis; variations were made on it by Guyot and Krüger. Guyot, in his \textit{Nouvelles Récréations physiques et mathématiques}, suggested a simpler version of the ocular harpsichord, which consisted of a perforated cylinder. A piece of paper with colors corresponding to the pitches of a melody could be placed inside and rotated so that different colors would show through the holes in time with the performance of a melody. Moses Mendelssohn praised the idea of color harmony, though he believed that further effort was required in order bring such an art form to fruition.\textsuperscript{33}

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When the ocular harpsichord is discussed in modern literature, it is often pointed to as an example of how 18\textsuperscript{th}-century thinkers began to use language borrowed from painting. Maarten Franssen focuses on

\textsuperscript{32} \textit{...eine Fuge in Klänge eine Fuge in Farben ausmachen werde. Denn eine Fuge ist nicht anders, als die Widerbringen gleicher Farben, zu verschiedenen Zeiten des Tactmaßes.} Ibid., p. 21.

\textsuperscript{33} See Euler, \textit{Lettres à une Princesse d’Allemagne sur divers sujets de physique et de philosophie}, (1768-1772), in \textit{Opera omnia}, 3\textsuperscript{rd} series vols. 11-12, ed. Andreas Speiser (Zurich: Orell Füssli, 1960), and Franssen’s extended discussion of Euler, pp. 45ff.

Moses Mendelssohn discussed the idea of color music in his \textit{Breife über die Empfindungen} (Berlin, 1755).
the ways in which the instrument embodied a tendency towards synesthesia in the arts, showing how discussions of the instrument touched upon many of the issues at stake in the formation of romantic aesthetics. Thomas Tolley also briefly mentions the instrument, though in his discussion it appears as a “side effect” of Newton’s *Opticks*, and he consequently focuses more on the impact of Newton’s work as a whole, showing, like Franssen, how musical and visual vocabularies became increasingly intertwined during the course of the 18th century.

These scholars focus primarily on the positive reception of the ocular harpsichord in the 18th century. Though numerous thinkers were intrigued by the idea of color music, many more thought such an idea ridiculous. It is in these criticisms that some of the most important steps were made towards the establishment of a philosophy of music that valued instrumental music. Early criticism of the ocular harpsichord focused primarily on the weakness of the scientific basis for the color-pitch analogy. Voltaire, despite his initial good will towards Castel, ridiculed the idea of the ocular harpsichord in his *Lettre à Rameau*, which he wrote after becoming annoyed at Castel for criticizing his *Élémens*. Mocking both Castel’s idea and his failure to actually produce the instrument, he wrote:

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It paints minuets and nice sarabands. All the deaf of Paris are invited to the concert that he promises them for twelve years... with what goodness and obligingness towards humanity does he deign to demonstrate... with lemmas, theorems and scholia, 1. That people love pleasure. 2. That the art of painting is a pleasure. 3. That yellow is different from red, and hundreds of other thorny questions of this kind.\textsuperscript{36}

Dortous de Mairan of the Académie des Sciences argued in 1737 that the analogy between color and tone was faulty. He argued that tones, unlike colors, were rooted in simple mathematical ratios and that the eye and ear were such different organs that it was futile to suggest sound and color would have similar effects.\textsuperscript{37}

The criticisms of the instrument were prevalent enough that an anonymous supporter of Castel published a pamphlet in 1757 detailing the history of Castel’s attempts to perfect the instrument and

\textsuperscript{36} Voltaire, \textit{Correspondence}, Theodor Besterman, ed. 107 vols. (Genève: Institut & Musée Voltaire, 1953-1965), vol. 7, pp. 477-80, quoted and translated in Franssen, p. 42. “Il peint des Menuets, de belles Sarabandes. Tous les Sourds de Paris sont invités au Concert qu’il leur annonce depuis douze ans; ... Avec quelle bonté, quelle condescendance pour le genre humain, daigne-t-il démontrer... par Lemmes, Théorèmes, S choiles, 1. Que les hommes aiment le plaisir. 2. Que la Peinture est un plaisir. 3. Que le jaune est différent du rouge, & cent autres questions épineuses de cette nature.”

\textsuperscript{37} See Jean-Jacques Dortous de Marain, “Discours sur la propagation du son dans les différents tons qui le modifient,” \textit{Mémoires de Mathématique et de Physique, tirés des registres de l’Académie Royale des Sciences 1737} [pub. 1740], pp. 29ff and Franssen’s discussion, pp. 42-44. Marain strikingly described the ear as a kind of musical instrument: “The immediate organ of hearing is in fact, so to say, a real musical instrument...: it is a kind of harpsichord, [containing] an infinity of strings, which by their different lengths and their different tensions are capable of taking care of the relations of the vibrations of all possible tones.” Ibid., pp. 37-38, quoted and trans. in Franssen, p. 43. “L’organe immediate de l’ouie est en effet, on peut dire, un véritable Instrument de Musique... c’est une sorte de Clavecin, [contennat] une infinité de cordes, qui par leurs différentes longueurs, & par leurs différentes tensions, sont en état de fournir aux rapports, & aux vibrations de tous les tons possibles.” For more on analogies between humans and musical instruments, see chapter three.
defending Castel from his detractors. First, the author surveys the major criticisms of the instrument:

First, That colors could never have the same effect on the eyes as sounds have upon the ears; because sounds make such impressions, as go so far as to effect, and stir the soul, but that colors can excite no such emotions. Secondly, That the analogy between sounds and colors, was very different from that which he seemed to conceive in them; and that this analogy consisted but in the greater or lesser refrangibility of rays, and nothing more. Thirdly, That a note could never be divided but into nine sounds, and those very weak, very small, and hard to be understood, or distinctly heard; but that a color might be divided into, or generate more than thirty or forty shades, all very distinct and easy to be perceived by the eye. That he might then make a Harpsichord out of one single individual color, differently shaded as well as one out of the twelve primitive or mediating colors. Fourthly, That the sounds striking the ear either simultaneously or successively, had their consonances or dissonances, but that colors (here are not meant the black or white, but only the primordial ones) could never form any consonances, or rather that they have neither consonances nor dissonances. Fifthly, That three colors starting at once can never unite together in the eye, so as to form one single individual color, as three sounds uttered at once and striking the ear, form one single individual sound: that this difficulty is
such an obstacle, as he can never surmount and which must overset his whole system. That then, properly speaking, there could be neither melody nor harmony in his new instrument; no melody, because that requires dissonances mixed with consonances; no harmony, because three different colors starting at once, can never form a single one, composed out of three, &c. &c. 38

At first blush, the fifth objection seems rather odd, since one can clearly mix two or more colors into a new, unified color. It is less bizarre, however, when one considers that the ocular harpsichord functioned by flashing strips of colored papers: while two colors can be mixed into a new color, the eye, upon seeing two different colors, does not blend them in the same way that the ear, when two tones are sounded, will hear them as a unit. The pamphlet goes on to defend each of these points; yet, the defense reveals that, in the thirty years between Castel’s first article and the anonymous pamphlet, certain assumptions about the worth of sound and color had changed.

First, he did not pretend to work an effect upon the eyes that should penetrate the mind, as the sounds do which enter in at the ear; and that it is true that the sense of sight, though the most extensive, is yet with respect to the sensations it excites in the soul, one of the most limited, as it affects it the least; that he pretends to produce no

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38 Explanation of the ocular harpsichord, upon shew to the public (London: S. Hooper and A. Morley, and Gay’s Head, 1757), pp. 3-4
other effect upon the eye, than to entertain it agreeably, to surprise and dazzle it.\textsuperscript{39}

Castel had actually argued much the opposite: he believed that individual colors pleased and affected the eye far more than sound the ear. Nevertheless, his anonymous defender made it appear as if it were obvious that Castel knew that single sounds caused more effect than colors. This shift is representative of the perception of sound and color more generally in the 18\textsuperscript{th} century. The function of the instrument seems to be demoted from a new art form to a vehicle for simply entertaining the ear.

August Apel, in 1800, published an extended essay on the scientific relationship between color and tone in the \textit{Allgemeine musikalische Zeitung}. “One often finds something completely other than what one was looking for hoping to find,” Apel began, and went on to describe the history of theories of color-tone relationships, first discussing Newton and Euler, and quickly alighting on the topic of the ocular harpsichord and its reception:

Moses Mendelssohn, who expected much of color-music, remarked lucidly, upon seeing the failed results, that in order realize a color-art, one must realize another art, namely the division of space (although in the case of color-music the focus is on the succession of colors, it occurs in only one dimension). Had he not restricted himself merely to suggesting this, had he applied it himself according to his plan, he would have discovered that tone and color are

\textsuperscript{39} Ibid., p. 5.
by no means parallel to each other, but rather stand as opposites, that on account of this contrast, that which befits the one is not appropriate to the other, and that on the basis of this opposition, [he would have discovered] the impossibility of a color-art as an art unto itself, and the possibility of a music, with all its rules founded. 40

Apel saw the two media as scientific complements: each could provide something the other lacked; but their contrasting nature implied for him that one could not make a music of colors, because the rules of music could not be applied to color. Most interesting is his belief that the act of analyzing the difference between the two media not only revealed the aesthetic impossibility of color-music, but the foundations of music itself.

While these criticisms focused primarily on the failure of the analogy between color and pitch in terms of science, other critics stressed the fundamental aesthetic difference between the two media. The ocular harpsichord became an example of what music was not; it represented a misguided approach to music. Chapter Sixteen of

40 August Apel, “Ton und Farbe,” Allgemeine musikalische Zeitung 2 (30 July & 6 August) 1800, col. 753- 762, & 769- 774.“Moses Mendelssohn, welcher sich viel von der Farbenmusik versprochen hatte, bemerkte scharfsinnig, als er die verfehlte Wirkung sah, dass die Farbenkunst um realisirt zu werden, erst einer andern Kunst bedürge, nämlich der Eintheilung des Raumes; (zwar da es bey dieser Farbenmusik nur auf die Folge der Farben abgesehen war, bloss in Ansehung einer Dimension.). Hätte er sich nicht begnüget dieses bloss anzudeuten, hätte er selbst nach seinem Plane Hand angelegt; so würde er bald gefunden haben, dass Ton und Farbe durchaus nicht neben einander als Paralleln, sondern als entgegengesetzte einander gegenüber stehen, dass wegen diesesn Gegensatzes dem Einen nur zukommt, was dem Andern nicht zukommt und dass auf diesen Gegensatz die Unmöglichkeit einer Farbenkunst, als vor sich bestehender Kunst, und die Möglichkeit einer Tonkunst mit allen ihren Regeln sich gründe.”
Rousseau’s *Origin of Language* is titled, “False Analogy between Colors and Sounds” and begins,

> There is no kind of absurdity that has not been given a place in the treatment of the fine arts by physical observation. The same relations have been discovered in the analysis of sound as in the analysis of light. This analogy has been seized upon immediately and eagerly, with no concern for reason or experience. The systematizing spirit has confused everything, and presumes, out of ignorance, to paint for the ears and sing for the eyes. I have seen the famous clavecin on which music is supposedly made with colors. It would be a complete misunderstanding of the workings of nature not to see that the effect of colors is in their stability and that of sounds is in their succession.  

Like Castel and Telemann, Rousseau believed music was a dynamic art and that motion was a basic and necessary component of music; but unlike Castel and Telemann, he did not believe that colors set in motion would have the same effect as successions of tones. Rather, he argued that we take in the two media in wholly different manners. Rousseau continued:

> Painting is dead and inanimate. It can carry you to the depths of the desert; but as soon as vocal signs strike your ear, they announce to you a being like yourself. They are, so to speak, the voice of the soul. If you hear them in the

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wilderness, they tell you you are not there alone. Birds whistle, man alone sings. And one cannot hear either singing or a symphony without immediately acknowledging the presence of another intelligent being.\textsuperscript{42}

As Rousseau’s prose became more ardent, his argument changed paths: he no longer argued simply that people experience tone and color differently, but that tones possess a power that colors lack to immediately and forcefully effect the listener. The chapter ends with a resounding affirmation of the significance of musical experience:

...Music affects us deeply, arousing through one sense feelings similar to those aroused through another.... And the musician’s art consists of substituting for an imperceptible image of the object the movements which its presence excites in the heart of the contemplator. Not only will it agitate the sea, fan flames, and engorge a stream, but it will depict the horrors of a frightening wilderness, darken the walls of a dungeon, calm a tempest, subdue the winds, and the orchestra will lavish new freshness upon the forest. It does not represent these things directly, but excites in the soul the same feelings one experiences in seeing them.\textsuperscript{43}

Rousseau’s ardent praise of the power of musical tone is extraordinary, considering that earlier in the same essay, he had argued with equal fervor that music’s raw medium played a minimal role in music as an art.\textsuperscript{44}

\textsuperscript{42} Ibid., pp. 63-64.
\textsuperscript{43} Ibid., p. 64.
\textsuperscript{44} See Chapter two.
The idea of an ocular harpsichord made a deep negative impression on Johann Gottfried Herder, who invoked it throughout his career. In his essay, “Ob Malerey oder Tonkunst eine grössere Wirkung gewähre?” first written in 1785 and published in Hiller’s Wöchentliche Nachrichten und Anmerkungen die Musik betreffend two years later, he complained that contemporary music lacked enjoyment because it focused too much on academicism:

… this is just as foreign to my art, as when someone took it into his mind to invent an ocular harpsichord, only to be astonished that this puppetry did not delight as an ordinary harpsichord does.45

In other words, the ocular harpsichord was the quintessence of the academic exercise that had little relation to actual aesthetic experience.46

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46 Herder did consider the possibility that the there was a color scale analogous to the musical one, and that the eye and ear might function similarly. In posthumously published fragments, he argued, “Why could the color scale not be compared with the tone scale?... The range of both scales of such different senses seems miraculously the same in its relations, although irrationally ordered. The structure of our eye and ear, or rather of our seeing and hearing nerves, has to be analogous, which is not implausible.... It would also explain why each person likes certain tones and certain colors more than other ones; they are the ratio of the scales in which his organs find pleasure, in that both scales order themselves most easily starting from this ration... But one cannot fix both scales by our harpsichord. Other nations have divided and divide the scales differently; they like other intervals and other colors.” Franssen cites this passage to suggest that Herder came to approve of the idea of color harmony. However, I believe that we have to read this as a scientific and not an aesthetic analogy, and though Herder might have seen some physical similarity, it in no way had any bearing on his view of their aesthetic properties—Herder argued for the separation of science and art in his Fourth Critique (see Chapter Three). Franssen also does not discuss Kalligone (see below) in which Herder’s negative perception of the ocular harpsichord is reiterated.
In 1800, Herder published *Kalligone*, his critique of Kant’s *Critique of Judgment*. The third chapter, entitled “Vom Schönen und Angenehmen der Umrisse, Farben, und Töne,” is organized as a dialogue between three characters. Their meandering conversation wends its way through many topics, including the effect of tones. One speaker explains that a tone produces an effect that is accordance with both its inner qualities, and the constitution of the hearer. Because music can produce numerous and varied tones, it has wide-ranging effects on our emotions:

B: As every involuntary reaction of our emotions to music proves, these all produce similar responses. The tide of our passions ebbs and flows, it floods, it meanders and trickles. At one moment the passions are intensified, at another they are aroused now gently, now powerfully; at yet another moment they are satisfied; their movement and the way they move varies in response to every melodic nuance, and every forceful accent, let alone every change of key. Music performs on the clavichord within us, which is our own inmost being.

A: Might it not be Castel’s color-keyboard, or a keyboard of visual shapes that is played within us?

B: Visual shapes indeed! What have these to do with our inner responsiveness to emotional currents, vibrations and passions? You are implying that sounds *illustrate* things.\(^47\)

Later in *Kalligone*, Herder reiterated his belief that tone was superior to color, criticizing Kant for treating color and tone as equal aesthetic media. “*...the art of tone and the art of color* [are] fully equated; as though colors without drawing can be set equal to tones as a medium of art…” While Castel believed that colors were infinitely superior to tone, Herder argued precisely the opposite with equal conviction.

By time of Herder’s *Kalligone*, the notion that tones were more passionate than colors was so commonplace that other authors simply stated it as a fact. Koch’s *Musikalisches Lexikon*, for example, included an entry on the “Farbenklavier,” in which he explained the history of the instrument and included an excerpt of Telemann’s description. He finished the article by criticizing the aesthetic basis for the color-tone analogy:

> Because color is not a passionate medium for expression the way tone is, it is easy to see that through such a play of color, the purpose of the invention could not succeed; therefore no one has attempted to use this invention any further.\(^{49}\)

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\(^{48}\) Ibid, p. 41. *Kalligone* is discussed in more detail in Chapter Three.

\(^{49}\) “Weil die Farbe kein solches leidenschaftliches Ausdrucksmittel abgeben kann, wie der Ton, so ist leicht einzusehen, daß durch ein solches Farbenspiel die Absicht des Erfindung nicht erreicht werden konnte; daher man auch diese Erfindung nicht weiter zu benutzen gesucht hat.” *Musikalisches Lexikon* (1802), reprint with introduction by Nicole Schwindt (Kassel: Bärenreiter, 2001).
In their criticisms, these authors reiterate a single idea: the reason an ocular harpsichord is an aesthetic impossibility is because isolated colors cannot stimulate the soul or tug at our heartstrings. As the century progressed, it emerged that musical tones, on the other hand, have this power as their basic property: they instantly strike us and communicate something profound to our hearts and minds. In critiquing the ocular harpsichord, these thinkers all but codified the basic tenets of a new musical aesthetics that prized instrumental music. The criticisms of wordless music mentioned earlier—that it was a vague mishmash that merely tickled the mind—are refuted, if unintentionally, in the discussions of music for the eyes. If Castel had never imagined an ocular harpsichord, numerous thinkers in the 18th century would not have been forced to scrutinize the ramifications of Newton’s color-tone analogy. The very act critiquing the analogy between color and pitch catalyzed the crystallization of a conception of music in which tone was inherently superior to color and imbued with expressive power.

*Design, color, melody, & harmony*

The Newtonian color-pitch analogy was one of many ways in which thinkers in the 18th century used color in their discussions of music. Numerous writers, in discussions of musical parameters and their values, borrowed vocabulary directly from debates by French and Italian painters over the primacy of design and color. These debates
offered clear ways of delineating between elements of music that provided real intellectual content and elements that were once considered merely to tickle the ears.

The first major debates began in 16th-century Italy between Florentine and Venetian painters. The Florentine painters prized design above all else and advocated the use of preparatory sketches; their Venetian counterparts built their paintings directly onto their canvases, striving for spontaneous expression. The former believed that design captured the essence of a painting (arguing that, after all, one can represent a picture in black and white), while the latter believed that it was color that set painting apart from the other arts and gave it soul and life. The Florentine views were most clearly articulated in Vasari’s Lives of the Painters, but also in works such as Cesare Ripa’s Iconologia of 1630, in which Disegno is personified. The Venetian aesthetic was supported by Ludovico Dolce, whose Dialogo della pittura of 1557 defended the primacy of color. These debates continued through the 17th century, most notably between the Poussinists and Rubenistes. The supporters of Nicholas Poussin, like the Florentine painters, advocated design. They argued that one could locate in design both the value and the reason behind the artwork.

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Roger de Piles, spokesman for the Rubénistes, argued ardently that it was color that defined painting as a genre.\footnote{Thomas Tolley makes the fascinating observation that Roger de Piles used many musical analogies in his discussion of Rubens' work, and organist Abbé Vogler, during his keyboard recitals in which he would improvise on a chosen paintings, chose Rubéns' work most often. See Tolley, p. 10-11.}

The language used in these debates supplied a convenient vocabulary for discussing music: the metaphor of color and design allowed for the subdivision of musical parameters into a variety of registers with differing values, providing a useful way of separating the “rational” elements of music from the sensual. The use of the metaphor reveals the often-implicit value judgments made about musical elements, and enables us to chart the rapidly evolving attitudes concerning musical sensation.

As the new, Italian-influenced style spread during the 18\textsuperscript{th} century, many critics and writers were forced to contend with a kind of music that included bold contrasts, sudden changes of mood, and an increased focus on surface details. Many saw this new style as a degradation of the true, noble goals of music: it did not speak to the heart or mind, and only provided sensual pleasure. Bellamy Hosler has cataloged the many criticisms lodged against instrumental music during the 18\textsuperscript{th} century: Johann Christoph Gottsched, for example, claimed that new Italian compositions “mean absolutely nothing; they represent a mere jangle, which makes one neither cold nor warm,” while Christian Gottfried Krause mused, “Most of the pieces according to the new taste are not at all moving, do not express a distinct picture, and not only merely tickle the ears, but, if they do not arouse
outright disgust, at best they bring about boredom.” 52 Other writers found alternative ways of expressing what instrumental music lacked: it was barbaric, melodious nonsense, empty ear-tickling, mere noise, and so on. 53 For many, instrumental music did not express any clear ideas or contain any distinct content. Since music’s raw material was considered meaningless, tones could not provide the necessary intellectual and emotional content. When writers invoked the metaphor of color, they frequently used it to point out places where music lacked clarity and content. All assumed that design—whatever its musical equivalent was—was superior to color. Musical “color,” therefore, became whatever part of the music was being employed or enjoyed superficially. For example, Dubos, in his treatise of 1719, complained both about music that focused on melodic charm and harmonic variety over proper artistic imitation, and about those who were content to listen to such superficial music:

As there are people moved more by colors of a tableau than by the expression of passions, there are also people who are sensitive only to the charm of melody or the wealth of harmony in music and do not care much if the song well imitates the noise which it ought to imitate or if it suits the meaning of the words to which it is set... They are satisfied if these songs are varied, gracious, or even bizarre... [But] the richness and the variety of chords, the sweetness and novelty of the melody should serve only to

53 For an extended discussion, see Hosler, Chapter 1.
produce and embellish the passions. The so-called science of composition is a servant.  

Random splatters and obscuring shadows

Writers frequently turned to the idea of random splotches and splatters to emphasize contemporary music’s seemingly random nature: by conjuring images of ink and paint flung upon staves and canvases, writers could make clear the ways in which music lacked clarity and content. New music, to many thinkers, was a form of reverse Rorschach test: upon hearing music, they thought of random paint splatters. The metaphor was used both in black and white and in color.

In 1751, Oxford professor William Hayes, masquerading as the composer and organist Barnabas Gunn, published a pamphlet The Art of Composing Music by a Method entirely New, suited to the meanest Capacity, in which he satirically promoted the “Spruzzarino” as a way of critiquing Gunn’s music:

Take a Gallipot, put therein Ink of what Colour you please; lay a Sheet of ruled Paper on your Harpsichord or Table; then dip the Spruzzarino into the Gallipot; when you take it out again shake off the superfluous Liquid; then take the fibrous or hairy Part betwixt the Fore-finger and Thumb of your Left-hand, pressing them close together, and hold it to the Lines and Spaces you intend to

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54 Jean Baptiste Dubos, Réflexions critiques sur la poésie et sur la peinture (Paris 1719), translated in le Huray and Day, pp. 21.
Sprinkle; then draw the Fore-finger of your Right-hand gently over the Ends thereof, and you will see a Multiplicity of Spots on the Paper; this repeat as often as you have Occasion, still beginning where you left off. This done... take your Pen and proceed to the placing of Cliffs or Keys at the Beginning, marking the Bars, and forming the Spots into Crotchets, Quavers, etc., as your Fancy shall prompt you, first the Treble, then the Bass; observing a proportionable Quantity in the latter to suit the former; this done, season it with Flats and Sharps to your taste.\footnote{William Hayes' \textit{The Art of Composing Music by a Method entirely New, suited to the meanest Capacity. Whereby all Difficulties are removed, and a Person who has made never so little Progress before, may, with some small Application, be enabled to excel}. (London, 1751), quoted in Richards, \textit{Free Fantasia}, p. 88; see discussion 88ff. See also Otto Erich Deutsch, “Ink-Pot and Squirt Gun, or 'The Art of Composing Music in the New Style,'” \textit{The Musical Times} 93 (1952), pp. 401-3.}

Annette Richards referenced the Spruzzarino in her larger discussion of the picturesque sketch in the 18\textsuperscript{th} century. Richards has shown how the discourse of the free fantasia was informed by the notion of the improvisatory sketch and the aesthetic of the picturesque, arguing that musical discourse borrowed from the vocabulary of landscape gardening, turning the random sketch into the seeds of sublime expression. The Spruzzarino is also closely related to the many musical dice and top games that were proposed throughout the 18\textsuperscript{th} century.\footnote{Alexander Cozens, \textit{A New Method of Assisting the Invention of Drawing Original Composition} (London, 1785). See Richards, pp. 81ff.} Neal Zaslaw has recently documented the large number of dice, top, and card music games that circulated during the 18\textsuperscript{th} century, including Mozart’s experiments with his own minuet
These included Johann Philipp Kirnberger’s dice game, “Der allezeit fertige Polonaise- und Menuettencomponist” published in Friedrich Wilhelm Marpurg’s Historisch-Kritische Beyträge zur Aufnahme der Musik (1757), which was, according to Zaslaw, the first musical dice game and was “widely copied, imitated and plagiarized” along with similar games by C. P. E. Bach, Hermann François de Lange, and Johann Adam Hiller. As Zaslaw points out, the authors of many of these games stress their usefulness to those who have little musical knowledge, causing us to question the seriousness of such inventions.

The proliferation of games such as these—games that promised the ability to compose music without any true knowledge of composition—is doubly revealing: first, the games testify to an emerging notion of original genius: if an aspect of composition could be turned into a game, then some other aspect had to separate the truly great compositions from the merely technically correct. It was no longer enough simply to master the rules; the true master transcended

59 Zaslaw asks, “… to what extent are the following phrases [phrases describing the amateur nature of the users of the games] describing the intended users of these publications genuine enthusiasm for a new teaching method or advances in “science” and to what extent shrewd marketing devices or cynicism, irony, sarcasm, and possibly even bitterness?” Ibid., p. 225.
them. For example, Batteux, turning to the idea of the ocular harpsichord as an example of spectacle devoid of sense, complained of music that was merely correct:

... even though a musical composition be the most correctly calculated in all its sounds and the most geometric in its harmony, if it has no signification to accompany these qualities, it can only be compared to a prism which yields the most beautiful colors but which produces not the least image. It would be like a color-harpsichord which produced colors and arrangements in order to amuse perhaps the eyes, but which certainly would bore the mind.60

The meaning that Batteux claimed was necessary for a piece of music to be significant was something that a dice game could not produce. Rather, the games drew upon the aspects of music which were mechanical enough to be codified as a set of simplistic rules. Moreover, and more important to the discussion at hand, such games were rooted in the new style of music. They took advantage, often through jolly satire, of the same aspects—randomness, seeming lack of coherent content, sudden changes of mood—that caused many critics to complain about contemporary music: if many thought that music

60 “Concluons donc que la Musique la mieux calculée dans tous ses tons, la plus géométrique dans ses accords, s’il arrivait, qu’avec ces qualités elle n’eût aucune signification; on ne pourrait la comparer qu’à un Prisme, qui présente le plus beau coloris, et ne fait point de tableau. Ce seroit une espèce de clavecin chromatique, qui offriroit des couleurs et des passages, pour amuser peut-être les yeux, et ennuyer sûrement l’esprit.” Batteux, Beux arts, p. 358. Quoted in Hosler, p. 66.
sounded random, then that very idea could be seized upon and made into a game.

From light-hearted games to weighty criticism, the idea of randomness pervaded 18th century musical discourse; each critic found his particular form of the splatter metaphor to express music’s shortcomings. Hayes claimed the Spruzzarino was inspired by a visit to a bookbinder’s shop, in which he (or rather, Gunn) witnessed leaves of a book being marbled with a paintbrush. Similarly, Nichole Pluche, explaining that sounds that lacked an object of imitation tired the listener, used both marbling and embroidery as examples:

Let us proceed to the true cause of the error of so many musicians. Sound is the concern of the ear, as color is of the eye. But as colors are intended to distinguish objects, they do not please one for long if they are not attached to some figure, for they are out of place. Fine marbled paper and beautiful Hungarian embroidery are pleasing colors and nothing more. The first glance is not displeasing: one can even look for useful nuances and nice combinations in them. But these are not paintings; and if you wished to prolong this inanimate spectacle, even by varying it for fifteen minutes at a time, you would not care to: the mind does not search for colors, but for colored objects. In the same way sounds, in their variety, help us to designate an infinite number of thoughts and things. But if the sounds come one after the other without being attached to an
object or thought, they make us weary without our knowing why.\textsuperscript{61}

Other authors, rather than likening music to artisan tasks such as embroidery and marbling, turned to the dynamic and even more abstract imagery of paint being hurled upon a canvas. Batteux, in his treatise on imitation from 1731, wrote about music that did not properly imitate a subject:

What would one say of a painter who was content to throw onto the canvas bold strokes and masses of the most vivid colors with no resemblance to a known object? The application to music speaks for itself.\textsuperscript{62}

Francesco Milizia, over sixty years later, still turned to the metaphor of color splotches in to order stress the importance that music had to mean or express something. In his \textit{Complete Formal and Material Treatise on Theatre}, he wrote:

If music is a painting, what kind of painting would it be if the painter had drawn bold lines on his canvas, together with patches of the most vibrant colors, with no resemblance whatever to any familiar object? Similarly, what kind of song or sound would it be that expressed nothing? Monstrous indeed would be that music which expressed the complete opposite of what it ought to


signify. Music is a universal language, which speaks by means of sounds.\textsuperscript{63}

For many writers of the time, the antidote to music of random sounds lay in mimesis: through the imitation of appropriate subjects, a composer could transform paint splotches into a meaningful work of art. But the questions surrounding the nature of musical mimesis—such as the concern over what constituted an appropriate subject—made imitation both delicate and difficult. Many critics argued that musical imitation required a high degree of clarity, stressing that a composer could not properly depict something unless he strove for the utmost precision; any ambiguity spoiled the effect. Batteaux, for example, argued that clarity was of prime importance to a musical work:

‘Prima virtus perspicuitas’. Though there may be a beautiful building in the valley it will mean nothing to me if it lies hidden in the darkness. We do not expect a meaning from each and every detail but we do expect that each ought to contribute to the total sense, be it a phrase, a word or a syllable. Every tone, every modulation and every repetition ought to lead to a feeling or give expression to one.... Each mood must be exactly right. It is the same with feelings as with colors; mezzotints spoil the original colors, changing their character or making them ambiguous.\textsuperscript{64}

\textsuperscript{63} Francesco Milizia, \textit{A Complete Formal and Material Treatise on the Theatre}, (1794), translated in Fubini, p. 252.

\textsuperscript{64} Batteaux, \textit{Beaux-arts}, translated in le Huray and Day, p. 51.
Johann Christian Gottsched, who was strongly influenced by Batteux's views on art and imitation, reiterated the idea that half-tints spoil musical character, arguing:

What is supposed to be yellow must be quite yellow, not just yellowish; what should be dark blue, not half-mixed with white or printed light blue. Similarly the happy, the sad, the angry, the courageous, must always be expressed with conclusive tones, so that they can be recognized by everyone.\(^{65}\)

These writers, in stressing the need for clarity, implicitly suggest that music is somehow disadvantaged as an expressive art.

*The metaphor settles in*

As the color metaphor became more commonplace, it began to shed its negative connotations. Writers used the metaphor as a convenient means to differentiate between various musical registers and parameters, contrasting those elements that had an essential function from those that simply enhanced music’s basic structure. “Color” retained a subsidiary role, and was used in contrast to design.

Jean-Philippe Rameau drew upon the notion of design in his theory of harmony, though his dense and sometimes contradictory

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prose makes it difficult to understand precisely how he conceived of design. Because he argued that the *corps sonore* embodied the foundations of music, he concluded that harmony formed the basis of music, while all other elements were built upon the harmonic foundation. Yet several times in his *Treatise* he suggested that melody plays a more fundamental role than harmony. In Chapter 28 of Book two, entitled, “On Design, Imitation, Fugue, and on their properties,” he began,

The words we set to music always have a certain expression, whether sad or gay, which must be rendered in the music by means of melody and harmony as well as by movement... The entire design of the piece is based on the melody, harmony, and movement. A key, mode, movement, and melody suitable to the expression are first chosen, and then the harmony is made to conform to the melody thus composed.\(^6\)

Later, in Chapter 44 of Book Three, he reiterated the notion that melody comes before harmony:

In music, design is the general term encompassing everything we have put forth, that is: movement, key, and mode, melody, and harmony suitable to the subject, all of which a skillful musician will envisage from the start. The

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term, however, should be applied more precisely to the melody which we highlight in the course of the piece...  

Given Rameau’s insistence that musical harmony was present in the overtone series produced by all sounding bodies, one would expect him to argue that harmony created music’s design. I believe that two factors contribute to this seeming slippage: first, as Gossett argues, Rameau distinguished between musical science and musical practice, and his argument concerning the primacy of the overtone series related to the scientific side of his argument, while his belief that harmony is subsidiary to melody relates to actual musical practice; second, at the time Rameau wrote his Treatise, the metaphor of color and design was not fully established in musical discourse; indeed, though he uses the notion of design, he does not draw upon the idea of color.  

He therefore does not use the metaphor with the same rigor as did many later authors.

By contrast, when Rousseau set about to argue against Rameau’s theory in his essay On the Origin of Language, he drew upon the established notion of color and design. Basing his argument on the historical evidence that monophony long preceded any form of harmony in music, he argued that music’s “design” lay in melody:

Just as the feelings that painting excites in us do not come from color, no more does music’s power over us simply derive from sounds. Beautiful and well-graded colors please the sight, but the pleasure is purely one of

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67 Ibid. p. 348
68 See Gossett’s remark, p. 179n.
sensation. It is the drawing, the representation that gives life and soul to these colors.... Melody is the musical equivalent of design in painting; it is melody that delineates the features and forms, harmonies and sounds being only the colors.\(^6^9\)

Rousseau used the metaphor of color less as a means of criticism, and more as a clear way of assigning value to the musical elements he felt were the most important.

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To return to the idea of musical imitation, we can now identify a unifying idea that runs through the many disparate aesthetic ideas of musical mimesis in the early part of the 18\(^{th}\) century. Regardless of whether authors claimed music was expressive or imitative, they implicitly conceptualized music as a medium whose “meaning” depended on association with the external world, while the actual sounds of music had little aesthetic value. Imitation—whatever form it took—was a vehicle for supplying musical meaning. The musical medium was a raw substance that took on significance only as a composer manipulated it into forms imitating storms, brooks, or passionate human utterances.

Initially, the use of the color metaphor highlighted the perception of tone as aesthetically void: the image of random paint splatters poetically described the deficiencies of certain pieces of music, deficiencies that arose only because music’s medium was

meaningless. Castel was able to conceive of the ocular harpsichord in part because, if colors were aesthetically superior to tone, and scientifically equivalent, then it logically followed that by applying musical techniques to colors, one might create a new art form. Music’s art lay wholly in what a musician created out of tones.

The widespread use of the metaphor of color also played a constructive role within musical discourse: it supplied thinkers with new ways of conceptualizing and rationalizing the musical medium. The metaphor suggested that music could be broken down into constituent parts, and that these parts had varying aesthetic values and functions. Even if the analogy of paint thrown upon a canvas seems a long way from the praise heaped upon instrumental music by the early romantics, it provided a means for visualizing and discussing musical sensation in ways that were previously unavailable. Furthermore, the discourse surrounding the invention of the ocular harpsichord helped fuel a reevaluation of the worth of musical tone. The failure of Castel’s invention to produce a viable art form suggested that musical tone had some inherent value—i.e., that tones induced a kind of involuntary aesthetic reaction owing to a secret sympathy with the human mind and heart. Colors by contrast could only provide an empty spectacle. And so the metaphor not only supplied a vocabulary for discussing music, but also empowered music through this new vocabulary.

These developments set the stage for the new aesthetics of instrumental music that emerged during the second half of the 18th century. As we shall see in Chapter two, the need for clarity stressed
by Batteux and Gottsched began to give way to a new aesthetic that prized nuance. Wackenroder’s exuberate praise of the “rainbow of colors” offered by instrumental music would have been unthinkable a half-century before, when mezzotints appeared threatening. Wackenroder drew upon the same vocabulary and metaphors as his predecessors—but he transformed formerly ambiguous half-tones into “the bright, sparkling fire of art.”

The next two chapters will explore the birth of the concept of timbre, how it became equated with color, and the role the concept played in late 18th- and early 19th-century aesthetics. The varied uses of the color metaphor during the 18th century were prerequisites for the modern conception of timbre as musical color; the analogy between color and timbre implies certain ways of conceptualizing music. To trace the history of timbre is, at the same time, to chart the emergence of the modern conception of music.