

An Historic Overview of the Toccata as a Form and Compositional Technique

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Abstract

An exploration of the toccata as a musical form, and a study of its development over the course of history. Originating in the Renaissance Period, the first toccatas were lute pieces, and later became improvisatory preludial works for the organ. The toccata became a compositional vehicle for composers to experiment with new ideas without being hindered by the expectations of pre-existing musical forms. Today the word “toccata” encompasses a variety of different types of compositions. Although the toccata is an illusive form that is not easily classified, there are ways of studying and categorizing the pieces to make for a deeper understanding of their function. Many famous composers have written toccatas: G. A. Frescobaldi, D. Buxtehude, A. Scarlatti, and J.S. Bach to name a few. Whether stylistic or formal, Baroque or Modern, the toccata continues to retain its improvised feel. An appreciation of the historic significance of the toccata can be seen clearly when looking at the piece as a compositional technique rather than a set formal construction.

Keywords: Toccata, Composition, Technique.

1. Renaissance to Baroque

The word “toccata” stems from the Italian “toccare,” which means, “to touch.”¹ It is by nature a keyboard piece, originally for organ or harpsichord, and it has many forms and styles. The toccata is categorized as a virtuosic improvisatory piece, but it really only gives the impression that it is improvisatory. Since its conception, the toccata as a form has gone through many changes. Each composer added their own flavor to its style, which later composers then imitated and personalized. In the late Renaissance and Baroque periods, the toccata developed and became an important compositional tool with many styles and functions.

The first examples of the toccata started appearing in Italy in the late 1590s, at the end of the Renaissance.² Their influence then traveled northward, through Germany and Austria and finally into England.³ During the Renaissance, more and more composers began to write specifically for certain instruments. The toccata is said to be one of the first forms of music written specifically for a keyboard instrument, typically organ and harpsichord.⁴ By 1600, the toccata was already well established as an important keyboard form and stayed that way until the end of the Baroque period.⁵

In sacred genres, toccatas started out as organ music that was played in church celebrations as a prelude of some kind.⁶ They became used in secular music and developed into pieces designed to show off the virtuosic ability of the soloist.⁷ In secular genres, toccatas were originally pieces for lute, *ricercare*, first appearing in lute music collections and later in collections composed for keyboard instruments.⁸ The earliest appearance of the term “toccata” appeared in G.A. Castelionio’s *Intabolutura de leuto de diversi autori* in 1536, with a piece entitled *Tochata* by Francesco da Milano. The first toccata specifically written for keyboard was printed in 1591 by Sperindio Bertoldo. Other toccatas then followed: in 1593 the Gabriellis published the *Intonationi d’organo* and

Diruta published *Il Transilvano*. In 1598 and 1604 Claudio Merulo published two books of toccatas: the *Toccate d'intavolatura d'organo*. Also in 1604, Annibale Padovano published the *Toccate et ricercari d'organo*.⁹

Toccatas, when taken as a whole, including all styles and “forms,” are still difficult to summarize. More often than not, the form consists of contrasting sections, typically a rhythmic, driving first section, then a slower, free section, then finally a return to the first driving section. They incorporate both sonata and fugal styles, seem at the same time to be improvised yet have an underlying sense of order,¹⁰ and are characterized by difficult scale passages, pedal points and “rhapsodic sections over sustained chords.”¹¹ Toccatas have been composed under other names such as *prelude, praeludium, preambulum, tiento, fantasia, intonazione*¹² and sometimes toccatas are not toccatas at all, but other forms simply entitled toccata.¹³

The definition of a toccata is considered by some scholars to be dependent on form, not style.¹⁴ The reason for this is that the style of a toccata tends to depend on where it was written, whereas its form remains static in regard to the composer’s nationality. There are multiple forms of the toccata, anywhere from a prelude-type movement to a piece with extremely contrasting sections. The toccata in *modo di trobetto* was a fanfare piece and the toccata *durezza e legature* was a slow chromatic piece that used imitation.¹⁵ Some toccatas had alternating sections that were marked by meter changes or contrasting textures, while others were merely sectional with no bars or meter changes. Other toccatas were single-texture except for a short coda-like section at the end.¹⁶

Specific types of stylistic diversity by country include many examples from the entire European continent. Venetian toccatas usually had contrasting sections, beginning with a slow section and gradually building toward a faster section.¹⁷ Italian toccatas in general had rhythmic freedom¹⁸ and contrasting sections.¹⁹ They also had a more developed structure, harmony and texture than earlier works.²⁰ In Germany the toccata was sectional as well, but composers took the rhythmic freedom concept one step further. Instead of using free rhythm throughout, they contrasted sections of sixteenth notes and steady pulse with the free rhythm sections. They also used odd phrases with irregular endings.²¹ Germans were not very concerned about toccata composition in the early development of its form; they preferred to write fugues and chorales until later in the Baroque period.²² Spanish composers were even more hesitant to write toccatas than the early Baroque Germans. Only one composer, Cabanlles, (1644-1712) is credited with toccatas in Spain, and his pieces are stylistically different than southern European toccatas.²³

In the late Renaissance, the toccata tended to be a piece with “brilliant runs” against sustained chords in the opposite hand, mainly written for organ.²⁴ More importantly, the toccata was played before a fugue and started to become a more free-form piece.²⁵ Claudio Merulo (1533-1604) was the first toccata composer of note. Residing in Italy, he helped transform the genre of keyboard music from merely imitating vocal styles to a true keyboard form.²⁶ He used the power of the organ to his advantage in his work, using sustained tones and adding embellishments as well as a more lively texture.²⁷ The first to really use alternating contrasting sections, Merulo rejected the old school of thought of his predecessors, and contributed a new way of writing non-repetitious ornaments. His most notable contribution: He introduced a new type of toccata: the sectional toccata.²⁸

The next significant composer was Giovanni Gabrielli. (ca. 1557-1612) He wrote toccatas based on his predecessors Andrea Gabrielli and Merulo.²⁹ Gabrielli started the trend of imitating other toccata styles in his own works, but did not take it to the extent that future toccata composers did.

Jan Pieterszoon Sweelinck (1562-1621) was a Dutch organist and teacher who became famous as a composer of both vocal and keyboard works.³⁰ His greatest contribution to the development of the toccata was his melding of all the styles of the time and shaping them into his own creation.³¹ He was a composer of great imagination who did not merely “mimic” other composers’ works; he pushed the envelope further to challenge the keyboard world.³² Sweelinck had an extensive knowledge of the keyboard music of his time, from the music of foreign countries to that of his native Netherlands. His toccatas typically had a homophonic introduction, “balanced construction,” an extended free section with “rambling rhapsodic passages,” and sometimes a short concluding fugal section.³³ Sweelinck differed from Merulo in the fact that he preferred to focus on the structure of the piece, without much use of ornamentation.³⁴

H.L. Hassler (ca. 1564-1612) was a German organist who composed vocal and organ works, however none of his keyboard music was published during his lifetime.³⁵ His *Toccatina sexti toni* was a lengthy piece which used a tetrachord to create unity throughout, something that had not appeared in the genre before. Hassler combined the Venetian influence with his own personal features and set the stage for the next significant composer.³⁶

With Girolamo Alessandro Frescobaldi (1583-1643) and the beginning of the Baroque period, a “new era was inaugurated.” With the publishing of his first book of toccatas in 1615, the pieces now had more extreme contrasts and more complex rhythmic passages.³⁷ Frescobaldi was a child prodigy of keyboard instruments and voice, and was an excellent composer.³⁸ He wrote keyboard works of every kind known at the time, and his “surviving works surpass those of any predecessor or contemporary.”³⁹ Instead of following in Merulo’s footsteps and using

alternating chordal-fugue sections, Frescobaldi made the toccata into a “vehicle of great affective tensions”⁴⁰ and “laid the foundation of the expressive keyboard style.”⁴¹

This expression of feeling that Frescobaldi used called for a flexible tempo and rhythm, use of dissonance, and even more contrast within his pieces. His particular type of emotional style was dubbed *stylus fantasticus* by Athanasius Kircher in 1650.⁴² This was just another way of saying the toccata was an emotional piece free from form that was designed to show off virtuosic ability. Frescobaldi also used a wide variety of styles in his toccatas, borrowing from other forms as well. No two of his toccatas are exactly alike, either in form or style. He frequently wrote fugue-like toccatas in which a beginning motive was used and then transformed repeatedly. He also took inspiration from the madrigals of the time, recitative, lute pieces, and popular songs and dances. His toccatas were typically characterized by chromaticism, long pedal tones, complex rhythms, and always a sense of the toccata’s improvisatory nature.⁴³ Frescobaldi would sometimes substitute a toccata for the Introit of the Mass, creating the composition as he played. Yet even though his toccatas were improvisatory at times, in composition he used harmonic direction (the use of dominants and functional harmony) to give the piece shape.⁴⁴

Frescobaldi published two books of toccatas in his lifetime, both of which he revised before he died. The first book, *Primo Libro Di Toccati*, was published around 1615 and was really a book of various keyboard pieces. The second volume, *Toccate*, was published in 1627. It was this second book that intrigued future composers and performers because of its intense emotion and passage work.⁴⁵

Frescobaldi set the standard for the Baroque toccata. He developed the pieces into music for Mass, preludes for larger pieces called *intonaziones*,⁴⁶ and long pieces that could stand on their own.⁴⁷ It was he who made popular the central toccata section and exemplified the transition between Merulo’s mode-like toccatas and the functional harmony of the later toccatas.⁴⁸

Michelangelo Rossi’s (1597-1653) toccatas are harmonically “more extravagant” than Frescobaldi’s, although Rossi may have studied under him. It is debated among scholars whether or not he took his inspirations from Frescobaldi or from the madrigals of the time. Either way, his *Toccate e Correnti* was an important composition because it used shorter free sections interrupted by long fugal sections. He favored tonality, using “lively” rhythms and melodic subjects; he rarely used chromaticism.⁴⁹

Johann Jacob Froberger (1616-1667) was a student of Frescobaldi, and became an organist in the Austrian Court. He traveled extensively and was able to accumulate many styles of composition. He was particularly influenced by the French, and was uniquely able to blend French dance music with Italian harmony. The French even adopted Froberger’s style in return, creating the *prelude non mesure*, the French unmeasured prelude,⁵⁰ which was essentially a toccata in everything except name.⁵¹ Froberger wrote twenty-four toccatas, all of them sectional, some fugal and some canzona (variation)-like.⁵² They are more “tightly organized” and have more continuity in each section than the toccatas of Frescobaldi,⁵³ and his improvisatory sections are especially indigenous to his works.⁵⁴ His use of chromaticism, “expansive structure,” and challenging runs also surpassed his teacher’s models.⁵⁵ A typical Froberger toccata was as follows: a lengthy song-like introduction, two fugato sections, (The second fugato section being a variation on the first.) and a short, free section to conclude. Though he adopted a form for his toccatas, there was still room for variation among the different pieces.⁵⁶ Froberger used the toccata as an experimental form, developing fugal elements that already existed rather than creating new harmonic works.

Dieterich Buxtehude, (ca. 1637-1707) a German-Danish organist and composer, was considered “one of the most important composers of organ music before J.S. Bach.”⁵⁷ He turned the toccata into a “large-scale work”⁵⁸ in which thematic unity was present amidst alternating (shorter) rhapsodic and (longer) fugal sections.⁵⁹ Buxtehude took Frescobaldi’s *stylus fantasticus* idea further with his use of harmony, melody, and use of the organ’s inherent qualities.⁶⁰ His toccatas are filled with “movement and climax,” long pedal points, a variety of styles and textures, and imaginative free sections. His works are another example of how a piece can seem improvisatory but in fact it was carefully planned out and conceived.⁶¹

Bernardo Pasquini (1637-1710) was influenced greatly by the style of Frescobaldi. He wrote around thirty-five toccatas that vary in length and style.⁶² In his pieces, he added sequencing, parallel writing and more tonal and harmonic qualities. Pasquini’s toccatas had wonderful continuity,⁶³ foreshadowing the late Baroque style.⁶⁴

Juan Cabanilles (1644-1712) was the only known Spanish composer of the toccata. He wrote both sectional pieces and single-texture pieces, while using fugal techniques to create the *discurs* or *verset* toccata. The *verset* toccata was a piece with four different-yet-related fugal thematic sections, all having different meters.⁶⁵ Johann Pachelbel (1653-1706) also wrote few toccatas in his day. His toccatas did not use the fugal elements that his predecessors used, but were mainly single-section pieces made up of “florid passage-work over held pedal tones.”⁶⁶

Alessandro Scarlatti (1660-1725) composed toccatas that were drastically different from the works that came before him. They were composed for harpsichord, and although considered conservative by some scholars, their *folia* (dance-like) bass line was evidence of his thorough knowledge of keyboard techniques and styles.⁶⁷ His

toccatas were made up of six to seven contrasting sections and he used fugal, variation, and recitative techniques.⁶⁸ *Toccate per cembalo* was a teaching piece, and is significant because it was the first toccata to have the fingerings written in by the composer.⁶⁹ Alessandro Scarlatti influenced the compositional style of both Handel and Bach, although Handel wrote no named toccatas.⁷⁰ His son, Domenico Scarlatti, composed sonatas with toccata characteristics: single movement pieces with free textures. However, these were exercise pieces written for his students, and did not truly contribute anything new to the form.⁷¹

Johann Sebastian Bach (1685-1750) was the last great toccata composer of the Baroque era, and was greatly influenced by the works of Buxtehude.⁷² He wrote twelve toccatas for both organ and harpsichord, but each type shared similar characteristics for the most part. Two of his preludes from Book I of the *Well-Tempered Clavier* were sectional, improvisatory, and toccatas in style: the E-flat major and the B-flat major preludes. Bach transformed the toccata into a technical genre of his own style, using fugal elements and driven rhythm to give the piece an improvisatory feel, rather than using an emotional free-form to do so. His trademark device in the toccata style was the use of a repeating melodic figure. Bach would repeat the figure over and over again to build up tension.⁷³ He would even develop this figure into a fugal and repetitive theme⁷⁴ that would build toward the end of the movement or to the beginning of another piece, such as a fugue.⁷⁵

Bach's harpsichord toccatas were large works that usually had one to two fugal movements.⁷⁶ He drew from the styles of the *ricercare* and the concerto for his pieces. The first movement of his E Minor Partita has an introductory toccata, an extended fugue, and then a return of the toccata, making the piece partita in name only.⁷⁷ His most brilliant harpsichord toccata is considered to be the Toccata in F-sharp minor, due to its virtuosic opening section and expert use of fugal devices throughout.

The organ toccatas of Bach were more well-known than his harpsichord pieces. They were toccata-fugue hybrids, and instead of being free in form and meter they had strict rhythms and were usually paired with a fugue.⁷⁸ (For example, his Toccata and Fugue in D Minor, BWV 565 and the Toccata and Fugue in F Major, BWV 540.) The Toccata and Fugue in F was written while Bach was at Weimar and is said to be the greatest toccata he ever wrote.

By 1739, the emphasis of the day was shifting to the ability of the composer and performer to improvise, and Bach's strict formal works were slowly beginning to give way to the different ideas that would come about in the Classical period.⁷⁹ Bach was the last composer to take the toccata in a new direction in the Baroque era. After he died and the Classical period began, no composers were really interested in the toccata as a developmental form. The toccata in the Baroque period gave composers a way to experiment with composition for the keyboard without having to follow strict conventions or rules; it was a way for them to do whatever they wanted without being limited by a given form. In the Renaissance and Baroque periods, the toccata began as a piece that was merely improvised and used as a prelude, became formally improvised, so to speak, and finally transformed back into a preludial movement. A toccata was a toccata when it gave the impression of being improvisatory, whether it really was improvised or not.

2. Classical to Modern

In both the Classical and Romantic eras, the toccata's formal and stylistic elements, along with its improvisatory nature, went on to be used in the forms of the *capriccio*, *rhapsody*, *moto perpetuo*, and *fantasia*.⁸⁰

The *fantasia* became a prominent form in the Classical and Romantic periods. In the Classical period, it was a "completely free genre" that took on the style of the toccata.⁸¹ In the Romantic period, it became a form on its own instead of an improvisatory piece, and "provided the means for an expansion of forms, both thematically and emotionally."⁸² Major composers of fantasias were Beethoven, C.P.E. Bach and Mozart. Numerous other composers wrote similar pieces, such as the *Fantasia-Improptu* and *Polonaise-Fantasia* by Frederick Chopin.

This is not to say that no one during the Classical or Romantic eras wrote toccatas. The finale sections of Ludwig van Beethoven's (1770-1827) Piano Sonatas op. 26 and op. 54 could later have been entitled toccata; they both have a sixteenth-note texture with continuous movement. His Sonata op. 27 no.1, *Sonata quasi una Fantasia*, was toccata-like in that it is sectional with flowing improvisatory elements. Robert Schumann (1810-1856) wrote the *Toccata* in C Major, op. 7, which was similar in texture to Beethoven's sonata finales and had imitation in the voices.⁸³

In the late 1700s, Italians started to experiment with toccata writing. Muzio Clementi's op. 11 toccata was written in 1784, and F. G. Pollini wrote some piano exercises that he called toccatas, *Trentadue esercizi in forma di toccata*.⁸⁴

In the late 19th and early 20th Centuries, neo-Classicism took hold of composers, and they began to look back to the forms and styles of decades and centuries past. This especially happened after the end of World War I. With the

popularity of this movement and the return of the Baroque and Renaissance styles, the toccata started to become experimented with once again.⁸⁵ French organists, such as Widor and Vierne, started using the title *toccata* for the finales of their organ symphonies. In 1845, Berlioz wrote an experimental piece for reed organ entitled *toccata*. In addition to *preludes*, *fantasias* and any other number of titles, the toccata style started to be found in movements called *sortie*, *final*, or *finale*.⁸⁶

In the 20th Century, Debussy and Ravel both wrote toccatas that “revived” the genre. Debussy’s was a finale toccata in the suite entitled *Pour le piano*, and Ravel’s was included in *Le tombeau de Couperin*. Both pieces are finale pieces in 2-4 time, and are continuous 16th-note movements, a cross between Schumann’s Toccata and the French organists’ works of the Renaissance period.⁸⁷ Debussy’s toccata is sectional with multiple key changes marking the sections, and Ravel’s piece uses folk elements along with a fast beginning section, slow middle section, and a return to the first quick section at the close of the piece. Both toccatas use driving rhythms and difficult passage-work to give the piece an improvisatory feel. The last movement of Ravel’s *Piano Concerto in G* is also a good example of a toccata.

Other composers of the 20th Century were working on toccata-forms aside from Debussy and Ravel. Sergey Prokofiev (1891-1953) wrote the *Toccata* op. 11 in 1912. This toccata is actually formal, even though it has a driving rhythm and improvisatory style. It is an (A-B-A) sectional piece with a first theme section, a middle “development” section, and a closing section which returns to the original theme. In 1933, Vaughan Williams wrote the first movement of his *Concerto for Piano and Orchestra* in the toccata form, using the orchestra as well as the piano sections to give the work an improvisatory sense. The movement is continuous and driving, and has an extremely difficult piano part.

Another significant toccata of the 20th Century is that by Aram Khachaturian, a native Armenian composer. He wrote the piece in 1932, when he was twenty-nine years old. Khachaturian frequently used Armenian folk music in his compositions, and is credited with popularizing his country’s culture.⁸⁸ It is no wonder, then, that his Toccata has elements of Armenian culture interwoven throughout, as well as Baroque and early 20th Century techniques.

The *Toccata* is a sectional piece, with a fast, rhythmic beginning section marked *Allegro marcatisimo*, which is in common time. The meter of the piece changes several times throughout, as do the expression markings. The second section is a slow, melodic section with frequent modulation. This section builds up to the third section, marked *Tempo primo*, a return to the original thematic material. The piece ends with a coda that uses the second section’s theme. The stark contrasting dynamics and pounding rhythm make this piece an enjoyable one to listen to and perform. It has enough tonality to draw the audience in without isolating them with an overabundance of dissonance.

After the toccata was firmly established as a form in the Baroque period, it continued to develop throughout the Romantic, Classical and Modern periods. After World War II, neo-Classicism gave way to the Avant-Garde and Indeterminacy movements. Composers wanted to start fresh with new ideas instead of develop from the old ones. Indeterminacy is when an “element of a musical work is [...] chosen by chance or if its realization by a performer is not precisely” notated.⁸⁹ It is an attempt to eliminate form altogether, just as the toccata was similarly used in the Baroque period to create a new compositional model. Composers continue to innovate and challenge boundaries, only to inadvertently draw from former composers. The toccata lives on through the music of the latter 20th Century and even into the 21st through its improvisatory aesthetic and virtuosic elements. It is this value that has carried the piece throughout the centuries: a form without a true form, limitless in its creative technical opportunities.

3. Endnotes

1. Barbara Russano Hanning, *Concise History of Western Music* (New York: W. W. Norton and Company, 2002), 147.
2. Murray C. Bradshaw, “Juan Cabanlles: The Toccatas and Tientos,” *The Musical Quarterly* 59.2 (1973): 291, <http://links.jstor.org/sici?sici=0027-4631%28197304%2959%3A2%3C285%3AJCTTAT%3E2.0.CO%3B2-4>.
3. Bradshaw, “Juan Cabanlles,” 286.
4. Manfred F. Bukofzer, *Music in the Baroque Era* (New York: W.W. Norton and Company, Inc, 1947), 47.
5. Murray C. Bradshaw, “The Toccatas of Jan Pieterszoon Sweelinck,” *Tijdschrift van de Vereniging voor Nederlandse Muziekgeschiedenis* 25 (1975): 46, <http://links.jstor.org/sici?sici=0042-3874%281975%2925%3A2%3C38%3ATTOJPS%3E2.0.CO%3B2-R>.
6. Bradshaw, “Juan Cabanlles,” 300.
7. Hanning, 235.

8. John Caldwell, "Toccatas," in *The New Grove Dictionary of Music and Musicians*, ed. Stanley Sadie, 2nd ed. vol. 25 (London: Macmillan Publishers Limited, 2001), 535.
9. Ibid.
10. Bukofzer, 47.
11. Hanning, 235.
12. Ibid., 148.
13. Ibid., 236.
14. Bradshaw, "Juan Cabanlles," 294.
15. Bradshaw, "The Toccatas of Sweelinck," 46.
16. Bradshaw, "Juan Cabanlles," 288.
17. Bradshaw, "The Toccatas of Sweelinck," 38.
18. Bradshaw, "Juan Cabanlles," 289.
19. Caldwell, 536.
20. Bradshaw, "The Toccatas of Sweelinck," 46.
21. Hanning, 234.
22. Caldwell, 536.
23. Bradshaw, "Juan Cabanlles," 291.
24. Caldwell, 535.
25. William S. Newman, "The Instrumental Background of the Early Baroque Sonata," *Bulletin of the American Musicological Society* Vol. 9-10 (1957): 28, <http://links.jstor.org/sici?sici=1544-4708%28194706%290%3A9%2F10%3C6%3ATIBOTE%3E2.0.CO%3B2-W>.
26. Rebecca Edwards, "Merulo, Claudio," in *The New Grove Dictionary of Music and Musicians*, ed. Stanley Sadie, 2nd ed. vol. 16 (London: Macmillan Publishers Limited, 2001), 473.
27. Hanning, 148.
28. Edwards, 474.
29. Bukofzer, 47.
30. Randall H. Tollefsen and Peter Dirksen, "Sweelinck, Jan Pieterszoon," in *The New Grove Dictionary of Music and Musicians*, ed. Stanley Sadie, 2nd ed. vol. 24 (London: Macmillan Publishers Limited, 2001), 770.
31. Bradshaw, "The Toccatas of Sweelinck," 46.
32. Bradshaw, "The Toccatas of Sweelinck," 38.
33. Bukofzer, 77.
34. Tollefsen and Dirksen, 773.
35. Walter Blankenburg and Vincent J. Panetta, "(2) Hans Leo Hassler," in *The New Grove Dictionary of Music and Musicians*, ed. Stanley Sadie, 2nd ed. vol. 11 (London: Macmillan Publishers Limited, 2001), 119.
36. Blankenburg and Panetta, 122.
37. Caldwell, 535.
38. Frederick Hammond and Alexander Silbiger, "Frescobaldi, Girolamo Alessandro," in *The New Grove Dictionary of Music and Musicians*, ed. Stanley Sadie, 2nd ed. vol. 9 (London: Macmillan Publishers Limited, 2001), 239.
39. Ibid., 243.
40. Ibid., 245.
41. Bukofzer, 47.
42. Yelena Zin'kevich, "Buxtehude, Dieterich," in *The New Grove Dictionary of Music and Musicians*, ed. Stanley Sadie, 2nd ed. vol. 4 (London: Macmillan Publishers Limited, 2001), 700-1.
43. Hammond and Silbiger, 243-45.
44. Anthony Newcomb, "Frescobaldi's Toccatas and Their Stylistic Ancestry," *Proceedings of the Royal Musical Association* 111 (1984-1985):29, <http://links.jstor.org/sici?sici=0080-4452%281984%2F1985%292%3A111%3C28%3AFTATSA%3E2.0.CO%3B2-9>.
45. Hammond and Silbiger, 245.
46. Ibid.
47. Bukofzer, 47.
48. Newcomb, 28-9.

49. Alexander Silbiger, "Michelangelo Rossi and His Toccata 'e Correnti'," *Journal of American Musicological Society* 36.1 (1983): 35-36, <http://links.jstor.org/sici?sici=0003-0139%28198321%2936%3A1%3C18%3AMRAHT%22%3E2.0.CO%3B2-G>.
50. Bukofzer, 108.
51. Harvey Grace, "The Organ Works of Bach. IV. The Later Weimar Preludes and Fugues (Continued)," *The Musical Times* 62.935 (1921): 12-17, <http://links.jstor.org/sici?sici=0027-4666%2819210101%2962%3A935%3C12%3ATOWOBI%3E2.0.CO%3B2-M>.
52. Caldwell, 536.
53. Howard Schott, "Froberger, Johann Jacob," in *The New Grove Dictionary of Music and Musicians*, ed. Stanley Sadie, 2nd ed. vol. 9 (London: Macmillan Publishers Limited, 2001), 284.
54. Caldwell, 536.
55. Bukofzer, 108.
56. Grace, 536.
57. Zin'Kevich, 695.
58. Caldwell, 536.
59. Hanning, 235-6.
60. Bukofzer, 265.
61. Zin'Kevich, 400.
62. John Harper and Lowell Lindgren, "Pasquini, Bernardo," in *The New Grove Dictionary of Music and Musicians*, ed. Stanley Sadie, 2nd ed. vol. 19 (London: Macmillan Publishers Limited, 2001), 187-88.
63. Caldwell, 535.
64. Newcomb, 44.
65. Bradshaw, "Juan Cabanlles," 290.
66. Caldwell, 536.
67. Bukofzer, 236.
68. Caldwell, 536.
69. Roberto Pagano, Malcolm Boyd and Edwin Hanley, "(1) (Pietro) Alessandro (Gaspere) Scarlatti," in *The New Grove Dictionary of Music and Musicians*, 2nd ed. vol. 4 (London: Macmillan Publishers Limited, 2001), 372-96.
70. Caldwell, 536.
71. Bukofzer, 236-7.
72. Ibid., 265.
73. Grace, 13.
74. J.A. Fuller-Maitland, "The Toccatas of Bach." *Proceedings of the Musical Association* 39 (1912-1913): 45, <http://links.jstor.org/sici?sici=0958-8442%281912%2F1913%2939%3C45%3ATTOB%3E2.0.CO%3B2-Q>.
75. Bukofzer, 285-6.
76. Caldwell, 536.
77. Bukofzer, 285.
78. Caldwell, 536.
79. Zin'Kevich, 701.
80. Caldwell, 536.
81. William Drabkin/r, "Fantasia, \$3: 19th and 20th centuries," in *The New Grove Dictionary of Music and Musicians*, ed. Stanley Sadie, 2nd ed. vol. 8 (London: Macmillan Publishers Limited, 2001), 554.
82. Drabkin/r, 555.
83. Caldwell, 536.
84. Ibid.
85. Hanning, 500.
86. Caldwell, 537.
87. Ibid.
88. Svetlana Sarkisyan, "Aram Khachaturian," in *The New Grove Dictionary of Music and Musicians*, ed. Stanley Sadie, 2nd ed. vol. 13 (London: Macmillan Publishers Limited, 2001), 556.
89. Bryan R. Simms, *Music of the Twentieth Century: Style and Structure*, 2nd ed. (New York: Schirmer Books, 1996), 343.

Technique along with individual benefits and complication profiles for each incision is reviewed. Objectivity and follow-up time intervals are necessary parameters for evaluating incisions for orbital floor exploration to further define guidelines. Read more.Â One culture-historical explanation that was popularized more than half a century ago is cultural diffusion via mass migration, particularly of the Amorites, an ambiguous population whom some consider [Show full abstract] responsible for initiating and spreading Middle Bronze Age culture. Although today's scholarly consensus has, in the main, departed from such perspectives, the spectre of the Amorites persists. Any form, shape and pattern of a natural object are its phenomenological outcomes and therefore, it is understood that there is a strong correlation between biological forms and mechanical properties (Figure 2) (Thompson, 1992). Accordingly, fractal geometry of nature, possibly has a connection with nature's structural and mechanical behavior. However, there is a recent debate about the fractal geometry and its denition to explain the form and pattern of nature.Â Dendriform, as mentioned before, is an imitation of the form and shape of a tree or plants. Treelike branching structure is also known as "dendritic structure" (Schulz and Hilgenfeldt, 1994). Toccata (from Italian toccare, literally, "to touch", with "toccata" being the action of touching) is a virtuoso piece of music typically for a keyboard or plucked string instrument featuring fast-moving, lightly fingered or otherwise virtuosic passages or sections, with or without imitative or fugal interludes, generally emphasizing the dexterity of the performer's fingers. Less frequently, the name is applied to works for multiple instruments (the opening of Claudio Monteverdi's opera L'Orfeo being