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The Evolution of the Clarinet and Its Effect on Compositions Written for the Instrument

Victoria A. Hargrove

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THE EVOLUTION OF THE CLARINET AND ITS
EFFECT ON COMPOSITIONS WRITTEN FOR
THE INSTRUMENT

Victoria A. Hargrove

COLUMBUS STATE UNIVERSITY

THE EVOLUTION OF THE CLARINET AND ITS EFFECT ON COMPOSITIONS WRITTEN
FOR THE INSTRUMENT

A THESIS SUBMITTED TO

HONORS COLLEGE

IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE HONORS IN THE DEGREE OF

BACHELOR OF MUSIC

SCHWOB SCHOOL OF MUSIC

COLLEGE OF THE ARTS

BY

VICTORIA A. HARGROVE

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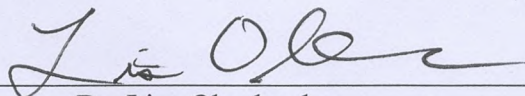
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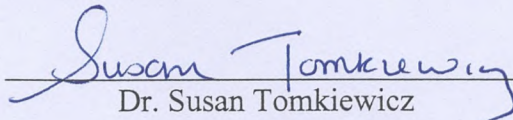


Dr. Lisa Oberlander

Date

5/3/2016

Committee Member

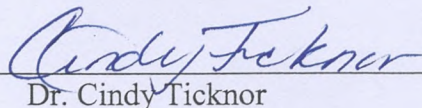


Dr. Susan Tomkiewicz

Date

5/3/16

Honors College Dean



Dr. Cindy Ticknor

Date

5/2/16

ABSTRACT

The purpose of this lecture recital was to reflect upon the rapid mechanical progression of the clarinet, a fairly new instrument to the musical world and how these quick changes effected the way composers were writing music for the instrument. There are many factors to the contribution of the clarinet repertoire in which some are explored in the following research. This research revealed that the evolution of the clarinet depended on many individuals both composers, performers, and instrument makers alike.

ACKNOWLEDGEMENTS

I would like to thank each member who sat on my committee and made this research possible: Dr. Lisa Oberlander, Dr. Susan Tomkiewicz, and Dr. Kristen Hansen. I would also like to extend a special thank you to Dr. Lisa Oberlander for guiding me through the research and performance of this lecture recital.

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The technical demands of the professional clarinetist have increased drastically since the earliest models of the clarinet were used. The modern, innovative key systems have been designed with inspiration from early performers demanding more virtuosity from their instruments. Even with the creation of the modern key systems, new technical demands were made by composers that required alterations from the performer. "Its expressiveness, agility, and richness of tone has attracted composers to the clarinet and has led to the many close associations between composer and performer: a tradition which has resulted in a wealth of concertos and chamber music."¹ This research will reflect the evolutionary timeline of the clarinet and its corresponding evolution in the music written for the instrument.

Most instruments have a predecessor to their modern states in which the evolutionary timeline is very clear between the predecessor and its modern instrument. The early history of the clarinet is very different in this aspect because it does not have a very close predecessor. However, it is argued that the chalumeau did in fact precede the clarinet due to their similarities. The chalumeau was invented in an attempt to increase the volume of the recorder. The instrument retains the body of the recorder with seven finger holes and one thumb hole on the back with a stopped pipe at the bottom. The difference between the recorder and the chalumeau is the added mouthpiece and single reed. The chalumeau is now not only louder than the recorder, but has a lower fundamental range. The argument that the chalumeau is the predecessor to the clarinet is countered by the fact that both instruments are recognized as two different voices. Both the chalumeau and the clarinet can be found in the same scores playing independent parts. An example of this could be found in one of Telemann's serenatas from 1728. The

1. Colin Lawson, *Clarinet* (Cambridge: Cambridge University Press, 1999), 163.

chalumeau was not yet dispensable due to the weak lower range of the clarinet. The chalumeau parts were usually used for poignant, dramatic moments.²

Johann Christian Denner (1655-1707) is credited with inventing the earliest clarinet with seven finger holes and two keys around 1700, These two keys are equivalent to the A key and the register key of modern clarinets. They are located completely opposite of each other. The presence of the register key is what marks the most important difference between the clarinet and the chalumeau. This key allowed the instrument to overblow, but it did not overblow to the expected perfect octave like the other woodwind instruments. It instead allowed the clarinet to overblow to a twelfth above the fundamental pitch. This created a completely new and higher range for the instrument and allowed the performer to easily control this range. This new register became known as the clarion register because its sound was described as a "clarion trumpet."³ Denner soon added a third key to extend the range lower from f² to e' below the staff. This key was not played with L4 (left hand, pinky) as it is today but was played with the right thumb on the back of the instrument.⁴

Another distinguishing difference between the first clarinets and the modern clarinet is the mouthpiece. The opening on the bottom of the mouthpiece was the entire length of the reed rather than half the length as they are today. The mouthpiece was also originally played with the reed on top rather than on the bottom. The most shocking detail of the early mouthpiece, however, is that the mouthpiece with the reed attached is the size of today's bassoon reed, which is incredibly small compared to today's clarinet mouthpiece. These mouthpieces were wooden,

2. David Pino, *The Clarinet and Clarinet Playing*, (New York: Penguin Books, 1969), 200-201.

3. *Ibid*, 201-202.

4. Pino, *The Clarinet and Clarinet Playing*, 202.

which caused a problem for performers. The wooden mouthpieces were prone to warp from all of the moisture and did not last very long.⁵ Mouthpieces were originally connected to the barrel as one piece, but by 1770 the two were made as separate pieces. This is thought to be due to performers looking to repair chipped mouthpieces but wanting the maker to keep the original barrel. This separation gave makers the freedom to make mouthpieces from a more resistant wood (usually imported blackwood) rather than the local boxwood. It also made it much easier for makers to cut the mouthpieces for the instrument with the ability to work from both ends.⁶ Another advantage to separating the mouthpiece from the barrel was being able to craft mouthpieces from different materials other than wood to eliminate the rapid warpage of wooden mouthpieces. Other materials used to craft mouthpieces included ivory, glass, and metal. Ebonite was introduced at the end of the nineteenth century and continued on to become the standard material for mouthpieces.⁷ At this point in the clarinet's history, the instrument, along with the oboe and bassoon, was used for mostly outdoor concerts or military bands due to its loud sound. This stage of the evolutionary timeline is considered the "baroque clarinet."⁸

After 1770 clarinets pitched in B-flat and A are introduced and the instrument now has five keys. These new keys were the a-flat'/e-flat'' key for R4 (right hand, pinky) and the f-sharp'/c-sharp'' key for L4. It is unknown who added the two extra keys, but the most celebrated maker of the five-keyed clarinet is Heinrich Grenser (1764-1813).⁹ Composers notably writing for the five-keyed clarinet during this time were Johann Stamitz (1717-1757), Carl Stamitz

5. Pino, *The Clarinet and Clarinet Playing*, 203.

6. Lawson, *Clarinet*, 24.

7. *Ibid*, 149.

8. Jack Brymer, *Clarinet* (New York: Schirmer Books, 1977), 22-24.

9. Pino, *The Clarinet and Clarinet Playing*, 202.

(1745-1801), and Wolfgang Amadeus Mozart (1756-1791). These clarinet parts give us a good idea of the capabilities of the instrument during the time period without actually performing on a historical instrument. There were a few complications in the music that the performers had to overcome with the limited number of keys on this classical clarinet. For example, the chalumeau register b-natural, which is the lowest register of the clarinet named after the chalumeau, appears once in Johann Stamitz's Concerto for Clarinet and gives the performer quite a bit of trouble. Mozart also wrote this pitch with complications for the performer. This is thought to be due to the composers envisioning the clarinet to have a twin hole for R1 (right hand, index finger) such as the oboe does.¹⁰ The clarinet, however, requires flipping from index finger to middle finger in the right hand to perform b-flat to b-natural. Later an extra key (sometimes called the fork or sliver key) was placed between the lower two tone holes for easy half-step motion using the third finger on the sliver key while leaving the first finger in place. This key eliminates this complication for clarinetists today.

Most composers did steer away from writing in the chalumeau register of the clarinet during this time, though. The intonation in this register was too unstable due to the construction of the instrument. The tone holes were not large enough nor could they be placed correctly on the instrument because of the design of the human hand. The tone holes had to be covered by the fingers or by the few keys that were present on the early model of the clarinet. The solution would appear to be additional keys added to the mechanism. However, the mechanics of the keywork did not function well enough to add more keys to fix this issue during the classical period. It is also important to note that we do not see many accidentals throughout classical clarinet works. The lack of keys on the instrument made it difficult to play many chromatic

10. Lawson, *Clarinet*, 19-20.

itches. Clarinetists during this time usually owned three or four different clarinets all in different keys so that they were able to perform in whichever key the composer asked for. The standard classical professional clarinet package consisted of clarinets in C, D, Bb, and A. This stage of the evolutionary timeline is considered the “standard classical clarinet.”¹¹

Mozart’s clarinet works during the classical period are considered to be the most popular from this time. This still holds true as his concerto (K. 622), trio (K.498), and quintet (K. 581) for clarinet are performed quite regularly today. However, the concerto and quintet were originally written for the basset clarinet. Anton Stadler (1752-1812) created the basset clarinet which was an extended version of the clarinet. This instrument was capable of reaching lower pitches than the clarinet could. Stadler had a very close relationship to Mozart which resulted in these two fantastic pieces for Stadler’s new instrument. The pieces are now commonly performed on the clarinet in A, but these pieces are not great examples of what the classical clarinet could do. Because they were written for the basset clarinet, the range of these pieces reaches lower than the classical clarinet could have played.¹²

Carl Stamitz’s clarinet works, however, were considered the first worthy pieces for the instrument. His writing for the clarinet is very typical of the capabilities of the instrument during the classical period. We can very easily see the lack of the chalumeau register in Stamitz’s Concerto no. 3, movement 1.

Figure 1. Carl Philipp Stamitz, Concerto for Clarinet, no. 3 in B-flat major, mm. 49-53.¹³

11. Oskar Kroll, *The Clarinet* (New York: Taplinger Publishing Co., Inc., 1965), 14-15.

12. Lawon, *Clarinet*, 23.

13. Carl Philipp Stamitz, Concerto for Clarinet, No.3 in B-Flat Major (New York: International Music Company, 1969), mm. 49-53.



The lowest pitch in the entire first movement is c' just below the staff. Looking further into the piece, the second movement does not even go below the clarion register, which begins on b'' in the middle of the staff to c''' above the staff. This is the register that most classical works for the clarinet are written in. The intonation and sound production were at its highest quality for the instrument in this register during the classical period.¹⁴

Moving into the nineteenth century, we see more keys added for many different reasons. Some performers individually had a few keys here and there added to their instrument to make impossibly difficult trills easier. Some keys were even added to make the instrument louder. However, one of the major reasons for adding keys during this time was to even out the tone and intonation of complex chromatic passages. There were many performers who objected to the addition of keys during this time because it created an issue of unintentional leakage. The tone holes covered with the use of keys were being sealed with a small patch of soft leather attached to a square metal flap. Many attempts were made to fix the sealing issue, but it wasn't until Iwan Müller (1786-1854) brought about his solution that it really improved. Müller used a stuffed pad to seal the tone hole and raised the rim of tone hole. Later in the nineteenth century, the stuffed pad was slightly upgraded and replaced with a card-based pad lined with thin fish bladder, which is still in use today. It is also important to note that Müller invented the metal ligature that secures the reed to the mouthpiece. Previous to his invention, the reed was always secured by wrapping twine around the mouthpiece.¹⁵

14. Lawson, *Clarinet*, 24-25.

15. Kroll, *The Clarinet*, 24.

In 1812 Müller presented his thirteen-keyed clarinet to a panel of judges at the Paris Conservatoire. Müller presented this clarinet with the idea that it would eliminate the need for clarinets in A, C, and D because this clarinet could play in all keys. The panel of judges rejected his new clarinet with the reasoning that the special musical character of each different clarinet should be preserved. Müller's invention did not keep composers from writing for the A and C clarinets because they enjoyed having the option of differing tonal resonances. Müller wrote a few concertos to display the potential of this new clarinet which explored the full range of the instrument from the lowest pitch all the way up to c'''. The modern Oehler key system, the German style clarinet, builds heavily upon the work of Müller's clarinet.¹⁶

There were other instrument makers during this time who looked into eliminating the need for multiple clarinets in different keys. Some attempts were made to extend the instrument such as using a screw joint between the mouthpiece and barrel to literally unscrew the Bb-clarinet into an A-clarinet, or one technique of attaching ten evenly segmented attachments to lower the instrument a half-step from Bb to A. These inventions, however, were extremely impractical and did not gain much popularity for obvious reasons.¹⁷

The demand for more keys was also brought upon by the composers at this time. Louis Spohr's clarinet concertos forced performers to have no less than thirteen keys for his pieces to be performed as written.¹⁸ However, perhaps the most popular pieces written for the clarinet in the early nineteenth century were the works of Carl Maria von Weber (1786-1826). He wrote all of his clarinet works for the clarinetist Heinrich Baermann (1784-1847). Baermann performed

16. Kroll, *The Clarinet*, 25-26.

17. David Pino, *The Clarinet and Clarinet Playing*, (New York: Penguin Books, 1969), 215.

18. Brymer, *Clarinet*, 44-46.

the works of Weber on a ten-keyed clarinet. Chromatic passages occur much more often in Weber's clarinet works because the number of keys allowed this to be possible. Not only did Weber utilize the new ease of chromatic passages, but he also utilized the new improvement of the chalumeau register.¹⁹ We can easily see this in Weber's *Fantasia and Rondo*, which come from the *Quintet for clarinet and strings*, Op. 34. The bottom of the long chromatic passages start at the lowest notes of the clarinet moving to the top of the clarion range.

Figure 2. Carl Maria von Weber, *Fantasia and Rondo*, Op. 34, mm. 39.²⁰



This one example displays the improvements of the intonation in the chalumeau register on either side of the dynamic scale, the evenness in tone throughout the registers, and the ease of chromatic passages. He even writes in a large, three-octave leap from the lowest note into the altissimo register with an extreme dynamic change.

Figure 3. Carl Maria von Weber, *Fantasia and Rondo*, Op. 34, mm. 36-37.²¹



19. Lawson, *Clarinet*, 80.

20. Carl Maria von Weber, *Fantasia and Rondo*, Op. 34 (New York: Carl Fischer, Inc., 1916), mm. 39.

21. *Ibid*, mm. 36-37.

This displayed the huge change in the stability of tone through the registers. Weber used these pieces to not only show off the virtuosity of Baermann but to also show off the virtuosity of the improved clarinet.²²

In the mid-nineteenth century, Hyacinthe Klosé (1808-1880), a clarinetist, moved the advancement of the clarinet forward to its modern design. He examined the work of Theobald Boehm (1794-1881), an instrument maker and flautist. Boehm designed a key system for the flute that involved ring keys which allowed the instrument to have bigger tone holes that could be farther away from the hand without having to accommodate the structure of the hand. Klosé took this information to Louis Buffet (1818-1898) whom created the Boehm system in 1839 that is the prototype for the clarinet most performers use today. This system consists of seventeen keys and six rings to allow the performer to control twenty-four tone holes. Not only did this system create more ease in technical facility but also in acoustical production. The elimination of constant "fork fingerings," the closing of a tone hole below an open tone hole, and the size increase of the tone holes allows the performer to produce a much clearer sound with better intonation.²³ The width of the bore, the inside of the clarinet, was increased to a little over half of an inch. The acoustical ratio for the clarinet changes due to the cylindrical bore, but this increase in the bore's size made it easier to play smoothly and evenly throughout the registers.²⁴

Carl Baermann (1810-1885), son of Heinrich Baermann, made significant improvements to Müller's system during this time allowing for more technical ease. He was able to make adjustments to Müller's model by including duplicates of some keys so that they could be played

22. Lawson, *Clarinet*, 80.

23. Kroll, *The Clarinet*, 31-32.

24. Brymer, *Clarinet*, 90.

by the opposite hand if need be, such as the added L4 (left hand, pinky) key to play c'' when it is normally played with the R4 (right hand, pinky) key. This is especially useful when playing passages that require c'' to eb'' because eb'' could only be played with R4. There is an optional additional L4 key to eliminate this issue, but it is not standard. Another major improvement was the placement the reed. It has now become standard for the reed to be played on the bottom lip rather than the top lip. This allowed clarinetists to produce a much more beautiful, singing sound rather than sounding as if they "were playing on the glottis of a goose."²⁵

It was the Müller-Baermann clarinet that Richard Mühlfeld (1856-1907) performed on to inspire Johannes Brahms (1833-1897) to write his quintet, trio, and two sonatas for clarinet. Brahms had announced his retirement prior to hearing Mühlfeld play and had not written any pieces for two months.²⁶ Brahms had yet to compose chamber music for the clarinet before hearing Mühlfeld play, but the sound that Mühlfeld produced was so beautiful to Brahms that he referred to the clarinetist as "his dear nightingale."²⁷ The purity of sound and ease of technical facility of this clarinet can be reflected in these pieces. Brahms found the sweetness of Mühlfeld's tone to fit appropriately with the serious mood of his late compositions. Brahms took note of Mühlfeld's ability to easily move between the registers of the clarinet with a consistently beautiful tone and impeccable intonation. He was very sensitive to Mühlfeld's strengths when composing all four pieces for him. The two sonatas for clarinet and piano were the last instrumental pieces that Brahms wrote during his life.²⁸ His Sonata in F Minor, Op. 120 no. 1 displays the improved beauty of the clarinet sound through sweeping melodies in every dynamic

25. Kroll, *The Clarinet*, 28-29.

26. Pino, *The Clarinet and Clarinet Playing*, 210-213.

27. *Ibid*, 214.

28. *Ibid*, 214-215.

range. There are many places throughout the first movement where a smooth change in register is required from the performer to perfectly execute the phrase.

Figure 4. Johannes Brahms, Sonata for Clarinet and Piano, no. 1, Op. 120, mm. 5-9.²⁹



The advances in the key system helped to make this less difficult, but changing registers in a legato style is still a difficult skill to acquire for a clarinetist, especially when involving the altissimo register.

The clarinet evolved quickly through the romantic period and achieved its modern state. In the twentieth century, composers and performers worked together to broaden the possibilities in sound from the instrument. This experimentation with the instrument resulted in new techniques that the clarinet was not mechanically intended to perform. It is very common for the composer to work closely with the performer to find the unique sound that they are looking for in a way that is possible for the performer to execute. Extended techniques, however, do not always produce the same way on different clarinets, which can result in the performer experimenting with their own instrument to figure out the best way to produce the required sound.

Most of these extended techniques were experimented with after the second world war. Some of the standard extended techniques include but are not limited to multiphonics, more than one pitch being produced at once; microtones, tones that lay acoustically between two definite pitches; circular breathing, a technique allowing a performer to sustain a note or phrase for an extended amount of time; and vocal sound simultaneously with air, singing while producing a

29. Johannes Brahms, Sonata for Clarinet and Piano, No. 1, Op. 120 (München: G. Henle Verlag, 2014), mm 5-9.

different pitch.³⁰ Even though many composers found the use of these techniques liberating and exciting, there is a large amount of controversy over the use of these techniques in music. The techniques can seem to be arbitrarily written, but the majority of the works insist on artistic reasoning for the placement of the extended technique.³¹

Most contemporary pieces that utilize these techniques provide instructions on how to produce the desired sound. For example, some pieces provide an alternate fingering to produce multiphonics written in the music. Some instrument makers attempted to avoid the unusual fingerings such as an attempt early in the twentieth century to invent a quarter-tone clarinet, but the mechanics were not that great and the demand for it was low considering it only played quarter tones.³²

The two most common key systems for the clarinet today are the Oehler system (German) and the Boehm system (French). The Oehler system is a highly improved model of the Müller system. Oskar Oehler (1858-1936) was a clarinetist of the Berlin Philharmonic when he decided to give up his performing career to become an instrument maker. Over the years he altered the position and shape of almost every key on the clarinet. He redesigned the key system to be perfectly tailored to the player's hand while also being acoustically as perfect as possible.³³ This resulted in a few additions and changes to the old key system. He added a finger plate that works as a vent key for b-flat' and f-natural''' under R2 (right hand, middle finger) allowing a more clear tone on those pitches. He also concerned himself with the issue of forked fingerings on the Müller model and added an extra key that opened a tone hole on the side of the

30. Lawson, *Clarinet*, 163-164.

31. Pino, *The Clarinet and Clarinet Playing*, 266.

32. Lawson, *Clarinet*, 175.

33. Brymer, *Clarinet*, 47.

instrument. This reduced the fuzzy sound produced with the forked fingering. In a few instances, Oehler added extensions to keys that provide smooth legato trills but were also capable of being disconnected when they were not needed. The Oehler system consists of twenty-two keys, six rings, and one finger plate. The Oehler system clarinets are now most commonly played in Germany and other German-speaking countries.³⁴ The Boehm system as previously described consists of twenty keys and six rings. The Boehm system clarinets are played in almost every other country in the world.³⁵

Even though the construction of the instrument has reached its most efficient state so far, there have been attempts to fix specific issues that still exist on the instrument. These include adding an extra tone hole near the register key to create more resonance and purity of sound in the throat tones, specifically b-flat, and an extra key added for L4 to produce a-flat''/e-flat'' rather than only having the option for the right hand. Not all modern instruments consist of these newer additions.³⁶

It is important to note the more modern key systems that have failed to catch popularity. One of the designs known as the Clinton model has an additional ring key spring-loaded against a single side lever which allowed a side-key fingering for e-flat'/b-flat'''' and g''''/c'. The main purpose of this addition is to make trills such as c' to e-flat' or g'''' to b-flat'''' much more fluid. This adaptation, however, cannot be made to the Boehm system and the model died out. One clarinetist attempted to address the issue of the register key's duality. American William Stubbins looked into altering the register key on the instrument so that a rich b-flat could be produced along with a purer clarion register. The ultimate placement for the register key to

34. Brymer, *Clarinet*, 48-49.

35. Kroll, *The Clarinet*, 38, 40.

36. Brymer, *Clarinet*, 50.

produce the twelfth is much higher up on the instrument than its current placement, but for a much stronger, clearer throat tone b-flat the tone hole would ultimately work best much lower on the instrument. Stubbins' mechanism worked so that playing throat tone b-flat with the normal fingering would open a larger tone hole lower on the instrument, but once the ring on the left thumb hole was depressed, the larger tone hole would close and a much smaller tone hole higher up the instrument would open. This mechanism, however, did not catch enough popularity to become standard.³⁷ Many performers today still choose to add or move keys and tone holes to reach the maximum ability of their instrument so that they may fully achieve what composers ask of them.³⁸

The mouthpiece along with the key systems has also developed quite a bit to its modern state. The mouthpiece is now much larger in length and width than the classical mouthpiece. The opening of the mouthpiece goes from the tip to halfway down the mouthpiece rather than the entire length and the tip opening is less narrow. The standard material for crafting mouthpieces is ebonite.³⁹ There is no standard ligature material to attach the reed to the mouthpiece but some of the materials used are metal, leather and string.

The persistence of innovative makers such as Müller and Klosé have skyrocketed the progression of the fairly new musical instrument. The inspiration and ambition of clarinetists in close relationships with the great composers gave us a repertoire that is rich in the progressing capabilities of the instrument through the decades. This progression only continues to flourish not only as new music is explored and experimented with but as new makers continue to work on perfecting the instrument for the comfort and ease of the performer.

37. Brymer, *Clarinet*, 52-54.

38. *Ibid*, 50.

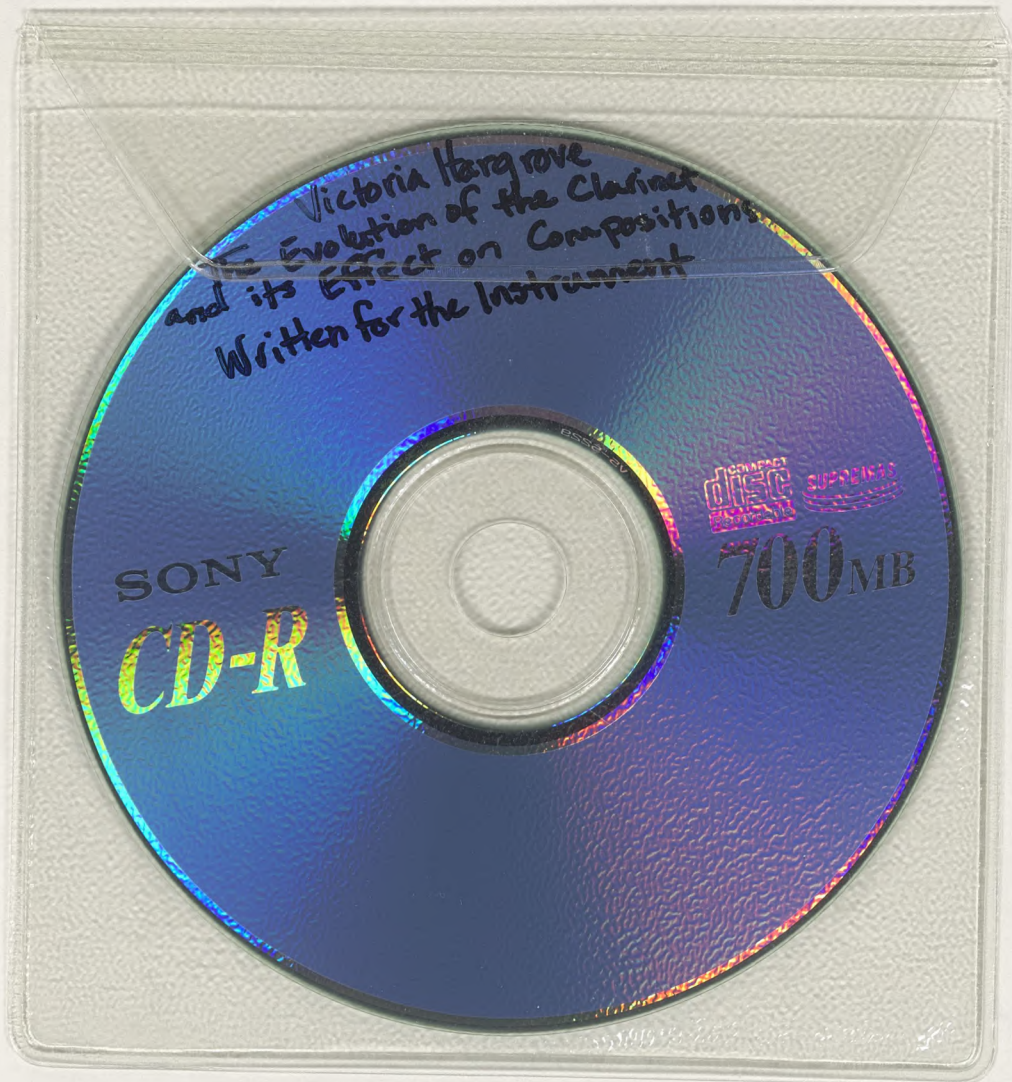
39. Lawson, *Clarinet*, 24.

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