The Kingma System Flute: Redesigning The Nineteenth-Century Flute For The Twenty-First Century

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THE KINGMA SYSTEM FLUTE:
REDESIGNING THE NINETEENTH-CENTURY FLUTE
FOR THE TWENTY-FIRST CENTURY

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And finally, I am indebted to Eva Kingma: not only for her assistance in this project, but also for making this fascinating instrument a reality. It is my sincerest hope that this document and my future research activities will help to raise awareness of the Kingma System flute and an understanding of what it has to offer the music world.
ABSTRACT

This project investigates the development and reception of the Kingma System flute, designed by Dutch flutemaker Eva Kingma. For some time now, flutists have been honing creative techniques to provide imperfect approximations of what composers have specified, but the Kingma mechanism achieves the exact effects desired with ease. Through her close work with composers and performers, Eva Kingma was able to create a mechanism that is comfortable to play, versatile in performance, and beautifully suited for contemporary repertoire. The Kingma flute is an invaluable tool for performers and an exciting new voice for composers, offering unprecedented musical possibilities and yet undiscovered expressive potential. Despite being given a highly publicized debut and being produced in partnership with respected brands, the Kingma flute has yet to gain significant traction with the majority of the flute community. This has little to do with any specific quality of the instrument itself; rather, it likely results from general misinformation and limited composer involvement. This project explores how the presentation and promotion of the Kingma flute must be changed in order to dispel common misconceptions are addressed and marketing strategies are optimized.
Considering the current compositional trends, the 170-year-old design of the Boehm flute is scarcely keeping pace with the demands of twenty-first century compositions. By examining current and past compositional trends and considering historical precedent for acceptance and rejection of designs, one can determine the likelihood the Kingma flute replacing the Boehm flute as our standard instrument.
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LIST OF SYMBOLS

|$|$ | Natural

|$|$ | Flat

|$|$ | Sharp

|$|$ | Lower pitch by one quartertone

|$|$ | Raise pitch by one quartertone
Throughout history, compositional trends and advances in musical instrument design have been closely correlated. Generally, composers exploit an instrument’s newfound capabilities once it has been improved upon; on occasion, however, new musical demands can instead spur on the development of a more capable instrument. The flute community currently finds itself in the latter category: contemporary composition has begun to outpace the capabilities of the traditional Boehm system flute, but we have yet to see widespread acceptance of any major modifications to the roughly 170-year-old design.

In this document, I will investigate the Kingma System flute, an instrument that is arguably the most significant advancement in flute design since Theobald Boehm’s revolutionary 1847 model. Commercially debuted in 1994, the Kingma System flute was designed by Dutch flutemaker Eva Kingma. The new mechanism developed by Kingma not only extends the harmonic and timbral vocabulary of the flute exponentially, but also addresses the most common difficulties encountered in the contemporary repertoire. Her modifications make the instrument fully quartertonal throughout its range and also allow for many additional microtones, multiphonics, glissandi, and other unique timbral effects. However, even though it boasts many new capabilities, the Kingma System flute is not a fundamentally new instrument. Built around the existing mechanism created by Boehm, the Kingma System flute does not require a new fingering system. A player new to the Kingma System can utilize all of the conventional fingerings while playing within the
compass of the chromatic scale. New fingerings are only needed to access quartertones, microtones, and other special effects. Nevertheless, despite the intuitiveness of its design and its obvious technical advantages, the Kingma System flute has yet to garner widespread support.

Throughout the course of this study, I hope to illustrate that the Kingma System flute is an invaluable tool for performers and an exciting new voice for composers. The advanced capabilities of the Kingma System flute will be explored at length; a discussion of the mechanism will clarify its role in the production of these new capabilities. To demonstrate the merit of the Kingma System flute in a performance context, I will conduct a side-by-side comparison of Boehm and Kingma fingerings for selected passages from the standard repertoire. The Kingma System’s advantages over the Boehm system become immediately apparent.

Additionally, I intend to initiate a discussion of whether or not the Kingma System flute may truly be a viable successor to the standard Boehm. The flute community finds itself in a very similar situation as it did in Boehm’s day: contemporary works are constantly pushing the boundaries of the standard flute in use. Considering the current compositional trends, the Boehm system flute is scarcely keeping pace with the demands of twenty-first century compositions. Over the last few decades, many compositions for flute have frustrated performers with requested effects that cannot be truly achieved on the standard flute: quartertones cannot always be played with accurate pitch, multiphonics are frequently resistant or inaccessible, glissandi can often only be approximated. Industrious performers have on occasion surmounted these obstacles by using cross-fingerings; however, these complex configurations are generally impractical
for use at high speed or in successive combination with other cross-fingerings. With increasing frequency, composers request effects that performers can only approximate, often with considerable difficulty. This holds especially true for the emerging solo repertoire. The irony is that the instrument for which many composers write is already here; unfortunately, many flutists still do not fully understand what the Kingma System flute has to offer.

Looking for precedents, I examined instances throughout the history of flute making to determine what circumstances have served as catalysts for change in flute design, specifically, how composer demand affected change in flute design. When one considers that composers have asked for an instrument with these capabilities for decades, it would seem that the Kingma System flute is long past due. However, the past is not always a reliable indicator of the future, and an instrument’s timeliness is not always a guarantee of its ultimate success. Although one cannot say with certainty what direction the flute repertoire may take in the future, some reasonable assumptions can be made based on current trends. It is in examining these trends that an important question presents itself: How can we be certain the Boehm flute will continue to be adequate? The purpose of this discussion will be to determine the likelihood of the following outcomes: that the Kingma System flute will not find or keep its audience, waning in popularity; that the Kingma System flute will find considerable acceptance, eventually being viewed in equal standing with the Boehm flute; or that the Kingma System flute may, in the coming decades, slowly replace the Boehm flute as our standard instrument. By examining current and past compositional trends and considering historical precedent for acceptance
and rejection of designs, I hope to present a reasonable argument for the Kingma System’s staying power.

My intention for this study is that it will highlight the value and timeliness of the Kingma System flute. I aim to illustrate what the Kingma System flute can offer for our contemporary and classical repertoire alike. The information presented herein may also help to clarify long-held misconceptions about the instrument, as they are likely one of the primary reasons that the Kingma System flute has yet to gain significant ground. My goal is to dispel any misinformation and help bring this incredible instrument into serious discussion in the flute community. By exploring the development, critical reception, and musical potential of the Kingma System flute, I hope to make a compelling case for this innovative instrument.

Literature Review

Although the 1995 commercial debut of the Kingma System flute was followed by several articles in The Flutist Quarterly, there have been relatively few publications about Kingma’s design. To date, there exists only one scholarly dissertation that focuses solely on the Kingma System concert flute, Cindy Shiung’s “The Brannen-Cooper Kingma System Flute: A Resource Thesaurus of Multiphonic Production Capability”, published in 2008. Carla Rees’ 2014 dissertation “Collaboration in Practice: Developing a Repertoire of Extended Techniques for the Kingma System Alto and Bass Flute,” is a substantial document with more updated information, but deals primarily with the

1 The National Flute Association’s official quarterly publication.
2 Cindy Ying Shiung, Cindy Ying Shiung, “The Brannen-Cooper Kingma System Flute: A Resource Thesaurus of Multiphonic Production Capability” (DMA diss., New York University, 2008)
3 Carla Rees, "Collaboration in Practice: Developing a Repertoire of Extended Techniques for the Kingma System Alto and Bass Flute" (Ph.D. diss., Royal College of Music, 2014).
Kingma System’s application on the low flutes. Deborah Fether’s “A Discussion of Contemporary Flute Design and Issues Surrounding These Developments” (2005) considers the Kingma System flute at length, albeit in a larger discussion of many different modifications and advancements made by several other flutemakers as well. These documents, along with the small number of articles from Flutist Quarterly, represent the entirety of Kingma-specific publications and research. Other, non-Kingma-specific sources were consulted for their relevance to contemporary compositional trends, extended technique, or flute making.

The most substantial and detailed document available is Shiung’s dissertation, “The Brannen-Cooper Kingma System Flute: A Resource Thesaurus of Multiphonic Production Capability.” This thesaurus has served as an invaluable resource throughout the course of my own research. Shiung’s document is, in essence, a reference for multiphonic production; that is, it provides an encyclopedic catalog of multiphonic fingerings. For each multiphonic sonority, she includes guidance on how to achieve the multiphonic, what timbre and volume to expect, and what its intonation tendencies are for each sonority. In preparing this document, Shiung worked very closely with Robert Dick, a flutist-composer generally acknowledged by the flute community as a master of contemporary techniques. Building on Dick’s groundbreaking work The Other Flute: A Performance Manual of Contemporary Techniques and her subsequent collaboration with the composer, Shiung catalogs multiphonic fingerings for the Boehm system flute, then presents the available multiphonics for the Kingma System for comparison. The

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comparison between the two instruments reveals the staggering difference in capability. I found this juxtaposition to be a tremendously effective way to illustrate the discrepancy in ability between our standard flute and its newer counterpart; Shiung’s work illustrates where there is overlap between the two flutes and, more importantly, where the Boehm system flute falls short. Shiung’s thesaurus is prefaced by an exceptionally detailed discussion of the acoustics of the flute and the science behind multiphonic production. She highlights some of the limitations of Kingma’s initial attempts at transferring her quartertone alto flute mechanism onto the concert flute and discusses some of the subsequent variants and modifications made during Kingma’s collaboration with Bickford Brannen. Shiung addresses some of the other modified flutes that Kingma has crafted, most notably the custom-made flute she built for flutist-composer Robert Dick.

While Shiung’s dissertation deals with the Kingma System concert flute, Carla Rees's thesis, "Collaboration in Practice: Developing a Repertoire of Extended Techniques for the Kingma System Alto and Bass Flute," provides a detailed look into the application of the Kingma System to the lower flutes. Rees's research draws on her experience as a Kingma flutist and commissioner of Kingma-specific works. Over seventy Kingma-specific works for alto and bass flute are examined (all commissioned by Rees), along with discussion of how composers had to modify their approach or even their notation for these instruments. This document is only part of a larger project undertaken by Rees; her accompanying websites offer video and audio examples of all techniques explored in within her document, as well as fingering charts and notational charts for all conventional and new techniques.
Deborah Fether’s document, “A Discussion of Contemporary Flute Design and Issues Surrounding These Developments,” was a valuable source as well. Fether’s research is broader than that of Shiung; she examines several notable innovations in flute making since the time of Boehm. Design modifications included in addition to the Kingma System are the Goosman Butterfly Headjoint, the Drelinger UpRite Headjoint, and the Robert Dick Glissando Headjoint. Fether additionally discusses new materials being utilized for flute tubing, keys, and pads, as well as several new approaches to cork and crown assembly design. In the appendices of the document, Fether provides transcripts of several interviews she conducted with the creators of each design and several composers. In the latter half of the discussion, Fether posits valid questions about who exactly inspires such designs and leaves her research open-ended on the topic of whether some of the discussed designs may eventually replace the standard Boehm system flute.

Karin Bijsterveld’s and Marten Schulp’s article “Breaking into a World of Perfection: Innovation in Today’s Classical Musical Instruments” is a tremendously well-researched and thought-provoking look into the how modern instrument makers innovate and successfully market new designs in a field bound by long-standing tradition. The authors present several different cases in addition to Eva Kingma and her quartetone system: ergonomically and acoustically redesigned string instruments, synthetic oboe reeds, PVC bass flutes, synthetic disc saxophone pads, and several others are examined. Although the Kingma System is not explored in the same depth as in the aforementioned documents, Bijsterveld and Schulp conduct a far more comprehensive discussion that

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ranges from practical obstacles instrument makers face, to objections from performers, to composer response, to the ultimate acceptance or rejection of new designs. Although much of this article did not pertain directly to the Kingma System flute, it was nonetheless one of my most valuable sources and prompted me to further explore the question of whether the static tradition and culture surrounding classical music may possibly have a detrimental effect on the introduction and success of fledgling designs.

Several articles from the publication The Flutist Quarterly, most of which were published in the years immediately following the Kingma System’s commercial debut, were consulted as well. These articles are brief and offer mostly general information about Eva Kingma and the capabilities of her new flute mechanism; however, several provided valuable composer insights, namely from flutist-composers Anne LaBerge and Robert Dick.

Robert Dick’s own books, *The Other Flute: a Performance Manual of Contemporary Techniques* and *Tone Development Through Extended Techniques*, were also frequently consulted, especially during music analyses. Although both were published several decades ago (1975 and 1986, respectively), these manuals are more useful to the performer now than ever. Dick’s groundbreaking work in the 1970s helped demystify the emerging extended techniques and provided ingenious suggestions for how to accommodate such techniques on the standard Boehm system flute. He provides many suggestions for how to achieve certain modern techniques like microtones and multiphonics on a flute that was not designed for such effects and sonorities. These books

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also stand testament to the fact that composers have long been exploring the mechanical limitations of the Boehm system flute.

Another dissertation, Rebecca Rae Meador’s “A History of Extended Flute Techniques and an Examination of Their Potential as a Teaching Tool”, traces the history of these “special techniques” all the way back to the 1750s, although her focus is primarily the compositional developments of twentieth-century flute music. She discusses extended techniques at length – how they originated, how they were interpreted by composers – and cites several instances in which flutemakers altered their designs specifically to better accommodate these techniques. Although Meador does not address the Kingma System flute, her extensive research demonstrates that composers and performers alike have for centuries pushed the boundaries of that which our instrument is mechanically capable.

In order to research the mechanical specifications of our current flute design, I referred to Nancy Toff’s *The Flute Book*, Ardal Powell’s *The Flute*, and Theobald Boehm’s *The Flute and Flute Playing: in Acoustical, Technical, and Artistic Aspects*. Toff’s and Powell’s exhaustive volumes provide a detailed history of the mechanical development of the flute and the concurrent stylistic development of our repertoire. Boehm’s own publication, with translation and commentary by Dayton C. Miller, was of obvious importance in my research. The flutemaker not only charts the development of

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9 Rebecca Rae Meador, "A History of Extended Flute Techniques and an Examination of Their Potential as a Teaching Tool" (DMA diss., University of Cincinnati, 2001).
his fledgling model and subsequent redesigns, but also explains his motivations for creating a flute more capable of meeting the compositional demands of the day.

I consulted several other dissertations, articles, and books that dealt with flute design or extended techniques. Although none specifically mentioned the Kingma System flute, they nonetheless offered insight into how pedagogues have suggested overcoming the increasingly taxing demands of contemporary works. All authors, however, eventually hedge that the standard Boehm system flute does have very real mechanical limitations that cannot be overcome by even the most creative techniques. Studies like these underline the importance of giving the Kingma System flute serious consideration as a solution to a growing problem.

Throughout the course of my research, I was unable to find any document that utilizes musical analyses to specifically illustrate how the Kingma could be of use in the standard repertoire. Perhaps the most convincing case for this new mechanism design could be made by presenting several analyses from a performer’s perspective of difficult excerpts from familiar compositions with accompanying fingering charts. Conducting a detailed, side-by-side comparison of conventional Boehm fingerings and available Kingma alternates would serve as a valuable demonstration of how, in many cases, the Kingma can serve the performer better than the Boehm. In order to fill this void in the resources available, I have chosen select excerpts from the standard repertoire on which to conduct such analyses. I intend to present the conventionally-used fingerings beside the new fingering options made available on the Kingma System flute in order to illustrate how the Kingma System mechanism is better suited for such passages.
CHAPTER 2: THE KINGMA SYSTEM FLUTE: DEVELOPMENT AND DESIGN

Eva Kingma began learning her trade under the tutelage of her uncle, Dirk Kuiper. Kuiper, then second flutist of the Concertgebouw Orchestra of Amsterdam, had founded his workshop in the 1950s, then called the Kuiper Company. Following World War II, there was a shortage of flutes, so Kuiper established a small workshop in Holland in response to the demand for new instruments. Kingma was fascinated by her uncle’s workshop from an early age. She recalls that she always spent more time taking her own flute apart than practicing her scales, often requiring her uncle to repair her dismantled instrument. When Kingma was around the age of sixteen, Kuiper finally allowed her to begin spending time in the workshop, supervising her through simple constructions and repairs. By 1975, Kingma officially joined her uncle’s company. She learned the trade quickly despite having no formal education in engineering, mathematics, or acoustics; Kingma cites her curiosity as the driving force behind her progress. It was not long, however, before she began to deviate from Kuiper’s original designs, finding new ways to construct various components. Following his retirement in 1981, Kuiper left his company in Kingma’s capable hands. After taking over the company, however, Kingma began to gradually shift her focus. With Kuiper at the helm, the company had primarily produced concert flutes. Although very few alto flutes were created by the Kuiper Company, Kingma remembers them as being significant, as they piqued her curiosity for

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the low flutes. When Kingma took over the workshop – under its new name, the Kingma Company – she began to explore alto flute and bass flute design.

In 1986, Kingma began a very fruitful collaboration with Albert Cooper, esteemed British flutemaker and vice president of Brannen Brothers Flutemakers. Cooper is most notably remembered for developing the Cooper scale, a manner of altering the hole placement along the flute’s tubing in order to improve intonation and response. With Cooper’s knowledge of acoustical principals, Kingma perfected her designs even further, especially those of her low flutes. Up until this point, most alto flutes were based on the proportions of the concert flute, a seemingly logical design but, in reality, an acoustical nightmare. The conventional design of the alto flute resulted in very temperamental intonation, uneven tone quality across the range, and limited volume. Kingma had already begun to make some of her own modifications to the basic design of the alto flute prior to meeting Cooper; however, with his expert input, she was able to improve upon it further.

In 1988, Kingma decided to move her workshop to the small, picturesque village of Grolloo in the Netherlands.\(^\text{14}\) Since then, Kingma has instead concentrated on the low flutes, garnering an international reputation for making some of the highest quality alto, bass, and contrabass flutes available. In addition to the low flutes familiar to most, Kingma also offers subcontrabass flutes, contralto flutes, upright bass flutes, and her proprietary “Hoover” bass flute.

\(^{14}\) Ibid.
Figure 2.1: Complete line of flutes offered by Eva Kingma (L-R):\(^{15}\)

1. Concert Flute: standard flute (key of C)
2. Alto Flute: pitched a fifth below the concert flute (key of G)
3. Bass Flute: pitched a full octave below the concert flute (key of C)
4. Upright Bass Flute: The upright bass flute is identical to the standard bass flute, apart from Kingma’s headjoint design which allows the player to hold the flute upright instead off to the side.
5. “Hoover” Bass Flute: Built in 2004, this unique instrument is the product of a partnership between Kingma and flutist-composer Matthias Ziegler. They began with the standard bass flute design, then lengthened the standard footjoint from C to G, extending the flute’s range. The “Hoover” Bass – affectionately named for its resemblance to a vacuum cleaner – also includes Kingma’s patented key-on-key venting system as a standard feature.
6. Subcontrabass Flute: pitched a full octave below the contralto flute (key of G)
7. Contrabass Flute: pitched a full octave below the bass flute, two octaves below the concert flute (key of C)
8. Contralto Flute: pitched a full octave below the alto flute (key of G)

As her reputation grew, Kingma was often approached by flutists interested in procuring custom-made instruments. Many were performers specializing in contemporary

\(^{15}\) Image reproduced with permission of Eva Kingma Flutes: www.kingmaflutes.com/
music who had become frustrated with the limitations of the standard flute; others were flutist-composers who were looking for new sounds and effects from the instrument.

The process of redesigning the standard flute mechanism began in 1987, when flutist-composer Jos Zwaanenburg requested an open-holed alto flute. Much of the emerging repertoire was meant for the open-holed concert flute; many of the techniques utilized in contemporary music are only achievable because of the its open-holed construction. This music could not be adequately replicated in a performance on the alto flute, as all of its keys are closed and cannot be vented. When Zwaanenburg became interested in performing similar techniques on his alto, he approached Kingma for help.\(^\text{16}\)

This was an unusual request; although open-hole concert flutes were already standard for most professionals, the feature had never been successfully applied to the alto flute.

To understand why this design feature was not feasible on alto flutes, one must first be familiar with the arrangement of the open-holed keys on the concert flute.

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\(^{17}\) Images in Figures 2.2 and 2.3 reproduced with permission of Gemeinhardt Flutes: [www.gemeinhardt.com/](http://www.gemeinhardt.com/)
Flute keys can be constructed one of two ways: closed-holed (plateau style) or open-holed (French style). While closed-hole models are generally favored by beginners, open-holed models are typically reserved for more experienced players, as they require more accurate finger placement on each key. The open-holed keys retain the outer ring of the key cup, but are open in the center. To seal a given key entirely, the player must depress the key ring and completely cover the center hole. However, by depressing the key ring and instead uncovering the center, a player can control how much air is vented from the key, thusly achieving a variety of timbral effects. By venting these keys independently or in combination, the player can achieve an array of glissandi, multiphonics, quartertones, smaller microtones, and other effects frequently used in contemporary works.

Not all keys can have open-hole construction, however. Only five of the keys can be operated – and vented – directly by the fingers: those operated by LH2, LH3, RH1, RH2, and RH3. The remaining keys, LH1, LH4, LH thumb, and RH4, operate their respective keys indirectly by lever mechanisms and cannot be vented. This design means that the Boehm system flute cannot offer a complete set of multiphonics or a full, accurate quartertone scale throughout its range.
Figure 2.4: Diagram of fingering placement for the standard concert flute mechanism. The label “LH” refers to the fingers of the left hand, and the label “RH” refers to the fingers of the right hand. The RH thumb is not included in fingering charts, as it does not operate any keys but instead stabilizes the instrument from underneath.18

The only requirement, then, for a key to be made in the open-hole construction is that a player’s finger can reach it directly. The player cannot vent a key which he or she cannot reach. The difficulty of Zwaanenburg’s request to Kingma had to do with the size of the alto flute – traditionally, alto flutes are constructed with closed keys precisely because almost all of its keys are out of reach. Most of the keys are operated by lever or by key extension and are therefore indirectly operated. In Zwaanenburg’s case, however, a convenient solution presented itself: by constructing LH2, LH3, RH1, RH2, and RH3 keys as open-holed (as are traditionally on a concert flute) Kingma was able to give the alto flute comparable venting ability to its smaller counterpart. For Zwaanenburg, this solution worked; he had larger hands and was able to easily reach and seal the five open-holed keys.

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18 Image reproduced with permission of Gemeinhardt Flutes: www.gemeinhardt.com/; fingering labels provided by the author.
Nevertheless, Kingma challenged herself to find a better mechanical arrangement. If the instrument were to be played by others, it was not likely that their hands would be large enough to accommodate such a stretch. To address the ergonomic issue, Kingma found herself in a similar situation as Theobald Boehm did when first embarking on his new design: some kind of new mechanism was needed in order to properly seal the keys that fell out of the player’s reach. Keeping practicality in mind, Kingma refrained from making any alterations that would complicate the existing set of fingerings. It was important to keep all standard fingerings consistent and the incorporation of the new auxiliary keys intuitive as possible. She began to carefully construct several additions to fit within the existing mechanism: a working of levers, touchpieces, and additional keys that would eventually become her trademark mechanism.

Out of curiosity, Kingma began to translate the same mechanism to the bass flute in order to vent the same five keys. As news of her ingenuity spread, other flutists began to approach Kingma for custom flutes or modifications to their own instruments. One such flutist-composer whose input was also particularly important to Kingma at the time was Robert Dick. Dick frequently composed and improvised music that involved multiphonic and had long been frustrated with the limitations of the standard flute. While

\[\text{Figure 2.5: Mechanism of Kingma’s standard open-hole alto flute.}^{19}\]

\[\text{Image reproduced with permission of Eva Kingma Flutes: } \text{www.kingmaflutes.com/}\]
the production of many multiphonics is possible, the instrument cannot navigate through a complete set of multiphonics throughout its range. “The Boehm system, which is an incredible design for one note at a time and the notes in the chromatic scale, becomes an irrational obstacle course if you’re trying to move multiphonic sonorities around,” he elaborates. The prospect of not only having open-holed keys on the bass flute intrigued the composer, but he was even more interested in more independence of movement within the mechanism, thus allowing for the production of previously unachievable multiphonics. After meeting a number of times at flute conventions in Atlanta, Paris, and the UK, Kingma and Dick collaborated constantly – he asked for new sounds and capabilities, and she devised methods to access them by way of slight modifications or entirely new mechanisms. One of the most encouraging forces behind this cooperation was that Dick immediately used whatever new options Kingma had made available to him in his new compositions. For every new open-holed key that Kingma was able to provide, Dick would find all the possible new microtones and multiphonics it offered, then incorporate the new capabilities into his music. By 1989, Kingma had successfully produced the first open-holed bass flute for Dick.

Shortly thereafter, flutist-composer John Fonville contacted Kingma and encouraged her to further alter the mechanism of the alto flute in order to accommodate more contemporary extended techniques. Kingma was intrigued by Fonville’s challenging request and was curious about the new sonic capabilities that would result. However, even though Kingma’s auxiliary mechanism for the alto flute sported five ventable keys and, as such, allowed comparable quartertonal ability to that of the

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standard open-holed concert flute, it was still limited. Although many quartertones, microtones, multiphonics, and glissandi were now available, the mechanism was still not capable of producing complete sets of accurate quartertones or multiphonic series across the range of the instrument. She knew then that she would need to make the mechanism fully ventable.

Kingma then began the process of extending her newly developed key-on-key system to the remaining keys on the flute, those which lie out of the player’s reach. The formerly unventable keys were first reconstructed as open-holed. She then fashioned small vent keys on top, which could cover and uncover the center of the key in the same manner in which a player’s finger would. Lastly, Kingma connected all the new vent keys to levers that would be within the player’s reach. She explains, “This system is the only practical way of doing it, and it is unique to me. Technically, the alternative to the ‘key-on-key’ system is to have many more holes, which would mean extra key work, extra weight, and the sound would be affected due to so many perforations on the flute body,”22 or, she jests, a player “would need sixteen fingers” to play.23

Pictured here at several different angles, the G# key provides an excellent illustration of why the standard flute’s construction necessitated an auxiliary mechanism for additional venting. In order to achieve the quartertone between G and G#, one must be able to vent the center of the G# key. However, the G# key is on the underside of the flute and is very much out of reach.

22 Eva Kingma, interview by Deborah Fether, April 11, 2005.
In order to successfully vent this key, Kingma created an extra lever (the G-up lever) and positioned it next to the existing G# lever, making it easy to reach with LH4.

The connecting mechanism can be followed to the underside of the flute where it attaches to the new G-up key, which is situated on top of the larger G# key.

When not in use, the G-up key seals the center of the G# key, creating no difference in how the flute normally functions. Once the G-up lever is depressed,

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24 Image reproduced with permission of Brannen Brothers Flutemakers, Inc., www.branneflutes.com/
25 Images in Figures 2.7, 2.8, 2.9, 2.10, and 2.11 courtesy of the author.
however, the G-up key uncovers the central hole in the G# key. This permits a small amount of air to escape, though not as much as would normally be released by opening the G# key completely. As such, this partial venting allows the production of an accurate quartetone between the pitches of G and G#

Kingma applied this key-on-key mechanism to the rest of the closed keys on the alto flute and was pleased with the result. Her mechanical innovation was separate enough from the primary mechanism not to interrupt the use of standard fingerings, but was integrated seamlessly enough to be intuitive and comfortable when executing quartetones. Thus, she devised the fledgling version of what is now known as the full Kingma System mechanism. This auxiliary mechanism, carefully intertwined with the existing keywork of the instrument, actually made Kingma’s new alto flute more flexible than the standard open-hole concert flute.

It was at this point that Kingma was approached by several flutists eager to own a fully quartetonal concert flute. Many of the flutists who contacted her were composers themselves; while they were more intimately familiar with the uttermost capabilities of the standard instrument than the average player, they were also more consistently frustrated by its limitations.

**Partnership with Bickford Brannen**

While Kingma was energized by the interest in her new mechanism and its potential capabilities, she was frustrated by the concert flute. Although her design was well-suited for the alto flute and translated successfully to the bass flute, the cramped dimensions of the concert flute made it difficult to accommodate the extra mechanisms needed for the key-on-key system. Still unable to satisfactorily apply the full Kingma
System to the smaller flute, Kingma sought the advice of respected flutemaker Bickford Brannen. Brannen was intrigued by the concept and agreed wholeheartedly to work with Kingma on adapting her mechanism.

After patenting her key-on-key mechanism, Kingma and Brannen began a very intense collaboration that would last several years. They began their communicating in 1990, primarily over email, and kept the project very secret until its completion. The two flutemakers continued this discourse by email for a year and eventually were able to successfully adapt the original auxiliary mechanism to the concert flute. Flutemaker Lev Levit, who learned his trade under Brannen’s tutelage, recalls his mentor’s excitement about the project: “Bick always called this flute ‘the flute of the future’. This flute is designed in such a way that everything is accessible, and it’s easy to play. You can get anything out of it.”

Robert Dick has remarked that the partnership between Kingma and Brannen was particularly fruitful precisely because of Brannen’s willingness to experiment – this was not something typical of long-established flutemakers: “[Someone] like Brannen – who really is one of the best flutemakers ever – and the fact that somebody like that, at such a high level, is not conservative but instead really wants to explore. Brannen, in the end, is definitely the grandmaster in that zone: a way of thinking, of understanding something musically, and translating it into mechanism.”

Brannen proceeded to simplify the design until he arrived at something he could put into production. The resultant design was a standard Boehm system flute with an added C-sharp trill key and six additional keys with connecting mechanisms. All standard

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26 Lev Levit, interview by author, Skype, August 12, 2017.
fingerings, alternate fingerings, and trill fingerings functioned in precisely the same way throughout the entire range. Everything that could be done on a Boehm system flute could be done on a Kingma System flute with the exact same results: all fingerings for pitches within the chromatic scale, all trill fingerings, and all common alternate fingerings will elicit the same exact effects on a Kingma System flute as they do on the standard flute. Consequently, any flutist, at any level of advancement, could pick up a Kingma System flute and play his or her current repertoire without making any alterations or learning a single new fingering. However, with the newly constructed auxiliary mechanism, one could perform a full quartertone scale accurately as well as well-controlled microtones, complete series of multiphonics, an array of timbral trills, and glissandi that previously had not been possible on the standard flute. If the repertoire did not call for those techniques, there was no need to engage the auxiliary mechanism, and the flutist could continue to utilize conventional fingerings on the base mechanism of the instrument. John Fonville recalls being elated over the capabilities offered by the new mechanism: “I waited 25 years for this system and finally Eva Kingma and Bick Brannen were brave enough and talented, and dedicated to the system that it finally arrived. I cannot imagine musical life without the Kingma system flute since it opens so many more options, especially microtonal ones. The flute world owes great gratitude to Eva and Bick.”

The diagrams below illustrate Kingma’s specific additions to the standard flute mechanism, herein referred to as her “auxiliary mechanism.” The labelled components in the diagrams are the new touchpieces, or “up levers.” These levers operate the

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corresponding “up cups” that vent the center of the larger keys. These small key cups situated over top of the larger existing flute keys constitute Kingma’s signature “key-on-key” system.

Figure 2.12: Kingma System flute; diagram of body mechanism (top view). Levers and cups that are not part of Kingma’s auxiliary mechanism are noted without “up” in their label. For example, the B♭ cup in this diagram is part of the standard flute mechanism, whereas the B♭-up cup on top is a Kingma addition.30

Figure 2.13: Kingma System flute; diagram of body mechanism (side view)

Figure 2.14: Kingma System flute; diagram of footjoint mechanism

Each new touchpiece on the flute is a lever by definition, apart from one exception: the F♯-up touchpiece is not a lever, but a bar positioned over one of the existing bars in the mechanism. It serves the same purpose as the other up levers.

30 Images in figures 12-14 reproduced with permission of Eva Kingma Flutes: www.kingmaflutes.com/
(operating its corresponding vent cup), but was designed differently from the others for ergonomic reasons. The other up levers, regardless of their location on the mechanism, can be operated by using the fingertip or the side of the fingertip. The F#-up bar must instead be operated by leaning the underside of the right index finger onto the bar, depressing it downward. Considering its location on the mechanism and the physical movement required to operate it, the F#-up bar was constructed as a bar instead of a lever.

Each of Kingma’s new quartetone keys is named for the pitch it will raise by a quartetone. The player utilizes the standard fingering for a given pitch, then adds the appropriate quartetone key to raise it to an accurate quarterstep above the given pitch. For instance, the player can finger a D♭, then depress the D-up lever (pictured in Fig. 2.14), thereby achieving the quartetone between D♭ and D♯. In order to access the quartetone between F♯ and G♯, the player would similarly start with the standard fingering for F♯, then depress the F♯-up bar. The new quartetone keys and their uses can be summarized in the following table (Table 2.1) on the next page. The Kingma keys listed in the second column are to be added to the standard fingerings listed in the first column. This combination will accurately produce the quartetone pitch listed in the third column. The fourth column provides a visual representation of both the standard fingering (left chart) and the correlating Kingma key to be added (right chart).
Table 2.1: New Quartetone Options on the Kingma System Flute

<table>
<thead>
<tr>
<th>Standard Fingering</th>
<th>Kingma Key Added</th>
<th>Quartetone</th>
<th>Fingering</th>
</tr>
</thead>
<tbody>
<tr>
<td>D♭</td>
<td>D-up lever</td>
<td>D♭</td>
<td></td>
</tr>
<tr>
<td>F♯</td>
<td>F♯-up lever</td>
<td>F♯</td>
<td></td>
</tr>
<tr>
<td>G♯</td>
<td>G-up lever</td>
<td>G♯</td>
<td></td>
</tr>
<tr>
<td>B♭</td>
<td>B♭-up lever</td>
<td>B♭</td>
<td></td>
</tr>
<tr>
<td>B♮</td>
<td>B-up lever</td>
<td>B♮</td>
<td></td>
</tr>
<tr>
<td>C♯</td>
<td>C-up lever</td>
<td>C♯</td>
<td></td>
</tr>
</tbody>
</table>
These fingerings for the new quartertones made available are very closely related to the standard fingerings for the surrounding chromatic pitches. In order to access most quartertones, the player will simply use the conventional fingering for the chromatic pitch directly below the desired quartertone, then depress the corresponding vent key to raise the given pitch. Simply put, most of the new quartertone fingerings can be remembered as “standard fingering + one vent key”. For example, the quartertone between B♭ and C♯ can be remembered as “B♭ fingering + B-up lever”; likewise, the quartertone between D♭ and D♯ can similarly be expressed as “D♭ fingering + D up lever.” Once a player understands the system Kingma has designed, navigating the auxiliary mechanism becomes refreshingly instinctive.

These first Kingma System prototypes were produced through Bickford Brannen’s personal label, Osten-Brannen, before he would ultimately move production to Brannen Brothers Flutemakers. This particular instrument, then dubbed the Osten-Brannen Kingma System flute, made its heavily advertised commercial debut in 1994. Just prior to its official release, Kingma asked Brannen to depart from their typical practice: “Since Brannen had earlier only sold standard flutes, Kingma’s approach to experimental flutes was new to him. To his surprise, Kingma did not want to sell their

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first flutes, but to lend these $13,000-instruments to the player for one month, to listen to their comments and to change the instrument accordingly.”

Anne La Berge was one of the first flutists who was given an Osten-Brannen Kingma System flute on trial. La Berge, also a composer, had been using quartetones and smaller microtones in her own compositions for years before the Kingma System debuted. She recalls the excitement of getting to explore the versatile new mechanism: “I have been an extended technique and microtonal flute player since 1974. Thus, the chance to extend my playing possibilities [was] more than welcome by the mid 1990's!”

La Berge became familiar with the auxiliary mechanism very quickly; she would go on to endorse it wholeheartedly and give a promotional presentation at the upcoming 1994 National Flute Association Convention. The following year, La Berge wrote a promotional article for the publication Flutist Quarterly, entitled “The Osten-Brannen Kingma System Flute,” which detailed her experience with the new instrument.

Matthias Ziegler, a notable flutist and composer, was also given the Osten-Brannen Kingma prototype to try. Kingma and Brannen intended to simply loan out the new flute for a time in order to gather his feedback on the ergonomics, but they found in Ziegler a lifetime devotee. As an improviser and composer, Ziegler was fascinated by the new mechanism and immediately recognized that it would allow him to access a greater variety of sounds and effects in his compositions. He recalls the beginning of this very close friendship: “I wanted [Kingma] to develop my music for the flute, because having a flute that has the possibility of quartetones [...] having this whole soundscape, this palate

33 Anne La Berge, interview by Deborah Fether, November 17, 2004.
of sounds, of timbres – that’s only the beginning. I want to play my own music.”\(^{35}\)

Shortly thereafter, Ziegler purchased a Kingma System flute through Brannen’s subsidiary company, Osten-Brannen, and immediately began to compose for the new instrument. By 1998, Ziegler was also traveling to conventions to give promotional performances. To this day, Ziegler constantly tries to access new sonic effects in his music, and he frequently visits Holland to meet with Kingma to further develop certain aspects of the mechanism. One of Ziegler’s requests – that Kingma build him a custom upright bass flute with an extended footjoint – would become what is now known as the “Hoover” bass. She has since incorporated the patented key-on-key system, as well as several other modifications personally requested by Ziegler. The prototype of this instrument is currently on loan to Carla Rees. Because the instrument is continuously undergoing various modifications and add-ons, Kingma has elected to delay silver-plating the exterior in favor of keeping the malleable brass accessible for potential alterations. This sort of close collaboration between Kingma and individuals like Ziegler and Rees has resulted in endlessly exciting relationships, a tremendously versatile instrument, and a number of fascinating new compositions.

Thus, keeping with her traditional approach of working closely with the performers and composers, Kingma was able to utilize their input to perfect the design. Carla Rees explains that Kingma has always taken a very personal, hands-on approach to creating flutes: “I think one of the things that’s amazing about Eva’s work, as a flutemaker, is how much time she spends on the ergonomics. She really goes to great effort to make it comfortable to play.” She recalls working with Kingma the first time:

Kingma measured Rees’s hands and fingers before constructing her alto flute. Custom-made specifically for her hands, all of the keys, levers, and vents are comfortably within reach. Kingma explains the importance of involving performers’ input during the design process: “I can only do these things because I like to work with people. I learned a lot from Robert, I learned a lot from Matthias, from Wissam, from Jos Zwaanenburg, from all these players, from La Berge. It would’ve been impossible without them.”36

After gathering input from the flutists given the prototype, Kingma and Brannen streamlined the mechanism to reduce the weight of the added keywork and fine-tuned the entire system to further improve its intonation control.37 Since then, the Kingma System design has not needed any major modifications. Brannen Brothers states officially on their website and in their literature that the goal in introducing the Kingma System flute was to “[create] an environment where flutists can play anything they and composers can imagine.”38

Following the official debut of the Brannen Cooper Kingma System flute, Kingma conducted the publicity of her new design much in the manner she conducted herself in her workshop – she partnered with performers and composers. Kingma organized several events across Europe and the United States. Robert Dick travelled to several of these, performing new works and demonstrating the Kingma System flute’s new capabilities.39 Matthias Ziegler continued to present performances and presentations at various national conventions as well. Many of the early Kingma players cite one of

these presentations as the reason they decided to switch from the standard flute. Following his tour, Robert Dick then secured grant funding and commissioned eight different composers to write Kingma-specific pieces in order to jumpstart the repertoire for the instrument. Dick, expectedly, endorsed the Kingma System wholeheartedly and has played on it exclusively ever since. Subsequent endorsements came from Matthias Ziegler, Emmanuel Pahud, and other influential flutists.

**Production and Partnerships**

In the years since the Kingma System debut, Kingma has had a number of opportunities to expand her workshop or partner with bigger companies. Concerned that she would not have the same liberty to constantly experiment, she decided to keep her business small. Her preferred manner of developing flutes – working closely alongside the individual meant to receive the instrument – would also be most likely implausible at a larger-scale company. Carla Rees stresses why Kingma’s particular approach to flute making is so important to the particular clientele the Kingma System appeals to: “Eva has worked the whole time with different players who are bringing their own ideas to it and their own solutions to particular problems that they encounter along the way. And I think this whole relationship between the music and the players and the maker is really important, because it all evolves together.” Eva Kingma confirms this, explaining how

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41 ibid. 659.
42 Robert Dick, interview by author, Skype, February 22, 2018. Robert Dick’s current flute is considered a modified Kingma System flute. He began with a Kingma System concert flute and has since had it further modified by Bickford Brannen. With multiple new vent keys, an extra set of trill keys, and the addition of his own Glissando headjoint, Dick’s custom flute is even more flexible than a standard Kingma. He admits, however, that it is quite heavy and would not likely be adopted by most flutists.
these sort of interactions were the catalyst for her new auxiliary mechanism: “We put each other on the right track. And I can’t do what I do without really listening to what flautists want.”

Beyond maintaining the freedom of her own small-scale production, Kingma’s passion has always been the development of higher quality low flutes. As such, she has since allowed affiliate companies to adopt her patented design to their concert flutes so she can return her focus to refining her low flutes’ design – she now offers the full Kingma System mechanism on her alto, bass, contralto, upright bass, “Hoover” bass, and contrabass flutes. Following the introduction of the Brannen Cooper Kingma System flute, Sankyo Flutes began offering the Kingma System mechanism as an option in 2007, although they have indefinitely halted production. In 2012, Levit Flutes began making Kingma System flutes as well and continues to sell them consistently. These flutemakers, like Brannen Brothers, still manufacture standard concert flutes, but produce Kingma System flutes on special request. With this arrangement, Kingma was able to return to her alto, bass, contralto, contrabass, and subcontrabass flutes, and also respond to individual requests for custom modifications.

While there were not any significant changes made to the fundamental design of the original Brannen Cooper Kingma that debuted in 1994, both Sankyo and Levit have slightly different approaches to casting the extra touchpieces and fitting the accompanying mechanisms. Some of the key angles were altered, specifically the angles of the levers or shapes of the touchpieces that operated the auxiliary keys. Both Sankyo

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45 Cathy Miller (of Sankyo Flutes), email message to author, July 11, 2017.
and Levit took slightly different approaches in order to improve the ergonomics of their respective instruments.\(^\text{46}\)

Fig. 2.15: Brannen Kingma C-up mechanism\(^\text{47}\)  
Fig. 2.16: Levit Kingma C-up mechanism\(^\text{48}\)  
Fig. 2.17: Sankyo Kingma C-up mechanism\(^\text{49}\)

The above figures show the upper left-hand mechanism of the three different Kingma versions: the original Brannen Cooper Kingma flute (fig. 2.15), the Levit Kingma flute (fig. 2.16), and the Sankyo Kingma flute (fig. 2.17). In Brannen’s design, the C-up lever is positioned directly next to the LH1 key, and the auxiliary C\# trill lever was situated slightly further away. Levit reshaped both touchpieces and brought the auxiliary C\# trill lever closer within reach of the left-hand first finger (fig. 2.16). This configuration also allows the player to depress the LH1 key, the C-up lever, and the auxiliary C\# trill lever at the same time, if desired. Sankyo’s touchpiece for the C-up lever is constructed as a flat platform rather than a rounded key (fig. 2.17); additionally, Sankyo elected to remove the auxiliary C\# trill lever from the mechanism entirely. While the auxiliary C\# trill lever is a duplicate of the primary C\# trill lever operated by the right hand and is not integral to the playing of a complete quartertone scale, it does offer a

\(^\text{46}\) Lev Levit, interview by author, Skype, August 12, 2017.  
\(^\text{47}\) Image reproduced with permission of Eva Kingma Flutes: www.kingmaflutes.com/  
\(^\text{48}\) Image reproduced with permission of Brannen Brothers Flutemakers, www.brannenflutes.com/  
\(^\text{49}\) Image courtesy of the author.
variety of alternate fingering options for the third octave and many opportunities for timbral effects. Several performers consulted for this project asserted that they do prefer to have both C# trill levers, as the auxiliary lever proves especially useful for when a given fingering prevents the use of the primary lever. Carla Rees explains that having both C# trill levers “can have a big impact on multiphonic fingerings and also alternative fingerings [...] there's a lot of logic for me in having both.”50 Apart from the subtraction of the auxiliary C# trill lever, Sankyo’s other departure from Brannen’s original construction was the use of drawn tone holes instead of soldered tone holes.51 The Levit Kingma retains the soldered tone holes offered on Brannen’s version. Ultimately, individual players must decide which is the most ergonomically and musically appropriate version for their own needs.

Cost

Although allowing her flutes to be produced by other respected flutemakers has helped her design gain more visibility in the flute community, it does have an inherent

50 Carla Rees, email message to author, January 31, 2018.
51 “Brannen Flutes,” Brannen Brothers Flutemakers, Inc., accessed May 2, 2015, https://www.brannenflutes.com/. Many flutemakers offer customers the option of drawn or soldered tone holes. There are significant differences in the construction of each which affect the time and cost of production. Drawn tone holes are fashioned by first punching a small hole in the tubing, then drawing a steel sphere through the heated metal of the tubing up into the appropriate tone hole shape. Another tool rolls across the top of the tone hole, finishing it with a lip curled over the edge. This type of tone hole, sometimes called "drawn and rolled," is done with machinery and does not require hand-fitting separate parts. Although this method does result in slight inconsistencies in the thickness of the tubing surrounding each tone hole (it decreases the thickness by approximately 25%), it saves considerable time, labor, and costs. Soldered tone holes, in contrast, require the maker to first hand-cut sixteen holes out of the tube. Each of the tone holes (of six different sizes, which the maker must manufacture and stock) must then be soldered into place by hand. This method is far more time-consuming and requires precision work by hand. The advantage of soldered tone holes, however, is that the tubing thickness remains consistent in the areas surrounding the tone holes. Maintaining the thickness of the tubing does result in a slightly increased weight, but this results in a darker, richer sound and gives the instrument a comfortable resistance while playing. While soldered tone holes are generally associated with higher quality (namely for the increase in price), many flutists disagree over which construction provides a more desirable response. In contrast, the subject of repair is not up for dispute: flutes with soldered tone holes are much easier to fix if damaged.
drawback: Kingma no longer controls the price of the concert flutes. The average cost of a Kingma System flute is somewhat prohibitive, even without opting for additional features or upgrades. At all three companies, the Kingma System model costs more – sometimes significantly more – than its standard counterpart.

At Brannen Brothers, the base price for their Original Brögger Flute in sterling silver is $14,360. If a C# trill is added (additional $750), the Brogger model can essentially be considered a Kingma System flute without its auxiliary mechanism. Brannen Brothers lists their silver Kingma System at $22,780. Like any other flutemaker, Brannen Brothers offers various options that one would expect to see with any standard flute. Flutists purchasing from these companies can choose different metals,\textsuperscript{52} wall thicknesses,\textsuperscript{53} and tuning options.\textsuperscript{54} Requesting Kingma System flutes in 10K or 14K rose gold with silver mechanism would cost $36,500 and $40,555, respectively. Sankyo, during their production of Kingma System flutes, listed their Kingma System models at a slightly lower price: $18,000 for silver and $22,000 for 10K gold. The wide price discrepancy for Sankyo’s 10K gold model and Brannen Brothers’ 10K gold model is partly because the price of gold has risen considerably since Sankyo’s production of the Kingma flutes.

While the Kingma System flutes offered by Brannen Brothers and Sankyo are priced considerably higher than their comparable standard models, Levit has kept his Kingma prices closer to that of his other flutes. The Levit Kingma System flute currently lists at $16,800 for sterling silver, which is not far removed from the price of his standard

\textsuperscript{52} Brannen offers sterling silver, 10K rose gold, 14K rose gold. Their 14K white gold option is not available on their Kingma System flutes.
\textsuperscript{53} Wall thickness available (only on sterling silver tube) are .014” (light wall), .016” (standard), and .018” (heavy wall).
\textsuperscript{54} Pitch options are \textit{A-440, A-442, A-444, or A-446}. 
Boehm system flute at $13,500.\textsuperscript{55} Even though the price of his Kingma System flute is significantly less than that of the other companies, the price has only risen in recent years. Levit originally sold the Kingma System flutes for $13,800. “My original thought was that I would introduce the flute at a very low price. Then a lot of people would buy it. Because that’s what Bick [Brannen] was hoping too, because he always thought that his Kingma was the absolute top of what he could give to the flute world. It was a very complex and beautifully made flute that is easy to put together. And Eva was wanting the same thing, you know – finally people could get this flute and it doesn’t cost much, so they can actually buy it.”\textsuperscript{56}

When one considers the actual cost of constructing a Kingma System flute, these list prices may seem high. For a standard silver flute, the average cost of the metal alone is just under $2,000. Materials for the mechanism – pads, corks, springs, screws, etc. – add a negligible amount more. If the flute were to be made of gold instead, the cost to the flutemaker would generally be twice as much at $4,000.\textsuperscript{57} Even factoring in the average cost of labor (generally, flutemakers will spend roughly 120-150 hours constructing each standard handmade flute\textsuperscript{58}), there is still a significant discrepancy between the production cost of the flute and the final retail price.

The increased cost is due less to additional materials and more to extra manufacturing time needed to build the instrument. With the Kingma flute, it takes additional time to construct the extra mechanism; however, the amount of time required varies greatly between the affiliate companies. Levit’s total production time is the fastest.

\textsuperscript{55} Customers can also order the Kingma System flute in 14K gold with silver mechanism for $28,550.
\textsuperscript{56} Lev Levit, interview by author, Skype, August 12, 2017.
\textsuperscript{57} Ibid.
\textsuperscript{58} Sarah Graumann (of Brannen Brothers Flutemakers, Inc.), email message to author, August 1, 2017. Lev Levit, interview by author, Skype, August 12, 2017.
of the three flutemakers. After Eva Kingma gave Levit the designs for the auxiliary mechanism and the rights to produce it, Bickford Brannen gave him very detailed explanations of its construction. Levit did not receive any special training apart from talking through the new design with his mentor. “Over time,” he explains, “I came up with my own methodology and I streamlined the process for myself.” Additionally, because he owns a smaller operation, Levit has been able to make the construction exceedingly efficient, and his Kingma flutes can be finished in three months after just 160 hours of labor.

Brannen Brothers and Sankyo, in contrast, both require six to nine months to construct their Kingma models.\textsuperscript{59} For the larger companies, building the Kingma System mechanism can divert time away from their standard flutes. Cathy Miller confirms that this extra time was one of the primary deciding factors in Sankyo’s decision to halt production. The sheer number of hours required for production became untenable not long after the 2007 release: Sankyo’s technicians could routinely produce two or three standard flutes in the same amount of time that it would take to build one Kingma System flute. It became increasingly difficult to justify the amount of time required to build the Kingma flutes, as they tended to disrupt regular production flow. “If the craftsmen are not building them regularly,” she explains, “efficiencies are lost and the amount of time increases.”\textsuperscript{60} Notwithstanding the additional investment of time, Sankyo was losing profits on each Kingma they made. “Sankyo did not even charge the full amount of

\textsuperscript{59} Representatives from Brannen Brothers and Sankyo were unable to estimate the exact number of hours needed to construct a Kingma System flute and instead provided an approximation.

\textsuperscript{60} Cathy Miller (of Sankyo Flutes), email message to author, July 11, 2017.
additional investment, and still the extra cost was more than most flutists were willing to spend unfortunately.”

Graumann paints a similar picture of Brannen’s production of the flute, explaining that the Brannen-Kingma Flute “is far more time consuming to make than a standard Brannen-Cooper Flute.” While the practical concerns of producing the Kingma models have not been so great as to force them to abandon the flute, they have affected the cost. Levit echoed this sentiment, explaining that because Kingma flutes are produced in small numbers, there is little opportunity to streamline the manufacture process.

This price difference, however, is not only based on the flutemakers’ profit margin and the hours required to build the instrument. There are several outside factors contributing to the discrepancy between production cost and the increased retail price. Beyond the cost of materials and labor, the flutemakers immediately lose roughly 40% of the retail price to taxes. Royalties are also paid to Eva Kingma for the use of her design. Additionally, many flutemakers include “dealer discounts” in their retail prices. Levit explains: “If I’m dealing with a dealer, I’m selling the flute for about 25% off. After that 25% off, then I’m going to get taxed; so, very quickly, you can see that I have to figure out how I can offset that 25%. Powell, Brannen, Burkhart, Haynes – they build that dealer discount into the price. That’s the reason why their flutes are more expensive.” As most of Levit’s sales came from word of mouth, rather than from dealers, he elected not to build the dealer discount into his prices.

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61 Ibid.
62 Sarah Graumann (of Brannen Brothers Flutemakers, Inc.), email message to author, August 1, 2017.
63 Lev Levit, interview by author, Skype, August 12, 2017.
64 Ibid.
Therefore, most flutemakers determine the retail price by considering materials, labor, taxes, and built-in dealer discounts. Some flutemakers may inflate a price slightly more if they have not yet found the most efficient way to construct a particular item.

When a particular product is more difficult or time-consuming to produce, it takes valuable time away from the company’s “money-makers.” That extra time is often translating directly into the retail price. Levit, however, stresses that many companies do fight to keep their retail prices as reasonable as possible: “When people think that flutemakers are gouging the prices, it’s not necessarily true. Especially when you’re talking about smaller companies, it’s just not the case. The most important thing to you, when you’re providing services to someone is that you factor in your education and skill and what you’re capable of. You determine what you’d like to get paid. I do want to get paid the maximum for what I do; however, I understand the reality of the market. What I needed to do, especially at the beginning stages of my company, was to be able to sell to make a profit and to move everything forward. And that’s how I set my prices.”

Eva Kingma herself has expressed the hope that the prices will come down and become more accessible for a greater portion of the flute community. She recalls that, when Osten-Brannen was still in existence, they released the Osten-Brannen Kingma System flute for approximately $8,000. The Osten-Brannen Kingma had some cost-saving differences: drawn tone holes were standard and the keys were manufactured without French pointed arms, saving on construction time. This particular flute,

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65 Ibid.
67 Although frequently dismissed as a purely aesthetic feature, French pointed arms actually serve a practical purpose. This particular key design connects the key cup to the rod in a more stable way than the common Y-arm design. Y-arms, seen often on student and intermediate flutes, connect the key to the rod by a Y-shaped piece of metal soldered to the back of the key cup. Although this construction is less
however, is no longer being manufactured, making Levit’s version currently the most affordable Kingma System flute on the market.

The obvious problem with a prohibitive price, regardless of reason, is that it is undeniably detrimental to sales. In general, anyone who is not completely sold on the advantages the Kingma System flute offers would undoubtedly have reservations about the higher cost. If performers cannot see themselves utilizing the auxiliary mechanism enough to be worth the investment, they may balk at the price and elect to purchase a standard Boehm system flute instead. Younger or less advanced players who are looking for a step-up model as an upgrade from their intermediate model flutes are especially likely to pass it up for the conventional Boehm; most will see it as too much of a price increase from their current flute. Sarah Graumann, however, brings up a different way of looking at the cost issue: “Cost is only a deterrent when the Kingma System Flute is nice to have, but not necessary. For those players who “need it” to do their work, cost is viewed differently.”

Nevertheless, Eva Kingma still feels that the issue of price absolutely needs to be addressed in order to make the Kingma System flute more accessible to a greater number of flutists. Between the typical reservations about truly utilizing the unfamiliar mechanism and the general misconceptions about the learning curve involved in mastering it, the decision to purchase a Kingma System flute is not one entered into

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68 Sarah Graumann (of Brannen Brothers Flutemakers, Inc.), email message to author, August 1, 2017.
hastily. Levit attests that many flutists still see the Kingma “as a curiosity” and, as such, will not likely make an investment in something they are uncertain they will use fully. While Levit has managed to significantly reduce the cost, the price of a Sankyo Kingma or Brannen Kingma flute generally encourages customers to choose the familiar Boehm over the Kingma System.

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70 Lev Levit, interview by author, Skype, August 12, 2017.
CHAPTER 3: MARKETING AMID MISCONCEPTIONS

Despite the Kingma System flute’s considerable advantages over the standard Boehm, there still exist several barriers to the viability of the instrument in addition to its higher price. In actuality, cost is not the most common reservation prospective buyers have once a customer fully understands the value of the new capabilities offered by the Kingma System. Instead, according to sales representatives from Kingma’s affiliate companies, several common misconceptions about the instrument prove far more difficult to overcome than objections to price.

Appearance

Most flutists initially encounter the Kingma System flute at conventions or festivals. A potential customer’s first impression is a visual one: the auxiliary mechanism gives the Kingma System flute a rather striking appearance, especially when displayed side-by-side with the familiar Boehm. There are, quite literally, keys on top of keys. Anticipating that the auxiliary mechanism may be a deterrent, Brannen’s promotional literature on their Kingma System flute offers this encouraging advice: “When you first look at the Kingma flute, the keywork can be a bit overwhelming. In actuality, this flute is quite simple. It is in all respects a C flute with a C# trill. All of the normal touch pieces and fingerings are where you expect them to be.”\(^7\)

slightly; their literature now combats this issue before apprehension sets in too deeply, often before the customer even tries the instrument.

The Kingma System flute is hardly the first instrument to elicit this sort of reception because of its unusual appearance. In investigating innovative piano design, Libin asserts that “some innovations in the piano have been rejected just because they looked ‘odd’.”72 Schulp and Bijsterveld found similar instances in which new designs that departed too far from the traditional look of the instrument failed to garner widespread acceptance. They cite the Pellegrina, a viola redesigned by David Rivinus for mostly ergonomic but also acoustic reasons. The Pellegrina’s unusual and asymmetrical shape proved to be an obstacle for many would-be customers.73 Similarly, Drelinger’s Up-Rite ergonomic flute headjoint has been met with skepticism for its departure from the iconic transverse flute.74 Although it is acoustically identical to its standard counterpart and even offers the added advantage of projecting the sound to the player’s ears equally,75 this vertically held flute has yet to receive widespread acceptance. This resistance to any change of the iconography and appearance of classical instruments is another example of how the tradition-laden field of classical instrument making can often hamper innovative new designs before they garner much support. The appearance of the Kingma System flute, however, can also have an opposite effect – for every player it

75 One of Drelinger’s selling points for the Up-Rite ergonomic headjoint is that it allows the flute’s sound to reach both ears evenly. The standard flute’s horizontal, offset position results in more sound produced on the right side of the player’s body, making the sound louder in the right ear and softer in the left ear. Drelinger’s argument is that the advantage of the Up-Rite headjoint – aside from the ergonomic improvement – is that the player will have a more accurate impression of their volume and their balance with other players.
scares off, it incites curiosity in another. Sales representatives from each of the affiliate companies have begun to take a similar approach to Eva Kingma’s: even if customers are initially intimidated by the proliferation of extra keys, their discomfort can be remedied if a knowledgeable assistant explains the purpose of the extra keys and walks them through the use of each one.

Weight

While the issue of appearance does not seem to pose a terribly serious threat to the success of the Kingma System flute, it was nevertheless an obstacle that needed to be overcome by a modified sales approach. The visual, however, was merely a perceived obstacle, and perception can be influenced and changed. Those who tried the Kingma System flute in its early years of production were met with a very real obstacle: the weight. The very first Osten-Brannen Kingma prototypes sent out for one-month trials were noticeably heavier due to the extra mechanism. Some flutists saw the weight as a drawback, worrying that it might make the instrument feel more cumbersome than its standard counterpart. For the significant portion of the flute community that suffers from performance-related injuries, this was an especially serious concern. Even a small amount of excessive weight, exaggerated by the asymmetrical posture required to play, could swiftly exacerbate carpal tunnel syndrome, tendinitis, or any number of other common conditions. Flutists plagued by frequent strain-related injuries would likely avoid purchasing a heavier instrument out of fear of injuring themselves.

Beyond the concert flute, the addition of the Kingma System mechanism to the already weighty low flutes proved to be a concern for many. After receiving her full Kingma System alto flute in 2000, Carla Rees stated that the additional weight of the
mechanism was not necessarily unexpected, but nevertheless presented a challenge. She and Kingma discussed several ideas to subtract some of the weight; however, even once the alto was stripped to only its most necessary components, the instrument was still heavier than what Rees was accustomed to. She recalls that this initially affected her performance: for longer pieces, she had to set the flute down to rest her arms frequently. Determined to find a solution, Rees began weight training to strengthen her arms and shoulders. When commissioning new pieces, she even notified composers of the need for occasional rests in which she could lower the flute.\(^{76}\)

Responding to similar concerns from individuals trying the concert flute, Eva Kingma and Bickford Brannen reassessed the casting process for many of the extra components, streamlining the additional mechanism. The resulting version was much closer in weight to the standard flute, now more comparable to that of a standard heavy-wall Boehm.\(^{77}\) Nevertheless, the Kingma System flute’s reputation for being a heavyweight in comparison with its conventional counterpart lingers to this day. It is likely that this is due, in part, to individuals who tried the heavier model, but have not revisited the newer versions. Even now, many flutists will not try the Kingma System flute because they have heard it is extremely heavy.\(^{78}\)

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\(^{76}\) Carla Rees, interview by author, Washington D.C., August 14, 2015.

\(^{77}\) The term “heavy wall” refers to flutes that have a thicker tubing throughout the instrument (or thicker “walls”). A standard flute will have a wall thickness of .016”, whereas a heavy-wall flute will have a wall thickness of .018”. Some players prefer the .018” tubing, citing a richer sound and a slightly more resistant response, although the additional metal increases the weight of the instrument slightly. Some Japanese manufacturers produce their standard flutes with a .015” tubing and their heavy-wall models at .017”. Most of the major flutemakers also offer thin-walled flutes with a tubing of .014”.

\(^{78}\) Cathy Miller (of Sankyo Flutes), email message to author, July 11, 2017.
Lev Levit, interview by author, Skype, August 12, 2017.
Cathy Miller confirms that, during Sankyo’s production of the Sankyo-Kingma flute, one of the primary objections to the Sankyo-Kingma was its weight.\footnote{Cathy Miller (of Sankyo Flutes), email message to author, July 11, 2017.} In contrast, representatives from Brannen and Levit observed fewer instances of this common concern; however, the Brannen-Kingma and Levit-Kingma flutes both weigh slightly less than the Sankyo-Kingma due to proprietary design differences.\footnote{During my interviews with representatives from Brannen and Levit, both makers asserted that there were indeed design differences that were responsible for the weight reduction. However, both makers went on to explain that these design differences were proprietary information and that they could not disclose specific details.} Levit explains that the actual weight difference between his standard Boehm model and his Kingma model is just 22.68 grams. This difference is remarkably small – 22.68 grams is the weight of approximately four US quarters. In Levit’s experience, customers are often surprised the flute does not weigh more.\footnote{Lev Levit, interview by author, Skype, August 12, 2017.} Sarah Graumann concurs that even if a customer comes to her with preconceived notions about the weight, it does not seem to be a concern once he or she plays the Brannen-Kingma flute.\footnote{Sarah Graumann (of Brannen Brothers Flutemakers, Inc.), email message to author, August 1, 2017.} Nevertheless, even though the weight difference between their standard models and Kingma models has been made largely insignificant, their current Kingmas are often held to the reputation of the fledgling model. Because the mechanism has been streamlined as much as possible and no other components can be subtracted, the actual weight of the instrument cannot be changed. The customer’s perception, however, can be changed. Sales representatives for the affiliate companies can downplay the additional weight or even work with individual customers to find solutions for accommodating the increased weight (soft pads or ergonomic rests for hands, suggestions for balancing the flute appropriately to alleviate pressure points, etc.). By casting this particular obstacle in a different light, promoters
may be able to make the instrument more accessible to flutists who may have otherwise dismissed it.

**Maintenance and Repair**

Beyond the actual obstacles, like weight and cost, are the numerous perceived barriers to be surmounted in the promotion of the Kingma System flute. Maintenance is a common concern heard by Kingma and her affiliates. Upon seeing the auxiliary mechanism, many flutists wonder if the instrument will require more frequent maintenance or repair. Wissam Boustany acknowledges that this was among his initial reservations about the flute: “I thought that [since] it has more keys, that would mean more maintenance and pad changes. But I’ve had this flute for four years, and none of the quartetone pads have gone, and I’ve never had any leaks. I also thought the keys might be a bit dainty and prone to bending with usage, but I’ve not had that problem. It’s a very reliable instrument, which is important. I think that, because a lot of the [vent] keys are on top, they don’t get as damp as the keys lower down, so they last longer.”

Lev Levit concurs that the Kingma System is designed in such a way that it does not easily fall out of adjustment. Like any other flute, it requires regular cleaning and oiling, but the auxiliary mechanism does not create any new problems.

Misconceptions about increased maintenance and repairs similarly plagued Boehm’s 1847 model flute. Flutists of the time performed on instruments with only four to eight keys, operated by simple mechanisms; many assumed that the comparatively complex Boehm mechanism would require frequent adjustments and costly repairs.

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83 Wissam Boustany, interview by Deborah Fether, January 7, 2005.
84 Lev Levit, interview by author, Skype, August 12, 2017.
However, the first few customers who acquired the new instruments were pleasantly surprised to find that they “were constructed with workmanship of the most excellent quality, rarely equaled [and that] their adjustment was perfect.”86 Much like the Kingma System flute today, the first Boehm system flute needed to be taken to a technician familiar with the new mechanism for routine upkeep, but otherwise proved to be an instrument of unparalleled reliability.

Sales representatives can quickly address concerns about maintenance and repair. The Kingma System flute is currently manufactured by Brannen Brothers and Levit, two flutemakers esteemed for their quality of workmanship, and – as many Kingma owners can attest – the components of the auxiliary mechanism wear well and generally require less maintenance than the those of the base mechanism. Aside from the D-up cup, all the new Kingma keys are actually further away from the tubing and are exposed to less condensation. Additionally, the Kingma keys are utilized less frequently than those of the base mechanism and ultimately require less frequent adjustment to their connecting mechanisms.

Some flutists, however, are less concerned about the maintenance of the extra keys and are more apprehensive about the extra mechanisms getting in the way of their normal finger movement and potentially slowing down their technique.87 While the additional touchpieces are designed with ergonomics in mind, some players might find their locations inconvenient depending upon several factors in their individual technique.

It is for this reason that Kingma always preferred to work with performers directly,

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thereby allowing her to customize each instrument to better fit its owner’s hands and playing style.

**The Need for New Fingerings**

While apprehensions over the weight, maintenance issues, and ergonomic concerns are regularly voiced to Kingma and her affiliates, by far the most common misconception is that the Kingma System flute requires an entirely new fingering system different from that of the standard flute. The sales representatives at Brannen, Sankyo, and Levit attest that customers are often surprised to find that the Kingma System flute can be played with the same standard, alternate, and trill fingerings as any other flute.88 Sarah Graumann of Brannen Brothers explains where this misconception originated:

“These players are not entirely wrong in stating that it requires a new fingering system. If you are to play a quartetone scale, there are additional Kingma fingerings and half-holing required to play the quarter-steps between the standard Boehm halftone steps. [...] So, it would take some practice for a flutist to become comfortable [accessing the new capabilities].”89 While it is true that new fingerings are required for quartetonal and microtonal work, the representatives frequently need to dispel the initial misapprehension that the normal chromatic fingerings have changed. Robert Dick argues that the payoff is well worth the practice required to navigate the auxiliary mechanism proficiently:

“Having this tool which blows things open in terms of potential – yeah, it does mean there’s going to be some homework to do, but that’s exciting.”90

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89 Sarah Graumann (of Brannen Brothers Flutemakers, Inc.), email message to author, August 1, 2017.
To make the Kingma System flute more approachable to the uninitiated, it is beneficial to put it into a more familiar perspective. Flutists encounter two major adjustments as they graduate from student to professional instruments. The first is the addition of new keys. As a flutist progresses from a beginner model, the successive models may have additional keys that their previous flute lacked, thus requiring adjustment. For example, most beginner model flutes come standard with a C footjoint, whereas most intermediate or professional model flutes will instead have a B footjoint.\footnote{Flutes are constructed with either C or B footjoints. The C footjoint can descend to C4. The B footjoint possesses an extra key and can descend one half-step lower to B.} The switch from a C footjoint to a B footjoint is a relatively easy one to make: the player only has to learn how to reach the B roller without depressing the D-sharp key accidentally. Adding even one additional key requires an adjustment period of sorts; one must learn which situations can benefit from its use and which situations necessitate it.

The second adjustment flutists make is learning alternate fingerings. Once an adequate fingering for a given pitch is learned, it may seem redundant to the student to learn any alternate fingerings. However, the student will eventually realize that alternate fingerings can be essential in certain contexts. Once this advantage is understood and the fundamental technical skill is perfected, a performer can comfortably use alternate fingerings (or even a series of them) in order to correct pitch or facilitate playability.

Learning how to operate the Kingma System mechanism requires both types of adjustment: new auxiliary keys are present, and alternate fingerings need to be learned in order to take advantage of its special features. This is comparable to the experience most flutists have when first learning about the benefits of the B-flat thumb key and the B-flat lever key. These are two auxiliary keys that offer slightly different fingerings for the
pitch B-flat in the first and second octaves. Initially, having several extra fingering options for one particular pitch might seem unnecessary or overwhelming, as it is perfectly feasible to play B-flats without employing either of these options. When consulting a fingering chart, the differences between the fingerings may seem slight; but in the context of a technical passage, one fingering may prove to be far more comfortable and effective than others. It is only a matter of time before the player realizes the tremendous advantage offered by these newfound fingerings: as a performer becomes more adept at choosing which alternate fingerings to use based on the musical context, he or she will ultimately develop faster, more consistent technique and will execute formerly difficult passages with greater ease. This process – from the introduction of the new B-flat options to the capable command of them – can take time and is often frustrating at first. However, one would be hard-pressed to find a flutist willing to give up their B-flat thumb key and B-flat lever key options once they become familiar with the advantages they offer. This is an experience common to all flutists, and can help illustrate how the Kingma’s auxiliary mechanism can be approached in the same fashion.

Theobald Boehm found himself in a similar situation when he introduced his newly designed flute in 1847. Flutists balked at the prospect of having to learn new fingerings. However, unlike the Kingma System, Boehm’s new flute design departed so radically from its predecessor that it actually did require an almost entirely new fingering system. Even the pitches of the chromatic scale would have to be relearned. Boehm’s new mechanism received a cool reception, initially; established flutists did not wish to compromise the technical proficiency they had spent years developing. Bijsterveld and Schulp assert that “…fingerings, acquired after a lifetime of daily practice, are far from
easy to re-adapt,”\(^92\) which is why, as Libin observes, many professional musicians
“seldom initiate radical changes [in the] familiar instruments upon which their
livelihoods depend.”\(^93\) Boehm no doubt anticipated that some flutists would resist the
new design for precisely this reason. Yet he remained convinced that the advantages of
the new mechanism far outweighed the work required to familiarize oneself with it. “The
application of this system required a remodeling of the flute which I was unable to
accomplish without sacrificing my facility in playing which had been acquired by twenty
years of practice;”\(^94\) he hedged. Nevertheless, the Boehm went on to qualify that
“changing from the old flute to the new is not nearly so difficult as most players imagine.
Ordinarily it requires only about two weeks for one to become familiar with the
mechanism and the table of fingerings,” and that “one will find compensation for the
trouble involved in the clear, smooth and easy production of the tones.”\(^95\) Much like the
introduction of the now-standard Boehm system flute, the Kingma System’s debut was
met with skepticism, even though it retains all standard Boehm fingerings and only
requires new configurations for new effects. However, just like the fledgling Boehm, the
Kingma System promises new sonic capabilities – the value of which decidedly
outweighs the initial practice required to familiarize oneself with the mechanism.

As representatives at Brannen, Sankyo, and Levit discovered, the prevailing
impression among flutists is that learning to master the Kingma System is tantamount to
learning a new instrument. In reality, however, it is no different than the aforementioned

\(^92\) Karin Bijsterveld and Marten Schulp, “Breaking into a World of Perfection: Innovation in Today’s
Classical Musical Instruments” Social Studies of Science 34, no. 5 (Oct. 2004), 668.
\(^93\) Laurence Libin, “Progress, Adaptation, and the Evolution of Musical Instruments” Journal of the
\(^94\) Theobald Boehm, The Flute and Flute Playing: In Acoustical, Technical, and Artistic Aspects (New
\(^95\) ibid. 62.
situations. When the new keys are first introduced, they present a challenge, but the difficulty is eventually overcome once the benefits are realized. Most flutists who have switched to a Kingma System flute remark that they acclimated to the additional mechanism more quickly than anticipated. Carla Rees recalls familiarizing herself with her new instrument: “Literally, it took me a weekend to learn the fingerings. It was that easy to pick it up, because everything’s based on sharpening a normal pitch. So if you’re always thinking of about going up from a normal pitch, it’s very easy to find the placements and the fingerings. You get used to it so quickly.”

Wissam Boustany actively tried to avoid the auxiliary mechanism when he first received his Kingma System flute, but then found it so intuitive that he mastered it very quickly. He explains the approach he had set out for himself: “I would treat it like a normal flute to start with; I wasn’t immediately going to try and use all the buttons that are there. I wanted to fall in love with the basic sound of the scale and how I would play everything normally. I said ‘give yourself several months, maybe a year before you start to do unusual things.’ But the opportunity is there, and you can’t help yourself but try things. Before you know it, you just expand to the [additional capabilities].” He goes on to specify that he did not immediately attempt to perform contemporary works on his Kingma System flute, but instead focused on standard repertoire that did not incorporate quartertones, microtones, or extended techniques. Even so, Boustany found the new additions to the mechanism to be undeniably helpful in classical and even baroque music. The key-on-key system could be used to access a tremendous variety of tone colors and gave him a myriad of options for fine-tuning problem pitches. As he began his foray into

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97 Wissam Boustany, interview by Deborah Fether, January 7, 2005.
utilizing the auxiliary mechanism for quartertones, microtones, glissandi, and multiphonics, Boustany became familiar with the new keys and fingerings much faster than he expected.98

**Emotional Attachment to the Boehm System Flute**

Even after these commonly held misconceptions are addressed, sales representatives still must overcome flutists’ emotional attachment to their standard flutes. Although several slight modifications have been made to Boehm’s original design, our standard flute is still essentially the same instrument and presents many of the same difficulties that confronted Boehm. Flutists struggle with irregular intonational tendencies throughout the flute’s range, and the responsiveness of the lowermost and uppermost registers of the flute is lacking compared to the cooperative middle register. Rather than being deterred by these idiosyncrasies, players often pride themselves in having surmounted these inherent difficulties.

Bijsterveld and Schulp offer some insight into this issue: “The fact that it is highly complicated to control a musical instrument, while it also offers a kind of resistance to control, makes the instrument into an ‘engaging technology.’ This notion refers to artifacts with which people have an enduring relation because they need to take great pains to control them [...] Musicians know how to handle the peculiarities of their instruments and consider such a mastery to be part of their artistic and professional identity. They do not want to lose it.”99 Both Robert Dick and Wissam Boustany performed on older tin Lebret flutes before they switched permanently to the Kingma

98 Wissam Boustany, email message to author, January 24, 2018.
System. Dick recalls the somewhat unruly nature of his previous flute: “For 20 years I played on a tin Lebret, with a tin Louis Lot Headjoint. I was very loyal to this wonderful instrument, which was not necessarily ‘easy to play’ but it had real character and was (and still is) a unique flute.”100 Unfazed by the occasional resistance proffered by the vintage Lebret, Dick remained attached to the instrument for its unique sound.

Fether concurs that, particularly for an established player, techniques learned in order to overcome these familiar difficulties eventually become a normal or expected part of playing the flute, and that “such challenges [are thought to] add to the calibre of a player.”101 Introducing a new design that addresses these issues – and thus negating the need for those practiced techniques and adjustments – does not always meet with immediate acceptance. Eva Kingma herself states that any instrument maker presenting an innovative new design “has almost to supply a herd of psychiatrists”102 at its release.

Promoters may face a slightly more challenging task addressing the emotional attachment many flutists have to their instrument. Fether explains that “parting with, or changing one’s flute, can be difficult and could explain why relatively new flutes can take a time to establish.”103 Most are still loyal to their Boehm system flutes, despite the inherent limitations; they have learned how to coax 21st-century extended techniques out of what is still essentially a 19th-century mechanism. They need to be reassured that their mastery the Boehm system will indeed transfer to the Kingma; many of those hard-won

proficiencies will simply be easier to execute. Moreover, the Kingma System flute still qualifies as “engaging technology,” as Bijsterveld and Schulp termed it. In fact, because the Kingma System flute possesses such a dramatically expanded sonic vocabulary and provides the player with so many more choices for executing any given effect, it could be said that the Kingma is far more cognitively and musically engaging than its predecessor. As many of the flutists and composers consulted for this project have attested, while it takes only a short time to develop confidence navigating the auxiliary mechanism, it takes many years to fully uncover the instrument’s full sonic potential. Indeed, innovative flutists like Robert Dick and Matthias Ziegler are still discovering new effects to this day.

**Pedagogical Concerns**

Although many flutists’ reservations are related to how the Kingma System flute will affect their own performance, some have expressed concerns for how their students would be affected. When introducing new concepts or correcting mistakes, many teachers prefer to demonstrate techniques on their own instrument in order to provide examples for their students to imitate. Some teachers feel that if they are not playing on the same type of flute as their students, the students will be confused when watching demonstrations.

Many flutists have, no doubt, encountered a similar situation in their own teaching experience: when teaching a student how to finger the flute’s lowest C, some confusion can arise if the teacher has a B footjoint and the student only has a C footjoint. The student may not notice the differences in the mechanism and may execute the incorrect

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fingering at first. If both the teacher and the student have flutes with B footjoints, however, the student will more readily recognize the correct position for his or her fingers. The apprehension over the Kingma System flute, then, is that the presence of the extra keys will unnecessarily complicate the visual appearance of the flute, and may ultimately interfere with such demonstrations. However, those who own Kingma System flutes insist that the complex visual does not distract when they demonstrate to students, or at least not to an extent that cannot easily be remedied.\textsuperscript{105}

Another concern that representatives commonly hear from flutists is that they worry students would see their own Boehm system flute as somehow lacking in comparison to their teacher’s more versatile Kingma. Fether cites a conversation with her own teacher, Ian Clarke, when he said that if he bought a Kingma System flute, “a barrier would be formed between him and some of his students. The student may be unconvinced by the quartertone possibilities of a Boehm flute, since their teacher has a quartetone flute.”\textsuperscript{106} The reality is that the Kingma System flute is indeed more capable than the standard Boehm in playing quartertones. Perhaps Clarke’s underlying concern is that, if students feel their standard flute is inadequate for the assigned repertoire, they might consider purchasing a Kingma System flute for themselves – a topic which brings forth several unique concerns to examine.

By and large, the concerns discussed thus far are those of established players – those flutists already long-accustomed to their instrument and its inherent idiosyncrasies – and how the new Kingma mechanism would affect their performing or their teaching.

\textsuperscript{105} Wissam Boustany, email message to author, January 24, 2018.
\textsuperscript{106} Ian Clarke, interview by Deborah Fether, January 12, 2005.
But additional apprehensiveness remains regarding less-advanced flutists wanting to utilize the Kingma System themselves.

The current price of a Kingma System flute would surely be prohibitive to a novice flutist; however, if the price of production is reduced (by one of the affiliate companies or perhaps another that has yet to adopt the design), younger or less-advanced flutists may consider purchasing an instrument. Although the scenario of a high-school aged student purchasing a Kingma System flute may seem hypothetical at best, it is not unheard of. Contemporary repertoire is increasingly introduced earlier in the standard curriculum, and along with it, the demands of contemporary techniques. A particularly advanced young student may perhaps see the Kingma System flute as a wise investment, especially if he or she has an interest in contemporary music. This would pose a unique situation for their teacher to navigate.

The general position taken by the flute community is that fewer keys are better for younger students, a sentiment evidenced by the popularity of simplified, “bare-bones”-type instruments marketed to young flutists. Models like the Jupiter JFL700UD (Fig. 3.2) and the NUVO jFlute (Fig. 3.3) convinced many teachers that having fewer keys means having fewer distractions.

Figure 3.1: Reference photo of standard concert flute

Figure 3.2: Jupiter model JFL700UD

Figure 3.2: NUVO jFlute

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107 Photo reproduced with permission of Jupiter Flutes.
The lack of a footjoint is immediately apparent; the player is only able to reach a D-natural below the staff, rather than to the customary C or B offered by the conventional footjoint. The presumption is that most beginners will not encounter the lowest notes frequently enough to need the full range of a regular flute. If attention is brought to the lower portion (or the right-hand area) of the JFL700UD, one will notice the absence of trill keys. Again, this modification is made with the assumption that trill keys are not typically utilized until later in the student’s development. Similarly, it can be seen that there is no B-flat lever key present either.

These simplified models are, in fact, more helpful to younger players because they decrease the complexity of the standard Boehm. Starting an absolute beginner on a Kingma System flute would clearly yield some undesirable results: the student would likely be intimidated by the mechanism, and the auxiliary keywork would merely serve as a distraction, as repertoire demanding its use would not be assigned until many years later. Until a student reaches a level of competency at which he or she can decide when to use auxiliary keys, such keywork need not be present. None of the individuals consulted for this project – Kingma-players or otherwise – contested this view in the slightest. Thus, no one would seriously propose starting a student on a Kingma System flute, no matter how affordable the flutes become. Kingma’s auxiliary mechanism would, no doubt, overly complicate the already unfamiliar Boehm mechanism in the eyes of a novice.

However, the prospect of a college undergraduate or even advanced high school student procuring a Kingma System flute is not so far-fetched an idea as it once was.

108 Ibid.
109 Photo reproduced with permission of Nuvo Instrumental.
Boustany believes that while no student should ever be encouraged to begin learning on a Kingma, any student could eventually become ready for a transition to the Kingma System: “They could all expand into a Kingma system, but is it crucial for their musicality? No, [...] you don’t need it at the early stages,” citing that most of the standard repertoire is still playable on the Boehm. “You don’t need an 8,000lb flute when you’re thirteen years old, [...] you still have a lot to grow into with a student model flute. But when you refine [your playing], you need another instrument to push you to a new level.” Most Kingma and Boehm players consulted for this project echoed this viewpoint, stressing the importance of developing a basic technical and conceptual command of the Boehm system flute before introducing the Kingma System flute.

If presented too early, intonation is one element that could potentially be compromised. For the young flutist whose intonational acuity is still developing, playing an instrument with microtonal capabilities may undermine the confidence of his or her ear. Robert Dick echoes this sentiment when discussing his Glissando headjoint, stating that while an exceptionally talented student may be able to still develop his or her sense of intonation, for most young players, it would be too much distraction. Carla Rees, although in general agreement with Dick about very young students, does suggest that the Kingma System can actually benefit intonation, when adopted by an adequately advanced player. By using the Kingma’s accurate quartertones regularly, players can improve the precision of their intonation further than they would be able to otherwise. On a standard flute, many of the quartertones require uncomfortable cross-fingerings, which often only

110 Wissam Boustany, interview by Deborah Fether, January 7, 2005.
111 Robert Dick, interview by Deborah Fether, September 14, 2004
approximate the desired quartertone. Quartertone production on a Boehm system flute might accustom a player’s ear to imprecise quarter-steps, whereas the Kingma System would aid the player in developing a more accurate sense of intonation.

While some feel that extended techniques shouldn’t be introduced to young players, in reality there are advantages to introducing contemporary techniques early on. For example, it was commonly thought that an instructor should not teach pitch bends too early, presumably because bending pitch by rolling the flute on the bottom lip would be disruptive to a developing embouchure. Similarly, bending pitch by sliding the fingers to vent a key was thought to promote sloppy technique. But the opposite can also prove to be true: navigating lip bends early can give a young player enhanced embouchure flexibility. Learning to control pitch while rolling out of the customary position is tremendously useful, and learning to effectively return to that position without resetting the lip plate is essential. Similarly, learning how to vent open-hole keys by sliding to and from the normal finger position can improve a developing player’s spatial awareness of the mechanism, thus benefiting technique, not hindering it. If teachers wait too long to introduce extended technique, tacking it onto a student’s instruction sometime in their undergraduate years, they may, in fact, be doing the student a disservice. Introducing contemporary technique and cultivating the flexibility that it promotes seems to be far more advantageous when introduced much earlier in a student’s development.

The conventional practice of delaying exposure to contemporary technique is becoming passé in favor of an approach that takes full advantage of younger students’ unparalleled ability to learn. If younger students are taught extended technique earlier in their development, they are far less likely to make a clear distinction between traditional
and contemporary techniques. By learning both simultaneously, they will consider all new techniques, conventional or otherwise, as simply part of their foundational command of the instrument. Conversely, for the student who learns extended technique later in life, it will always seem like something apart. The already advanced student, introduced to unfamiliar concepts, is more likely to see a clear delineation between this late-acquired skill and everything else they are accustomed to doing. This creates an artificial dichotomy between “conventional flute playing” and “special effects,” and those categories remain mentally separate. In contrast, a player who has had extended techniques incorporated into his or her instruction from rather early on, and does not make this sort of distinction, will likely be far better prepared and more confident when approaching modern repertoire.

But how does this sort of educational trend relate to the Kingma System flute? There is, in fact, a parallel between how contemporary techniques are approached and how the Kingma System flute is viewed. There exists the general opinion that, in order to play the Kingma System flute, one must already be a tremendously advanced player. This may no longer be entirely true. Just as contemporary techniques were formerly reserved for only advanced players, the Kingma System flute has similarly been thought of as off-limits to the less experienced. However, just as contemporary techniques are now being successfully introduced earlier, there is perhaps no longer any reason why this educational trend cannot translate to a slightly earlier introduction of the Kingma System flute. Given that younger flutists are becoming markedly more comfortable with extended techniques, one might assume that undergraduate students or even tremendously
advanced high school students could similarly acclimate to the Kingma System mechanism if teachers consider it appropriate for their students on a case-by-case basis.

Many members of the flute community still balk at the prospect of a Kingma System flute in the hands of a less-advanced player, but once the common misgivings are considered and addressed, introducing the instrument to particularly industrious students seems feasible. Given that the typical progression through various step-up models necessarily requires such adjustments as upgrading from a C-footjoint to a B-footjoint, transitioning between the in-line and offset G configuration, and the addition of a C#-trill key, the Kingma System flute could simply be thought of as the next logical step in that standard progression. It could perhaps be seen as the new advanced model or, at the very least, an equal counterpart to the standard professional Boehm system models available. Of course, a less expensive version of the Kingma System flute would need to be offered – the current cost is one of the likely reasons it is primarily being purchased by seasoned professionals. But if cost were addressed, the only remaining obstacle would be challenging the conventional progression of flute models. Considering the direction of contemporary performance practice, and that contemporary repertoire is being introduced into the standard pedagogical progression earlier, it would only be logical to extend that thinking to the type of instrument we use. Thus, the Kingma System flute can be seen as a timely answer to a growing need and a valuable tool for the next generation of flutists. However, in order for the instrument to be seen as such, teachers need to be reassured that their possession of a Kingma flute will not interfere with their ability to demonstrate techniques to students, and – as several of the teachers mentioned herein have attested – will not undermine the students’ confidence in their own instruments’ capabilities.
Only for Contemporary Music?

Finally, the most common argument leveled against the Kingma System flute is that, because the vast majority of the standard repertoire can be adequately performed on a Boehm system flute, there really is no need to switch to another system. Cathy Miller explains that in her experience, by far the “most common misconception was that [the Kingma System flute] is meant for contemporary music only.”\textsuperscript{113} This sentiment was expressed consistently by all flutemakers and sales representatives interviewed for this project.

This misconception could be traced back to when the Kingma System flute first debuted: several of the flutists who gave promotional performances and presentations, namely Anne La Berge and John Fonville, had a predilection for quartertonal and microtonal music. While the Kingma System flute certainly does bring enormous advantages to the performance of such repertoire, the execution of quartertones is hardly the instrument’s only new sonic capability. Consequently, the Kingma System flute “got stuck with this unfortunate moniker ‘quartertone flute,’”\textsuperscript{114} and is still often referred to as such. The inherent drawback of having been saddled with such a title is that the uninitiated may not realize what the Kingma mechanism can offer beyond the production of quartertones.

Because there is the misconception that the Kingma System flute is beneficial only for contemporary music, a related misconception also exists: that the mechanism would somehow hinder performance of standard repertoire. Throughout her research, Deborah Fether found many flutists and flutist-composers who echoed this viewpoint.

\textsuperscript{113} Cathy Miller (of Sankyo Flutes), email message to author, July 11, 2017.
Sebastian Bell, who referred to the Kingma System flute as “a radically altered instrument,” conveyed to Fether his concern that “sweeping changes to design might well mean that the instrument is no longer suitable for performance of mainstream compositions.” Composers Robert Aitken and Michael Pestel both expressed similar viewpoints, citing that the Boehm system flute is perfectly adequate for most music. Aitken went on to suggest that “such flutes are not worth the financial investment for the limited repertoire which one can play on them.”

It is apparent, then, that misinformation about the Kingma System flute and what it has to offer is not inconsequential: the rumor that it is not suited for the traditional repertoire can reach many individuals long before they have the opportunity to actually play a Kingma System flute. This misunderstanding will, at best, result in preconceived notions that may influence an individual’s first experience with the Kingma System in a negative way. At worst, it may discourage players from even trying the instrument in the first place.

**Convention Experience Contributing to Misconceptions**

The manner in which the Kingma System flute is commonly tested at conventions may be partly responsible the formation of the aforementioned misconceptions. Armed with the impression that the Kingma operates with a different fingering system, or that it is somehow ill-suited for the performance of the traditional repertoire, many customers do not typically test Kingma System flutes the same way they might test other flutes. When auditioning Boehm system flutes, flutists generally play scales, arpeggios,

115 Sebastian Bell, interview by Deborah Fether, November 18, 2004.
orchestral excerpts, and snippets of concerti in order to get a sense of how the flute responds and functions compared to their current instrument. Yet this does not seem to hold true for those trying the Kingma System flute.

This difference highlights another inherent difficulty in promoting the Kingma System flute. To understand how detrimental this sort of experience is to the Kingma System flute’s reputation, one need only observe the typical trial at an exhibit hall. Intrigued by the unusual keywork, a curious player will likely explore the auxiliary mechanism at random. This rarely yields positive results. For example, if the B-up key is utilized in conjunction with the standard fingering for B-natural, it will produce the desired quartertone above. However, if the B-up auxiliary key is depressed in conjunction with any note other than B-natural, there is no guarantee what the resulting sound might be. Although the Kingma System flute offers a tremendously expanded sonic vocabulary and, in capable hands, can access colors and timbres unavailable to the standard flute, when used improperly, the resulting sounds might be highly unusual or, at least, unexpected. Most flutists try to avoid making strange sounds while trialing new flutes in a crowded exhibit hall. At a convention, surrounded by their colleagues, their competition, and many influential performers, most flutists will not want to be perceived as anything less than highly capable. Frustrated, they might put the instrument down before even trying any real repertoire. Customers then leave the booth, feeling that they could barely operate the instrument.

Robert Dick attests that this type of experience is, unfortunately, all too common. His advice to inquiring flutists is this: “If you’re at a flute convention, and you try [a Kingma System flute], arrange to take it to a quiet place where you can actually hear
yourself and where there’s no pressure of thinking ‘Oh my God, well, now I’m supposed to actually be able to play on this thing in front of everyone else; what do I do now? I’ve never had one in my hands before in my life!’” He instead suggests, “Take it someplace quiet, where you can actually put two and two together and start to walk, and you’ll be running and flying in no time. [...] Students – and grownups – shouldn’t be afraid of curiosity.”\textsuperscript{117} Dick goes on to emphasize the importance of playing some familiar repertoire first, to illustrate that the new mechanism in no way compromises the performance of more traditional repertoire. “It’s very important to remind people that, because it’s new, it does not lose all of the old things. [The Kingma System flute] does all the older stuff better, plus much, much more.”\textsuperscript{118}

Sankyo’s Cathy Miller explains that her sales representatives quickly noted this trend at conventions and adjusted their approach accordingly: “Some flutists chose not to try it, unfortunately, but the majority seemed at least willing if not interested. We did encourage flutists to try it and coached them through various fingerings. I liked to start by having people try the Kingma without using any auxiliary keys to demonstrate that you can play it like a ‘regular’ flute, then move onto the quartertones.”\textsuperscript{119} Levit encountered the same issue while exhibiting the Kingma flutes at conventions, and began working more intentionally with interested customers who wanted some guidance.

Brannen takes a somewhat different strategy, citing that “most interested customers are curious people who enjoy the experience of finding their way around the

\textsuperscript{118} Ibid.
\textsuperscript{119} Cathy Miller (of Sankyo Flutes), email message to author, July 11, 2017.
While they do keep a Kingma fingering chart at the ready, their representatives often take a more hands-off approach, letting the customers explore the auxiliary mechanism without much assistance. They do happily accommodate those customers who specifically request some instruction before trying the extra keywork.

“We don’t try to sell the Kingma System flute to customers that are not already interested in it,” Sarah Graumann explains. “The commitment to and interest in playing a Kingma System Flute is something the customer must bring to the table.”

Brannen’s more detached sales approach is certainly understandable; however, it is problematic: many sales representatives claim that, even today, they still encounter a large number of flutists who have no knowledge of the Kingma System flute whatsoever. A certain percentage of these flutists might be interested in the Kingma System flute if they were introduced to it by a knowledgeable salesperson. Clearly, Brannen’s particular approach has not prevented them from selling their Kingma models at a steady rate. Nevertheless, adopting a more proactive approach could potentially increase Kingma sales.

In order to dispel these misconceptions and help would-be customers familiarize themselves with the Kingma, promoters and sales representatives at the affiliate companies may have to alter their sales approach slightly. Representatives must first dispel any concerns the customer may have about the visual before they explain the decreased weight or the purpose of the auxiliary mechanism; if the customer declines to even pick the flute up, a discussion of function will matter little. In order to address this first hurdle, the salespeople must take a more involved approach than they typically might. When convention attendees approach a flutemaker’s booth, they rarely need any

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120 Sarah Graumann (of Brannen Brothers Flutemakers, Inc.), email message to author, August 1, 2017.
121 Ibid.
prompting to happily try several flutes; what is more, is that they also need very little
direction in their trial run of each instrument. As most players are comfortably familiar
with the Boehm system mechanism, the attending salesperson can afford to be more
passive, allowing the customer to decide what material he or she would like to play, and
how much time to spend on each model.

The most important task a salesperson will have is to dispel the common
misconception that the Kingma System flute requires an entirely new fingering system.
All customers should be encouraged to perform a simple scale or a familiar piece before
attempting to work the auxiliary mechanism. Flutists who are initially hesitant to try the
new flute may feel immediately more comfortable if they realize that anything playable
on the standard flute is playable on the Kingma System flute. By modifying their
approach and encouraging customers to test the Kingma as they normally would a
standard model, the flutemakers could address another issue. Without the aid of a
knowledgeable salesperson, players often struggle with the Kingma’s auxiliary
mechanism. When other convention attendees observe such players trying an instrument,
yet unable to produce anything recognizable, it only reinforces the idea that the Kingma
System flute must have a different fingering system. Thus, the most important element of
Eva Kingma’s design – that all standard fingerings still work – is often overlooked. If the
affiliate companies encouraged more flutists to test the Kingma flute in the same manner
in which they test standard flutes – starting with scales and excerpts from the standard
repertoire – more customers will realize that the Kingma System flute is essentially just a
standard flute with a few additions. Once this misconception is corrected and some level
of familiarity is established, a sales representative can introduce a customer to the
Kingma System’s additional capabilities. Current Kingma performers can bolster this sales approach by testifying as to how easy it was to adjust to the Kingma mechanism.
CHAPTER 4: THE KINGMA SYSTEM FLUTE
AND CONTEMPORARY REPERTOIRE

As mentioned in the preceding chapter, one of the most common misconceptions about the Kingma System flute is that it is only useful in the realm of contemporary repertoire. Perhaps the best way to deal with this misconception is to first examine several contemporary pieces already considered part of the standard repertoire. By comparing the Kingma and the Boehm systems within the context of these works, one can more readily determine which flute would be better suited for performing the techniques required in each piece. Secondly, a compelling case can be made for the timeliness of the Kingma System flute if one considers the trajectory of contemporary composition. Compositional trends over the last century show that flutists’ – and composers’ – frustrations with the mechanical limitations of the Boehm system mechanism is nothing new. The twentieth century saw a marked change in musical language: composers began to explore a wide range of expressive devices, timbral effects, and tonal organization that departed substantially from the music of previous eras. In her research, Rebecca Rae Meador discovered pieces from as far back as the 1820s that utilize multiphonic sonorities (called “double-tones” then), although most new sonic effects originated in the early twentieth century. These novel techniques would eventually become collectively known as contemporary extended techniques.

123 Rebecca Rae Meador, "A History of Extended Flute Techniques and an Examination of Their Potential as a Teaching Tool" (DMA diss., University of Cincinnati, 2001), 15.
In response to the increasing inclusion of extended techniques in the emerging repertoire, several flutists and flutist-composers began to catalog such effects. The 1960s and 70s saw a large number of publications that addressed how to execute these extended techniques on the standard flute, all replete with advice for bypassing the mechanical limitations of the Boehm system mechanism when possible. Some of the first scholarly articles to explore multiphonic sonorities were published by John Heiss; the flutist-composer cataloged all known multiphonics in his article, “For the Flute: A List of Double Stops, Triple Stops, Quadruple-Stops and Shakes,” in 1966, and then compiled a more general listing of sonic effects in his article, “The Flute: New Sounds,” in 1972. Sheridan Stokes and Richard Condon collaborated on a similar project in 1970, and within the next decade, Thomas Howell and Pierre-Yves Artaud both published treatises on avant-garde techniques used in the contemporary repertoire. James Pellerite’s “A Modern Guide to Fingerings for the Flute” (1972) and Robert Dick’s “The Other Flute: A Performance Manual of Contemporary Techniques” (1975) brought not only multiphonics into serious discussion but also quartertones, and soon became indispensable volumes for any flutists attempting to delve into new works. Flutist Brooks De Wetter-Smith was the first to publish a dissertation on the phenomenon, examining the demands of modern compositions in his “Sound Modification Techniques in Selected Flute Repertoire Since 1966” (1979).

124 John Heiss, “For the Flute: A List of Double Stops, Triple Stops, Quadruple-Stops and Shakes” Perspectives of New Music 5, no. 1 (1966), 139-41.
126 Rebecca Rae Meador, “A History of Extended Flute Techniques and an Examination of Their Potential as a Teaching Tool” (DMA diss., University of Cincinnati, 2001), 7.
It was also during these pivotal decades that – perhaps in reaction to the proliferation of didactic texts – some composers began to request techniques that were actually impossible to produce on the Boehm system flute. Non-flutist composers were especially prone to writing unplayable techniques into their music. One notable example is a composition by Jens Peter Ostendorf: several years after the publication of his work “Multiphonia” for solo flute, he was forced to revise it heavily, as many of the multiphonic sonorities requested were unplayable.\(^\text{129}\) Because not all keys on the Boehm system flute can be independently vented, its multiphonic series is incomplete, something Ostendorf was unaware of when he wrote the piece.

Publications like these show that composers are not simply experimenting with such techniques anymore; these types of sounds have now become an integral part of our contemporary musical vocabulary. Shiung asserts that extended techniques are no longer considered “special, sound-altering effects, but as legitimate, expressive, musical materials,” and that “the popularity of their application in contemporary repertoire is developing into a major branch of mainstream composition and performance.”\(^\text{130}\)

Considering how long extended techniques have been accepted as standard performance practice, it is understandable why many performers approached someone like Eva Kingma to modify the instrument to accommodate such techniques. Flutists have struggled for decades against the boundaries of the Boehm mechanism, and Kingma’s key-on-key system provided a timely answer to a growing need.

Although the design of the Boehm system flute was groundbreaking for its time, it is hardly perfect – a fact that Theobald Boehm admitted himself, hedging that an ‘ideal’

\(^{129}\) Ibid., 15.
\(^{130}\) Ibid., 10.
flute designed from a purely acoustic perspective may not ever be possible. Any modification made to improve the intonation of a particular pitch would alter the intonation of others that had previously been in tune. Adjustments made for intonation control or to increase volume would also have unintended effects on the responsiveness of certain registers. As Boehm experimented with his new design, he realized that if he were to adequately address every issue, the resultant flute would be so mechanically complicated that it would hardly be playable.\textsuperscript{131}

The accurate production of quartertones was not a capability Theobald Boehm had in mind when he designed his 1847 model, as quartertones were not used in Western music at the time. This inherent drawback becomes increasingly irksome as players delve further into contemporary repertoire. Executing quartertones and microtones on the Boehm system flute very often requires incredible coordination from the performer. These awkward fingerings are especially problematic because they only approximate accurate quartertones. Additionally, some of the Boehm fingerings result in a grossly different tone quality as well – an undesirable side effect that cannot be easily remedied.

Robert Dick bemoaned these techniques before he switched to his Kingma System flute: “…you wind up doing cross-fingerings, some of which are pretty byzantine. Not only are the fingerings clumsy, but the sonority actually changes. And very few composers really do their homework – particularly the ones who don’t play the flute think a quartetone is a quartetone, and that’s not true. There’s a distinct difference in character between the ones that are created by [venting the center of the acoustically

appropriate key) and the ones that are done with cross-fingerings. And when you start to take the tempo up, the cross-fingerings become just maddening.”

Relying on quartertone fingerings that are difficult to remember or uncomfortable to manage in quick technical passages puts the performer at a serious disadvantage. John Fonville expresses that this limitation of the Boehm mechanism aggravated him for decades before the Kingma System was introduced: “Given my interest in microtonality, I have long been frustrated with the lack of consistent microtonal potentials. This frustration goes back to about 1975.” He goes on to cite that the inconsistencies in pitch and tone quality can also hinder a performer’s expressive decisions. Thus, it could be argued that learning to perform quartertones on the Boehm system flute is far more labor intensive and less rewarding than it would be to familiarize oneself with the intuitive fingerings offered by the Kingma System flute’s auxiliary mechanism. The awkwardness of many of the Boehm system’s imprecise quartertone fingerings seem to require an inordinate amount of work for a decidedly inadequate return. Although our modern flute has received minor updates throughout the years, the basic design is still rooted in 170-year-old technology.

A Comparison of Boehm and Kingma Quartertone Fingerings

To demonstrate just how much more ergonomic and intuitive the Kingma fingerings are for quartertones, one need only compare standard quartertone fingerings with Kingma fingerings. The standard fingerings used in the following chart have been

133 John Fonville, interview by Deborah Fether, January 13, 2005.
taken from Robert Dick’s *The Other Flute* and are generally recognized as the nearest and most responsive approximations of quartertones.

Table 4.1: Fingerings for Quartertone Sequence D♭ – D♯ – D♯

<table>
<thead>
<tr>
<th>Fingering System</th>
<th>Quartertone Sequence: D♭ – D♯ – D♯</th>
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<tr>
<th>Standard Fingerings</th>
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<td><img src="image1" alt="Standard Fingerings" /></td>
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<table>
<thead>
<tr>
<th>Kingma Fingerings</th>
<th></th>
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<tbody>
<tr>
<td><img src="image2" alt="Kingma Fingerings" /></td>
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To execute the movement of D♭ to D♯ to D♯, the player must accommodate more finger movement on a standard flute than on a Kingma flute. On a Boehm flute, the player must slide his or her third finger off of the center hole in the key, venting it while keeping the ring of the key depressed. A performer must coordinate this movement with a simultaneous shift of the fourth finger to the footjoint to cover both the C and C♯ levers. These movements are confined to the two weakest fingers on the hand. Additionally, most players favor venting their right-hand keys by pulling the finger backwards to sit on the inner side of the key ring, so while the third finger curls in, the fourth finger stretches outward to reach the footjoint. Thus, this fingering sequence requires uncomfortable contrary motion from D♭ to D♯ and from D♯ to D♯. In contrast, the Kingma fingering
pattern is simpler: the D-up lever is depressed between the standard D♮ and D♯ fingerings, requiring no awkward or complicated movement, just a slight upward motion of the fourth finger.

Table 4.2: Fingerings for Quartaomte Sequence F♯ – F♯ – G♯

<table>
<thead>
<tr>
<th>Fingering System</th>
<th>Quartetone Sequence: F♯ – F♯ – G♯</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Fingerings</strong></td>
<td><img src="image1" alt="Standard Fingerings" /></td>
</tr>
<tr>
<td><strong>Kingma Fingerings</strong></td>
<td><img src="image4" alt="Kingma Fingerings" /></td>
</tr>
</tbody>
</table>

By comparing the quartetonal series F♯ to F♯ to G♯ on both the Boehm and Kingma systems, an even starker contrast is evident. The finger movement required for the accurate execution of this sequence on the standard flute is more complex, and involves more contrary motion that that required for the same sequence on a Kingma system flute. The movement from F♯ to F♯ is the particularly awkward transition within this sequence. The player of the Kingma system will only depress the F♯-up bar, whereas the player of the standard flute will need to move four fingers: one up, two down, and one sliding to half-hole the G key; three types of contrary motion. As the player of the Kingma moves from F♯ to G♯, they will merely lift R1 and R3. The player of the standard
flute will need to lift R1 and R2, but will also need to simultaneously shift LH3 to cover the G key once again.

Table 4.3: Fingerings for Quartetone Sequence G# – G♯ – G#

<table>
<thead>
<tr>
<th>Fingering System</th>
<th>Quartetone Sequence: G# – G♯ – G#</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Fingerings</strong></td>
<td><img src="image" alt="Diagram" /> <img src="image" alt="Diagram" /> <img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Kingma Fingerings</strong></td>
<td><img src="image" alt="Diagram" /> <img src="image" alt="Diagram" /> <img src="image" alt="Diagram" /></td>
</tr>
</tbody>
</table>

The finger movement in this particular sequence – G# to G♯ to G# – is less unwieldy for the Boehm than other instances presented here. However, the Kingma system still offers a more straightforward movement for this sequence; the utilization of the G-up lever negates any need for the player to half-hole any keys. Even more than the number of fingers involved in a single shift, this half-holing technique is far more detrimental to technical speed. The Kingma system mechanism vents (of half-holes) the keys for the player, thereby making the physical action of sliding the finger on and off the key unnecessary.
Table 4.4: Fingerings for Quartetone Sequence B♭ – B♯ – B♮

<table>
<thead>
<tr>
<th>Fingering System</th>
<th>Quartetone Sequence:  B♭ – B♯ – B♮</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Fingerings</td>
<td><img src="image1.png" alt="Fingering Diagram" /> <img src="image2.png" alt="Fingering Diagram" /> <img src="image3.png" alt="Fingering Diagram" /></td>
</tr>
<tr>
<td>Kingma Fingerings</td>
<td><img src="image4.png" alt="Fingering Diagram" /> <img src="image5.png" alt="Fingering Diagram" /> <img src="image6.png" alt="Fingering Diagram" /></td>
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</tbody>
</table>

One of the most complicated quartetone sequences yet, B♭ to B♯ to B♮ presents the player of the standard flute with a series of fingerings that requires the addition of four keys, plus a shift to half-hole RH3, followed by the immediate subtraction of every key just added. The amount of movement and coordination required seems excessive compared to the Kingma system’s fluid navigation of the same sequence. On a Kingma System flute, the player depresses the B♭-up lever when moving from B♭ to B♯, then lifts the lever and RH1 when moving from B♯ to B♮. In this sequence, the player must activate an auxiliary lever with a finger which is already occupied in depressing a key. It might seem that this movement may require more coordination, but this motion would not be unfamiliar to the average flutist. Flutists often use a very similar motion to shift between the thumb key and the Briccialdi key. The thumb is shifted entirely to the Briccialdi key.
if it is needed for an extended period of time; however, if a player is only planning to utilize the Briccialdi key briefly, he or she will keep the majority of the thumb on the thumb key and only slide the tip of the thumb sideways toward the Briccialdi key to close it. On a Kingma System flute, the player would employ this same type of movement to activate the B♭-up lever: the player would slide his or her thumb upwards just slightly to the B♭-up lever while keeping the regular thumb key down. This movement is far less cumbersome than the movement required on a standard flute.

Table 4.5: Fingerings for Quarte Quartone Sequence B♭ – B♭ – C♯

<table>
<thead>
<tr>
<th>Fingering System</th>
<th>Quarte Quartone Sequence: B♭ – B♭ – C♯</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Fingerings</strong></td>
<td><img src="image" alt="Standard Fingerings" /></td>
</tr>
<tr>
<td><strong>Kingma Fingerings</strong></td>
<td><img src="image" alt="Kingma Fingerings" /></td>
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</tbody>
</table>

The fingering differences encountered in this sequence – B♭ to B♭ to C♯ – are very similar to those examined in the previous sequence, B♭ to B♭ to B♭. Instead of shifting the thumb upward to the Bb-up lever, the player of the Kingma flute will instead shift sideways to the B-up lever to achieve the quartetone B♭, then lift both the thumb key
and up-lever to arrive at C#. The standard flute mechanism, however, can only offer another sequence of contrary motion involving several fingers at once.

Table 4.6: Fingerings for Quartertone Sequence C♭ – C♯ – C#

<table>
<thead>
<tr>
<th>Fingering System</th>
<th>Quartertone Sequence: C♭ – C♯ – C#</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Fingerings</strong></td>
<td><img src="image1" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Kingma Fingerings</strong></td>
<td><img src="image4" alt="Diagram" /></td>
</tr>
</tbody>
</table>

The movement between quartertones C♭, C♯, and C#, is only slightly easier than related sequences between B♭ to B♯ to B♭, and between B♭ to B♭ to C♯. While the player of the standard flute engages four, then five keys to complete the sequence, the player of the Kingma needs only the C-up lever to transition between the fingerings of C♭ and C#. This lever is reached by shifting LH1 to the side.

The quartertone sequences presented here all share three common elements. First, the Kingma System mechanism negates the need for half-holing keys in these particular series. Second, the Kingma System simply requires fewer additional keys to be moved between the fingerings of the standard chromatic pitches. Finally, the Kingma System fingerings are consistently more closely related to the surrounding chromatic fingerings,
making them more intuitive and easier to remember. The fingerings charts above provide a clear illustration of how much complexity the Kingma System can alleviate for the player accustomed to the standard quartertone fingerings.

As for the remaining quartertones not included in the above sequences, the fingerings remain the same between the standard flute and the Kingma System flute. For those players who are already familiar with the quartertone fingerings involving the five traditionally open-holed keys of the Boehm system flute, the fingerings used on the Kingma would be exactly the same.

**Excerpts for Analysis**

Perhaps one of the most effective ways to help the average flutist approach the Kingma System flute is to present its new capabilities within the context of some well-known pieces. Many contemporary works, now considered part of the standard repertoire, require the player to perform some techniques that are difficult to execute on the standard flute. Passages that utilize quartertones that lie outside the control of the five traditionally open-holed keys can be particularly cumbersome. Examining how these passages would be played on both Boehm and Kingma System flutes allows us to compare how the key-on-key mechanism can greatly reduce complexity in these selected fingering sequences.

One of the best examples would be Ian Clarke’s popular work, *Zoom Tube*. In the years since its publication, this particular piece has developed a reputation for being challenging, even among those who have never performed it themselves. The primary reason for this reputation is the presence of an uninterrupted quartertone scale spanning an octave and a third. Additionally, several other smaller quartertone sequences occur throughout the piece. Although Clarke himself does not play on a Kingma System flute
and has expressed that he does not feel the Kingma is necessary for the performance of his compositions, it is undeniable that the new mechanism would make a piece like *Zoom Tube* far less taxing.

Presented below is the quartertone scale in question, taken from measures 76 and 77 (Examples 4.1 and 4.2), along with side-by-side charts of the Boehm and Kingma fingerings required for this passage (Tables 4.7 and 4.8). By comparing the two fingering sequences, it quickly becomes apparent that the Kingma System not only reduces overall movement but also allows for more intuitive fingering arrangements for the quartertone pitches.

Example 4.1: Clarke, *Zoom Tube*, mm. 76

Table 4.7: Boehm and Kingma Fingerings for *Zoom Tube* Excerpt (mm. 76)

<table>
<thead>
<tr>
<th>Pitch</th>
<th>C♭</th>
<th>C♯</th>
<th>D♭</th>
<th>D♯</th>
<th>E♭</th>
<th>E♯</th>
<th>E♮</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boehm</strong></td>
<td><img src="134.png" alt="Boehm Fingerings" /></td>
<td><img src="134.png" alt="Boehm Fingerings" /></td>
<td><img src="134.png" alt="Boehm Fingerings" /></td>
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<td><img src="134.png" alt="Boehm Fingerings" /></td>
<td><img src="134.png" alt="Boehm Fingerings" /></td>
</tr>
<tr>
<td><strong>Kingma</strong></td>
<td><img src="134.png" alt="Kingma Fingerings" /></td>
<td><img src="134.png" alt="Kingma Fingerings" /></td>
<td><img src="134.png" alt="Kingma Fingerings" /></td>
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Table 4.8: Boehm and Kingma Fingerings for *Zoom Tube* Excerpt (mm. 77)

Example 4.2: Clarke, *Zoom Tube*, mm. 77
<table>
<thead>
<tr>
<th>Pitch</th>
<th>C♭</th>
<th>C♯</th>
<th>D♭</th>
<th>D♯</th>
<th>E♭</th>
<th>E♮</th>
<th>E♯</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boehm</strong></td>
<td><img src="image" alt="Boehm fingering chart" /></td>
<td><img src="image" alt="Boehm fingering chart" /></td>
<td><img src="image" alt="Boehm fingering chart" /></td>
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<td><img src="image" alt="Boehm fingering chart" /></td>
<td><img src="image" alt="Boehm fingering chart" /></td>
</tr>
<tr>
<td><strong>Kingma</strong></td>
<td><img src="image" alt="Kingma fingering chart" /></td>
<td><img src="image" alt="Kingma fingering chart" /></td>
<td><img src="image" alt="Kingma fingering chart" /></td>
<td><img src="image" alt="Kingma fingering chart" /></td>
<td><img src="image" alt="Kingma fingering chart" /></td>
<td><img src="image" alt="Kingma fingering chart" /></td>
<td><img src="image" alt="Kingma fingering chart" /></td>
</tr>
</tbody>
</table>

By looking at the charts above and comparing the fingering sequences between the Boehm system flute and the Kingma System flute, it is clear that the Kingma fingerings require less overall movement and are, by far, less complicated. Additionally, the Kingma requires less half-holing and cross-fingering. While this passage is certainly possible to play on a standard flute, it is far easier to execute on a Kingma. The juxtaposition of these sequences should serve as a striking visual confirmation of how well suited the Kingma System flute is for repertoire like this.

Some might argue that this still only proves that the Kingma would benefit college-age students, as pieces like *Zoom Tube* are typically assigned to undergraduates. However, the same thing can be said for repertoire commonly given to high school students. *Trillium*, by Elizabeth Brown, serves as a prime example. This piece was commissioned by the National Flute Association for performance at the 1999 High School Artist Competition. Although *Trillium* was commissioned for high school...
students (albeit advanced ones), it requires contemporary techniques and effects that are more manageable on a Kingma flute than on a standard instrument.

For example, the piece opens by indicating that the player fall in microtones between a C and a B (Example 4.3). While the alternate Boehm fingerings provided by the composer are not overly complicated, they do lend this particular gesture a decidedly different timbre than the surrounding material. Whether or not this is intentional is beside the point – on a Kingma System flute, the player would have the option of using the provided Boehm fingerings if the timbral change was desired, but would also have the option of using more accurate microtonal fingerings if the timbre was intended to match the surrounding material.

Example 4.3: Brown, *Trillium*, mm. 2

There are several phrases in the piece that utilize quartertones. The figure in the excerpt provided below, from measure 6 of the piece (Example 4.4), is echoed several times throughout the piece in other gestures similar in contour and pitch. If one examines the Boehm and Kingma fingerings side-by-side, it is apparent that the Kingma fingerings are at least marginally less complicated than the standard options. Additionally, the timbral difference produced by these fingerings will be less obvious as well.

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Example 4.4: Brown, *Trillium*, mm. 6

When quartertone-based gestures are found in conjunction with one another, the excess movement required by the Boehm mechanism becomes even more evident. For example, measures 8-10 (Example 4.5) require a truly excessive amount of movement in both hands, something that would be completely unnecessary on a Kingma System flute.

Example 4.5: Brown, *Trillium*, mm.8-10

The complexity of measure 27 (Example 4.6) can also be remedied by the Kingma System. Indeed, some players may favor moving RH1 and RH2 rather than pivoting the left thumb. However, as confirmed by many of the flutists consulted for this project, navigating the new levers surrounding the thumb key becomes very natural in a very short time.

Example 4.6: Brown, *Trillium*, mm. 27
These excerpts provide evidence that even advanced high school students are increasingly being asked to perform repertoire incorporating techniques that can only be approximated on the Boehm. Although many within the flute community may feel that a Kingma System flute would be excessive for a high school student, pieces like *Trillium* demonstrate that – even as of twenty years ago – advanced high school flutists were asked to manage complicated techniques and sonic effects that would be easier on a Kingma System flute.

Alternately, it is also worth mentioning that while the Kingma may not be necessary for some pieces, it certainly does not hinder the performance of conventional techniques. Robert Dick’s collection of contemporary concert etudes, *Flying Lessons*, provide many examples in which a player can still perform the conventional Boehm technique on the Kingma. An interesting technique to examine comes from the sixth etude, in measures 15 and 36 (Examples 4.7 and 4.8). Initially, one might see these measures as an opportunity to utilize Kingma’s G-up lever in order to easily and accurately produce the G’s. However, in these particular instances, the composer provides very specific directions for how to execute these measures: the flutist is instructed to overblow certain harmonics on the cross-fingering shown in combination with either opening or half-holing the LH2 key (shown below) along with an alternating pivot of the headjoint (rolling in, rolling out, and neutral position).
Although the Kingma System flute could easily handle these required techniques, the instrument’s accurate production of quartertones would compromise the intended timbral effects. Dick directs the performer to use the prescribed fingerings and accompanying techniques in order to achieve a specific tone quality. While the Kingma’s auxiliary keys can simplify the fingerings, they also – as mentioned previously – make the quartertone pitches timbrally similar to their surrounding chromatic pitches. While this can be a tremendous advantage in many other pieces, in this particular etude, producing quartertones with uniform timbre is not the goal. Dick’s intention is for the performer to produce a colorful but diffused timbre that contains a hint of an underlying multiphonic sonority. The desired timbre is something that Dick has visited often in his other works. In his book *Tone Development Through Extended Techniques*, Dick discusses this frequent pivoting of the headjoint in his exercise “Bamboo Scales.”

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headjoint movement, used in conjunction with special fingerings, can help the modern instrument mimic the timbre of a bamboo flute. A similar timbre is desired in the previous excerpts from *Flying Lessons #6*, which requiring this combination of techniques. It should be noted, however, that just because the Kingma can produce quartertones differently, that does not mean it cannot produce quartertones with the traditional Boehm cross-fingerings. All of the techniques that Dick requests in this etude can still be successfully executed on the Kingma. Therefore, considering examples like these is important to show that just because one can use new techniques on a Kingma System flute does not mean that one must.

These new capabilities are obviously important when performing certain contemporary works, but the new mechanism has merit in more traditional contexts as well: the extra vents add an unprecedented number of options for alternate fingerings. The new alternate fingerings can remedy intonation problems, enhance tone color, and smooth timbral blend with other instruments. Additionally, the auxiliary keys can be utilized to shade or change the tone color of the uppermost notes, which can be especially helpful in combating shrillness. In this manner, even the most difficult notes become easier to tune; the new venting mechanism can easily resolve pitch issues in every register and throughout the entire dynamic range. These issues are not specific to contemporary music – they occur in solo and ensemble music in Baroque, Classical, and Romantic repertoire. As it is unfathomable that any conductor or fellow ensemble member would object to a flutist playing with better intonation, it seems that the Kingma System flute would be a welcome addition to any ensemble.
Overcoming Inadequacies of the Boehm Design

Although the original Kingma System prototype was primarily created as a remedy to the Boehm flute’s inability to execute a complete and accurate quartetone scale, the key-on-key has made possible some additional sonic capabilities, giving the Kingma System flute a distinct advantage over its predecessor. In addition to its frequently touted quartetonal and microtonal capabilities, the Kingma possesses a nearly complete set of multiphonics spanning its entire range, almost doubling the multiphonic vocabulary of the Boehm.\textsuperscript{137} The performer can progress chromatically through the range of the flute on double- and even triple-stops.\textsuperscript{138} Multiphonics, most of which are notoriously unstable on a standard flute, not only speak more strongly on a Kingma System flute but are also easier to execute in series with other multiphonics.

The Kingma System mechanism also allows the performer to easily bend any pitch with considerable control. On the Boehm flute, glissandi or slides between notes are not always possible, especially between larger intervals. A true slide between two pitches can only be executed by way of venting one of the five traditionally open-hole keys, thus, limiting the player’s glissandi and bend options to only a handful of pitches. If the pitches in question are not directly affected by one of these keys, the slide must be accomplished with the embouchure only. This approximation is somewhat difficult for the performer, as the embouchure setting is disrupted considerably, and it cannot always successfully be reset in an ideal or comfortable position. In addition, the distance which a player can bend a pitch by this method is somewhat inconsistent, especially when bending pitch upwards. The importance of a mechanism that enables the player to vent all

\textsuperscript{137} Cindy Ying Shiung, “The Brannen-Cooper Kingma System Flute: A Resource Thesaurus of Multiphonic Production Capability” (DMA diss., New York University, 2008), 89.
keys in a comfortable manner becomes most apparent here. Because of its construction, the Kingma System mechanism makes it possible to bend and glissando easily and consistently. While an accomplished player will eventually develop adequate precision with bending and glissandi, the Kingma flute facilitates greater ease performing such techniques.

Some flutists often use the auxiliary mechanism for more humble reasons than these contemporary techniques: many individuals consulted for this project explained that they most frequently utilized the auxiliary mechanism to facilitate playing at the extremes of the dynamic range. The new alternate fingerings allow for greater control over intonation in these circumstances. Flutist-composer Jennifer Higdon explains that she frequently makes use of the new alternate fingering options in non-contemporary compositions: “I began playing on [a Kingma System flute] around 1997. I play primarily just the standard repertoire. It's just a more flexible flute [...] with more keys to add to the control of the pitch, colour, and sound, it's a far superior flute than the regular Boehm flute.”¹³⁹ Robert Dick also cites the potential value of such options for ensemble players: “If I was an orchestra player, I would use a Kingma System flute. I would take advantage of the many ways to use new fingerings. And in my orchestral career, I learned very quickly that having a creative approach to shading and a creative approach to pitch and to color is really important [...] if you really want to make your wind section sound great as a section.”¹⁴⁰ Wissam Boustany, however, points out that a player must still develop his or her confidence with intonation: “Just because you have seven more buttons of the instrument doesn’t mean that you’re really going to play in tune,” he cautions. “Having

those keys on keys gives you 1, 2, 3, 4, 5, 6, 7 extra choices, and because they’re quartertones, the difference between the notes is more refined,” requiring a discerning ear.

Other flutists like Marion Garver prefer to manage pitch in the same manner they always have on the Boehm system flute, and instead primarily utilize the Kingma mechanism to access a wider variety of timbral options. “I do not use my instrument's keys to improve my pitch. I still roll in and out and use my ears,” she explains. She instead uses the new alternates because “the timbre is simply more interesting” to her.\(^{141}\) Carla Rees uses the auxiliary mechanism to both manage pitch and achieve desired timbral effects. Upon getting her Kingma System alto flute in 2000, she recalls what impressed her most was the ability to preserve all manner of expressive effects. On a Boehm system alto, she would normally have to make frequent lip or air stream adjustments to facilitate the production of certain effects, but on her new Kingma alto, she could much more easily control the evenness of response across the pitch and dynamic range of the instrument.\(^{142}\)

**Incorporation of Non-Western Elements into Contemporary Repertoire**

Another area in which many performers and composers find the Kingma System flute helpful is in the realm of non-Western genres. Although the Kingma System flute’s microtonal vocabulary may seem revolutionary to the American flute community, many non-Western traditions have incorporated microtones for centuries. Non-Western music has had an increasing influence on classical music during the twentieth and twenty-first

\(^{141}\) Marion Garver, interview by Deborah Fether, November 12, 2004.

centuries, and various elements of non-western music are being adopted by modern composers and performers. Although non-Western music has a centuries-rich tradition of utilizing microtones, most of Western classical music did not incorporate intervals smaller than a half-step until far more recently. Although much borrowing occurred between cultures in previous musical eras, the exchange was often limited to a simple mimicking of styles or a partial adoption of harmonic or melodic character. This phenomenon is perhaps best illustrated in the exoticism of the nineteenth century. However, it was not until the latter half of the twentieth century that composers began to more frequently incorporate techniques like microtones, pitch bends, and non-Western scales into their works. Whether these techniques are used to mimic the timbre of a non-Western musical instrument or merely approximate non-Western performance practice, performers are expected to execute these techniques accurately. The incorporation of non-Western elements into the contemporary classical repertoire is a blending of traditions that will likely continue, and if the emerging flute repertoire is taken as any indicator, the modern flutist is sorely in need of a more flexible instrument.

Several composers and performers consulted for this project mentioned that the Kingma System mechanism actually brings flutists closer to the keyless predecessors of the Boehm. Wissam Boustany cites Indian music as a perfect example: “If you listen to the Indian flute, well, you know the glissandos they could do, the bending, it’s just astonishing how flexible [...] having no keys, there allows real connection with the air stream. The keys [that Boehm added] allow us a wider range, and of course with the larger range, a bigger sound, because the more keys you have, the more choices you

have. But we’ve paid for it; we’ve paid for it by losing flexibility between notes.”¹⁴⁴ He continues on to explain that “having keys on our modern instruments has facilitated a much bigger range, greater power, and ease of fingering. But this has been at the expense of expression and subtlety and character. I believe that the Kingma takes an important step towards that flexibility of keyless wooden flutes, while maintaining the benefits of the Boehm system.”¹⁴⁵ Eva Kingma herself acknowledges the tremendous variety of effects that can be achieved on a keyless flute: “Sometimes, when I listen to Indian players doing so many amazing things on a these simple instruments – no keywork at all – I sometimes feel a little bit ashamed of all the keys that I added!”¹⁴⁶ Rees concurs that while a keyless flute can provide a tremendous degree of flexibility, the Kingma System ultimately is the best choice for a performer who wishes to play a variety of genres all on a single instrument. “I do play baroque flutes and use those for early music and contemporary music performance, so it's not just about having lots of keys;” she offers, “you can do magical things on a flute with only one key, but I feel the Kingma System makes the alto flute a complete instrument and fit for its purpose in the 21st century.”¹⁴⁷

Rees explains that the reason Kingma’s new mechanism works is because Boehm’s original design was extremely logical but also somewhat limited. She points out that quartertonal and microtonal music written for non-fretted string instruments is not always successful because it depends entirely on the performer’s ear and accurate finger placement. This means that microtones are often imprecise. Thus, a string instrument’s intonational flexibility is counterbalanced by a lack of precision. In contrast, the flute was

¹⁴⁴ Wissam Boustany, interview by Deborah Fether, January 7, 2005.
¹⁴⁵ Wissam Boustany, email message to author, January 24, 2018.
¹⁴⁷ Carla Rees, email message to author, January 31, 2018.
designed to produce a set of fixed chromatic pitches. Even though that exactness has been a point of frustration for many composers and performers in recent decades, it also provided a very stable framework on which to build the key-on-key system.¹⁴⁸

Boustany, who is Lebanese, explains that his ear has always been drawn to quartertones found in Arabic music. “The Kingma System does give access to these modes with fewer compromises to the tonal aspect of playing. My piece, Broken Child, has been played well on ‘normal system’ flutes, but to my ears there is a noticeable compromise to the power, clarity and projection of certain quartertones, because of the vented/covered alternative fingerings that need to be used, which wind up changing the timbre of certain notes. The Kingma System facilitates a more consistent quality of tone across the flute - and of course, we can always revert to other alternative fingers which are used on conventional flutes, if we want a certain effect.”¹⁴⁹ Composer Patrick Nunn similarly found the Kingma System to be well-suited for the performance of Arabic-inspired music: “I began writing for quartertone alto flute with Carla Rees a couple of years back [...] At the time, I was very much interested in Arabic music - so here was the perfect tool - an instrument that could play all those wonderful quartertones so evident in Arabic music. The result was a piece called Maqamat (which means scales in Arabic).”¹⁵⁰ Native American song makes similar departures from the chromatic scale: composer John Thow found the Kingma System alto flute to be indispensable for his Native American-inspired compositions.¹⁵¹

¹⁴⁹ Wissam Boustany, email message to author, January 24, 2018.
¹⁵⁰ Patrick Nunn, interview by Deborah Fether, February 15, 2005.
¹⁵¹ John Thow, interview by Deborah Fether, February 16, 2005.
Jazz and blues have long been incorporated into the conventional repertoire; however, composers like Ian Clarke and Robert Dick have done much to popularize jazz and blues elements. Although their compositional styles are quite distinct from one another, both Dick’s and Clarke’s works blur the lines between jazz and classical, offering something new while still being familiar to classically trained flutists. Flutist-composer Marion Garver also attests that her Kingma System low flutes have been of undeniable benefit in producing effects required in jazz and pop music.152

Even for those performers who rarely perform non-Western music, the Kingma System flute is still beneficial. Robert Dick points out that the classical repertoire is more flexible in regard to pitch than one might assume. String players and singers subtly manipulate pitch in ways that cannot easily be mimicked on a Boehm system flute. By contrast, the Kingma flute facilitates these effects without compromising sonic quality or consistency. Additionally, if more composers blur the boundaries between genres, an instrument capable of an exciting new array of sounds and effects will undoubtedly allow them to express themselves in ways they could not have imagined previously.

Composer Response

While flutists who use the Kingma System flute are constantly finding new uses for the auxiliary mechanism and exploring the exciting new possibilities that it has to offer, composers cannot readily develop a familiarity with the Kingma System’s sonic vocabulary on their own. Individuals like Robert Dick, Carla Rees, and Matthias Ziegler are incredibly proactive about reaching out to composers.

152 Marion Garver, interview by Deborah Fether, November 12, 2004.
Rees recalls that before Eva Kingma extended her trademark mechanism to the lower flutes, many composers consulted her about writing for the standard alto flute, asking about different techniques like multiphonics, timbral trills, and microtonal capability. Rees would explain to them that alto flute was much more limited than the concert flute in that regard because of its closed-hole keys. The composers would become frustrated or disinterested fairly quickly, she remembers. However, since the advent of the open-holed, full Kingma System alto, composers have demonstrated a renewed interest. “For them, it’s just suddenly like fuel to their imagination. And quite often what happens in the process of collaborating is that they write their ‘wildest dreams’ kind of music. They write what they would love to hear.”  

Many of the composers who contact her have long waited for an instrument like the Kingma System alto, she explains, particularly composers utilizing a spectral style in their works.

In order to accelerate the process for curious composers, Rees set up a website in 2013 designed to quickly and thoroughly inform the uninitiated of the Kingma System alto and bass flutes’ range of capabilities. She includes video demonstrations of commonly requested pitch, dynamic, timbral, and multiphonic effects, along with various options for articulation, percussive effects, and suggestions for amplification. The website also provides repertoire lists and links to Rees’s own publishing company, Tetractys Publishing, which specializes in repertoire for low flutes and also offers many Kingma-specific compositions. After composers consult Rees’s website, the true collaboration can begin. Rees states that many of the composers who contact her are not flutists, so it is incredibly helpful for them to have a resource like her website. It can be

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154 Carla Rees, email message to author, January 31, 2018.
difficult for them to remember everything the instrument can do after just a single meeting with her. Composer Daniel Giorgetti recalls his initial meetings with Rees: “[It was] just as well that I had flautist Carla Rees, who commissioned the piece, on hand to advise me. We had a couple of sessions before I wrote a single note. I wanted to build up a pallet of ideas which stem from the special nature of the instrument. From these sessions, I could get an idea of how the instrument sounded in each register and also learned about any techniques specific to the instrument.”

Often, after exploring the available capabilities of the instrument, composers inquire about additional sonic effects. “And then my job is to work out how to make that possible,” Rees explains. Occasionally, this requires her to push past limits she thought she had already reached, but it seems the full potential of the Kingma System alto has yet to be discovered. Composer Andrew March attests that the Kingma System greatly exceeded his expectations: “It took me places, technically, that I would not have dared to go with a conventional flute.”

Matthias Ziegler compiled a similar resource, but on CDs which he could send to inquiring composers. “When I discovered all the special colors [available on the Kingma System flute] I made a lexicon, and wrote down every single sound, with the dynamic range, with the time length, how long I can do it, and I recorded this on a tape or on a CD, and handed this out to composers and said ‘Listen, this is my instrument. If you want to write something, this is the instrument you have to deal with.’” He continues on to explain that many composers are so familiar with the abilities – and limitations – of the

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155 Daniel Giorgetti, interview by Deborah Fether, February 14, 2005.
157 Andrew March, interview by Deborah Fether, January 20, 2005.
158 Eva Kingma, Low Flutes, DVD, with Matthias Ziegler (Netherlands: Zappabach.tv, 2009).
standard flute that they are simply unaware of exactly how much further they can push the new Kingma System flute.

Ziegler’s statement seems to get to the very heart of the issue: many composers are simply not aware of the instrument’s existence, let alone what sets it apart from the one in current use. Both Ziegler and Rees believe that more composers would write for the Kingma System flute if they were more familiar with its new capabilities. Some may understandably be tentative about writing for an instrument that few people own, as their compositions would be performed infrequently. However, what the instrument has to offer composers by way of an expanded harmonic vocabulary and a more reliable command of contemporary extended technique might overshadow any reservations they may have.

**Beyond the Kingma System Flute**

Kingma continues to make modifications to her instruments, stating that if she can continually give flutists “something they can work with, something that inspires them,” then composers will “naturally come along as well” as both performers and composers continue to explore the yet undiscovered capabilities of the Kingma System.\(^{159}\) Ziegler weighs in on the importance of these interdependent relationships: “There is a constant process of influencing each other – between musician, instrument maker, composer, and the new possibilities of an instrument – which is leading to new music which inspires. And I like this process [...] finding out new sounds. It’s a creative motor for the music.”\(^{160}\) Other flutists followed suit after Ziegler and Rees; in fact, many flutists initiate


contact with composers soon after they purchase Kingma System flutes. Throughout the course of their research, Bijsterveld and Schulp found that most composers writing Kingma-specific works were doing so only because flutists had reached out to them after purchasing Kingma System flutes themselves.\(^{161}\)

It seems, then, that once flutists begin to uncover the new effects made possible by the mechanism, they immediately engage composers to exploit those new effects in their music. However, despite the efforts of new, enthusiastic Kingma flutists, very few Kingma-specific compositions have been published to date. Nevertheless, for every composer who has reservations about writing for a rare instrument, she encounters other composers who are eager to finally express their musical ideas fully with an appropriately capable instrument. Rees does her part to provide an incentive for hesitant composers: her publishing company, Tetractys, is essentially a non-profit because it gives such a considerable percentage back to the composers themselves.\(^{162}\) Considering this, Rees is probably one of the single most influential forces in the effort to grow the Kingma-specific repertoire, constantly arranging commissions and presenting premieres for new works.

Robert Dick has also expressed concerns about publishing Kingma-specific repertoire. Although he performs exclusively on a Kingma System flute and finds it indispensable for his own improvisations, he still primarily writes for the standard flute. “As the Kingma System flute becomes more popular, it will make more economic sense to publish music for it” he explains.\(^{163}\) To date, Dick has composed only one Kingma-


specific work – a composition that cannot be performed on a Boehm system flute – but has yet to consider publishing it. Ian Clarke also feels strongly that he should continue to write for only the standard flute, citing that there is still much to be explored within the confines of the Boehm system. Many extended techniques can still be effectively performed on the standard flute, he insists, despite the inherent limitations of the mechanism. Additionally, Clarke firmly believes that his works should be approachable to all flutists.\textsuperscript{164} While many in the flute community would love to see Clarke compose a piece that fully exploits the Kingma’s potential, such a piece would ultimately be inaccessible to the vast majority of flutists.

Another route that some composers have elected is to compose a Kingma-specific piece but then rewrite a similar version for the standard flute. Not only is this option economically advantageous, but by publishing both a Kingma version and a Boehm version of their piece, they can successfully make their compositions more accessible to a wider audience. However, transcribing a Kingma-specific piece for the standard flute is not without its drawbacks. Several of the composers that Fether encountered made attempts to bring their Kingma-specific pieces back into a feasible technical and expressive range for the Boehm, but are often displeased with the “unsatisfactory results.” Although the composers carefully prepared many ‘ossia’ alternatives to the most unplayable material, the compositions ultimately lost much of their original effect.\textsuperscript{165} For many composers, being held back by the incomplete multiphonic series of a Boehm flute is “a big compositional and artistic limitation,” and is especially frustrating.\textsuperscript{166}

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164 Ian Clarke, interview by Deborah Fether, January 12, 2005.
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Whether intentional or not, this sort of compositional activity has begun to affect the standard repertoire, if only indirectly. Carla Rees explains, “The composer starts out writing for KS, and their idea is to just try something and see how far it goes. And then, quite often, they’ll make two different versions of the piece. So, there’ll be a Kingma System version which is their ideal version of the work, and then they’ll imagine how you can adapt those extra techniques you can develop (because you’ve got all the extra keywork) and try to find ways of making it work on a standard flute. So then it becomes about the Kingma System also driving repertoire for the standard flute and showing how you can lead from the front and then adapt it.” Rees goes on to express the tremendous potential the Kingma System has to offer the low flute repertoire specifically: “It’s a brilliant system; it’s so logical. And I think, for low flutes, it’s made such a huge impact on what’s possible with the repertoire. It’s amazing.” She recalls that, prior to the development of the Kingma System, she was severely limited in her repertoire for alto flute; the closed-holed keys were a seemingly permanent boundary to the performance of contemporary extended techniques. Since the instrument’s keys were made fully and independently ventable, many composers have developed their own harmonic systems based upon the Kingma System’s expanded vocabulary. “I think it’s really shaping the future of what music is going to be,” she asserts.167

The Kingma System mechanism may even have implications beyond the flute community, she posits.168 Oboist Chris Redgate recently developed a fully quartertone oboe, the Howarth-Redgate oboe. The instrument was similarly redesigned to facilitate microtonal and multiphonic capability. “We’ve been able not only to meet some of the

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challenges that some of the most complex music has in it today,” he states, “but also to be able to expand the potential of the instrument.”\textsuperscript{169} The critical reception of the Howarth-Redgate oboe has been quite similar to that of the Kingma System flute: the presence of extra mechanisms and newly expanded sonic capability often lead people to believe that the redesigned oboe can no longer be used for the performance of standard repertoire. Redgate finds himself constantly reassuring inquiring oboists that the new mechanism will not compromise their ability to perform traditional music.

Bijsterveld and Schulp posit that such “individuals who operate with ‘creative marginality,’ that is, at the margins or intersections of disciplines and traditions, are often most inclined to innovate.”\textsuperscript{170} In fact, Theobald Boehm himself was one such individual: he was at once a flutist, a composer, a flutemaker, a metalsmith, and an engineer. The authors go on to state that, throughout the course of their investigations, they found individuals who exclusively composed “played hardly any role in the innovation process, whereas performer-composers and other people who found themselves at the crossroads of professions – such as performer-instrument makers, engineer-instrument makers and even a performer-composer-music teacher-instrument maker – proved highly significant. Such ‘go-betweens’ stimulated instrument makers to experiment”.\textsuperscript{171} Ultimately, it will be these individuals at the “creative margins” who will be most instrumental in spurring on the development of the Kingma System flute.

\textsuperscript{171} Ibid.
CHAPTER 5: SUMMARY OF FINDINGS AND SUGGESTIONS FOR FUTURE RESEARCH

The Kingma System flute, despite being given a highly publicized debut and being produced in partnership with respected brands, has yet to gain significant traction with the majority of the flute community. The instrument has garnered a steadily growing base of devotees, but their number is still comparatively small.

This collective hesitancy from the majority of flutists, while perhaps easy to anticipate, will likely be dispelled when more players are familiar with the instrument. The Kingma System flute’s new capabilities are myriad, and its benefits for the emerging repertoire are undeniable: quartertones and microtones are more acoustically accurate, and the timbral range has increased dramatically. Not only is the multiphonic series complete, but the sonorities themselves are more stable. The fingerings needed to achieve the new capabilities are generally more comfortable, easier to remember, and less complex in series with one another. And, most importantly, the additional keys do not interfere with the performance of non-contemporary repertoire in any way.

The inclusion of contemporary extended techniques and the incorporation of non-Western musical elements in the emerging repertoire will only increase. The Kingma System flute is far more adept than its predecessor at producing such effects, and is better suited for the performance of such repertoire in every way. Additionally, the compositions and didactic volumes published throughout the latter half of the twentieth century are evidence enough that composers have been asking for an instrument with
these capabilities for decades. Despite the advantages in performing both contemporary and standard repertoire, there are still many reservations about the Kingma System flute.

The pertinent question, then, is this: how must the presentation and promotion of the Kingma System flute be changed in order to ensure a more positive experience for a greater portion of the flute community? The first and most obvious answer would be to look to Eva Kingma herself. Kingma addresses common misgivings through one-on-one interaction with the individuals she meets at flute conventions and at her workshop. The manner in which she conducts herself at her exhibit booth is quite different from that of her affiliates. What makes her interaction with customers truly more effective is her hands-on approach. She coaches each player personally, walking him or her through which keys perform which function. She also provides fingering charts and ample print materials to demystify the unfamiliar mechanism. After just a few short minutes at Kingma’s booth, an interested flutist will have realized that his or her normal repertoire is indeed playable, and will also have been able to access some of the additional capabilities the instrument has to offer. Thus, through some careful guidance, any misconceptions about the new flute will have been cleared away, and the formerly intimidating mechanism will have been re-characterized as a manageable adjustment. Furthermore, Kingma’s excitement is contagious – when she detects a customer’s anxiety over the challenge of adapting to the new mechanism, she reassures the person that the adjustment happens quickly, and shifts the flutist’s focus to the tremendous advantages that the key-on-key mechanism offers. Potential customers need to be reassured that the Kingma System flute is not so foreign as they may have been led to believe.
**Replacement for the Boehm System Flute?**

If the aforementioned issues are successfully addressed, and the Kingma System flute does become more popular, could the Kingma be considered as a viable replacement for the Boehm? To answer that, one would have to consider historical precedent: by charting the introduction of historical flutes and considering their reception, one quickly realizes that there is a striking consistency between positive composer response and the ultimate acceptance of a new design. Throughout history, composers have generally had a tremendous influence on the staying power of any instrument or new version thereof. This is a compelling argument for the survival of the Kingma System flute if one takes into account the successes and failures of its predecessors, because the relationship between advancements in flute making and contemporaneous composition has always been close. Bijsterveld and Schulp cite numerous instances in which instruments required modification in order to keep pace with the demands of the emerging repertoire. “Such histories [demonstrate] that as soon as composers wanted to enlarge the range of keys, to refine modulations, or to colour their compositions with new timbres, musical instruments changed in response.”\(^{172}\) However, if that dynamic was reversed, and composers failed to utilize the new capabilities made possible by a novel instrument design, “the instrument failed or received belated recognition. The early neglect of the pianoforte, for instance, shows that when an instrument maker invents something before the composer is ready for it, his rewards will be slight. Early organologists, therefore,

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considered composers as the source that fuelled as well as hampered technological development."\textsuperscript{173}

The Boehm system flute currently finds itself falling into the former category; while much of the contemporary repertoire is still playable on the Boehm, compositional trends may soon necessitate an upgrade. In the mid-nineteenth century, however, the newly-designed Boehm found itself on the other side of innovation: the Boehm system flute represented a drastic departure from the standard flutes in use at the time, and many flutists were apprehensive about switching for many of the same reasons flutists balk at the Kingma today. Flutists of Boehm’s day first objected to the unusual appearance – in an orchestral section of simple wooden flutes, the new metal flute, with its seemingly excessive proliferation of keys, was seen by many as an eyesore. Many flutists also worried that the extra keys would require extra maintenance.\textsuperscript{174} The increased weight, though only slight, was another frequently aired concern. Price was another obstacle: Boehm found himself constantly espousing the new advantages of his design and the quality of his workmanship in order to convince his customers that their investment would be a wise one.\textsuperscript{175}

However, one of the greatest difficulties with which Boehm had to contend was that most flutists were adamantly opposed to adopting a new fingering system.\textsuperscript{176} Unlike the comparatively accessible new Kingma, the Boehm system flute did require an almost entirely different fingering system than its simple wooden predecessor. For all the acoustic and musical benefits the Boehm system flute had to offer nineteenth-century

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\textsuperscript{173} Ibid., 652.
\textsuperscript{175} Ibid., 181.
\textsuperscript{176} Ibid., 169-170.
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flutists, they would have to pay for it by relearning how to play. In comparison, transitioning from the Boehm to the Kingma seems to be an agreeable adjustment.

Beyond the physical alterations of the flute and the subsequent adjustments they necessitate, the present compositional climate is also similar to that of Boehm’s time. Contemporary composers are often frustrated by the Boehm system flute’s incomplete vocabulary of extended techniques. Non-flutist composers especially will find themselves confused as to what exactly the Boehm flute can and cannot offer. Robert Dick acknowledges the brilliance of Boehm’s design, but qualifies his comments with the assertion that contemporary music is outpacing the old flute’s abilities: “Boehm’s flute is an absolute work of genius - if you want to play one note at a time and only the notes in the chromatic scale. That’s why we are still using it! But if you want to play chords, glissandi, microtones, expand the color palette, etc., then Boehm's flute presents very many problems. Boehm developed his flute because music had changed, and the 8-key flute simply was not adequate to the needs of Romantic music. Music has changed again, and the Boehm flute needs to evolve to meet the demands of the music of the present and future.”

If history is any indicator, the current compositional trends taken in conjunction with the relative inadequacies of the Boehm system flute signal that a design upgrade is overdue. However, while one can analogize the advent of the Boehm system to that of the Kingma System, that in itself is not proof that the Kingma will eventually replace the standard Boehm. One can only speculate that the correlation between the two is very strong. Fether concurs that “although the Boehm flute is as yet unrivalled […] it seems

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unavoidable that the Boehm may not meet new needs demanded of the flute.”

She goes on to posit that, rather than being completely replaced by one design, the Boehm may instead incorporate multiple additions, suggesting that “recent innovations could be viewed as beginning the establishment of a more personalized, individual nature of flute design. [...] Perhaps we shall see a move toward each flute being tailor made.” Many flutemakers already offer customers a veritable menu of mechanical options to choose from, so it is very possible that flute making will merely continue to expand in this direction.

Some of Kingma’s affiliates have, perhaps, already resigned themselves to the idea that the Kingma System flute will only ever appeal to a niche market. Graumann states that the Kingma requires a “unique, imaginative player” who will “understand and embrace the enormous opportunity it affords,” but in the same breath, declares that its incredible new abilities are precisely what makes it “a specialty instrument that will never be adopted by the masses.”

Eva Kingma herself is hardly discouraged by the idea that her mechanism may not be the new standard anytime soon. She feels it has been a worthwhile endeavor, considering the incredible new compositions the instrument has inspired. Her goal has only been to outfit each player with an instrument that can keep pace with whatever his or her specific musical aspirations may be. And the joy, for Kingma, is not only in the finished product but in the process itself. “I want to keep it to a specific market. I am not focused on a big market,” she insists, “I like it to be personal, that people can come in

179 Ibid., 58.
180 Sarah Graumann (of Brannen Brothers Flutemakers, Inc.), email message to author, August 1, 2017.
my shop and I can help them, not every [flute] being the same." In taking such a highly personalized approach, her customers become collaborators, and that is the way she wishes to keep it. As for the adoption of the Kingma System by Brannen, Levit, and Sankyo, Kingma is content to have them continue production, and is also happy to see her flute catch on with more performers. But she does not concern herself with the popularity of her instrument.

The Kingma System flute may have its skeptics at the moment, but historical precedent begs the question – is it realistic to believe that our current flute design will never change? If we do not eventually adopt the Kingma System, what would be the next logical step? What direction are compositional trends pushing us, if not toward the Kingma System? If contemporary composition continues on its current trajectory, a major concern is that performers will become too frequently frustrated by the standard flute’s limitations and, presumably, composers will become equally frustrated when performers cannot adequately execute specific effects. In stark contrast, one can only imagine if the reverse were true: if the Kingma System flute and its remarkable capabilities were more widely known, what would the compositional response be?

**Suggestions for Future Research, Activities, and Promotion**

The Kingma System flute can appeal to a wider demographic of the flute community than it does currently. There are several things that can be done in order to accomplish this. The first task for promoters would be to increase awareness of the instrument. Fether highlights that most flutists have never encountered a Kingma System flute, and that the first hurdle to be cleared: “These flutes are still a specialist item, and

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182 Eva Kingma, interview by Deborah Fether, April 11, 2005.
many flautists are unaware of their existence and development."¹⁸³ Even several years into Sankyo’s production – and over twenty years after the commercial debut of the design – many representatives have found that “most people had never seen one before.”¹⁸⁴ The representatives of Brannen Brothers likewise “frequently encounter people who have never seen the Kingma System Flute before.”¹⁸⁵

In order for a great portion of the flute community to become familiar with the Kingma System flute, several steps can be taken. Promotional articles are of undeniable help to the promotion of any instrument; however, the majority of this sort of activity discontinued shortly after the Kingma’s commercial debut. That may indeed be normal for other less significant advancements in flute making, but the Kingma System flute is unique in that there are so many misconceptions about it. Periodic articles by respected players or composers could greatly help encourage flutists to discover the Kingma System for themselves.

In addition to promotional articles, an increase in scholarly or didactic work on the new mechanism and its abilities would do much to dispel misinformation. Shiung cites this lack of scholarly information as her primary impetus for compiling her “Resource Thesaurus of Multiphonic Capability” for the Kingma System flute. “Those who wish to adopt the instrument for composition or performance today will doubtlessly become discouraged because of the lack of detailed information on the Kingma flute’s sonic capabilities,” she explains, “Currently, the remarkable technical range of the Kingma flute is virtually unknown to the public and its repertoire is scarce. […] Its

¹⁸⁴ Cathy Miller (of Sankyo Flutes), email message to author, July 11, 2017.
¹⁸⁵ Sarah Graumann (of Brannen Brothers Flutemakers, Inc.), email message to author, August 1, 2017.
extended sonic capabilities have not been properly acknowledged and documented, leaving contemporary composers and performers who are interested in creating works for the instrument with only a vague idea about the Kingma flute’s sonic realm.”

Beyond the lack of scholarly work on the Kingma System flute, the available literature understandably concentrates on the flute’s prowess in the area of extended technique. It rarely focuses on how the Kingma System’s new capabilities can function in the standard repertoire. A worthy project for an established Kingma flutist would be to select pieces from earlier eras and provide commentary throughout the score as to how the Kingma mechanism can specifically be used to enhance the performance. By annotating the score, an experienced Kingma flutist could not only demystify the auxiliary mechanism, but also help curious flutists picture themselves playing a Kingma System flute.

There is a limit, however, to how much scholarly and didactic publications can help increase the visibility of the Kingma flute. The most effective promotion is through increased performance. Promotional performances and presentations that took place in the 1990’s were helpful in helping the Kingma System gain visibility, but after those tapered off, the instrument made fewer strides in the flute community. Such presentations need to continue. In order for flutists and composers alike to understand what the instrument has to offer, they must hear the Kingma played in two specific contexts.

First, Kingma-specific works must be performed more regularly. These are the only compositions whereby a performer can clearly demonstrate the Kingma’s unique capabilities. There are several challenging new works already published that fully explore

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the Kingma’s expanded sonic vocabulary. Second, Kingma flutists must arrange more performances of works from the standard repertoire. Performances of conventional repertoire would quickly dispel the myth that the Kingma System flute is somehow poorly suited for non-contemporary works. If more Kingma performers occasionally programed standard repertoire amid their Kingma-specific works, it would do a great deal to make the Kingma System flute seem more approachable. Eva Kingma herself has mentioned the need for more frequent performances of conventional repertoire, and especially for recordings.\(^{187}\)

Although the Kingma System flute showcases its versatility best in the area of contemporary extended technique, a quality performance of a familiar piece by Bach or Mozart could demonstrate something equally valuable: that is, if more members of the flute community could see that the auxiliary mechanism in no way interferes with the performance of standard works, they would presumably be less wary about trying one. As is true with the marketing of any product, if the potential buyer cannot see themselves utilizing the product, they are unlikely to purchase it. Presently, many flutists cannot picture themselves using a Kingma, either because they are concerned it would somehow hinder their performance of standard works, or because they do not perform contemporary repertoire frequently enough to presumably make the investment worthwhile. That is why a diverse recital program, performed entirely on a Kingma System flute, would not only speak volumes to the flute’s versatility, but also invite the average flutist to consider it for him or herself.

Understandably, most Kingma flutists primarily perform pieces that take advantage of the instrument’s expanded vocabulary. While these sort of performances are precisely what the Kingma System was designed for, the exclusive performance of contemporary repertoire may, in fact, contribute to the misconception that the Kingma System flute is ill-suited to playing older compositions. If more skilled performers presented older, standard repertoire on their Kingma System flutes, it would be of tremendous benefit to the instrument’s reputation. The most effective programming would be a selection of works from several different periods: a recital including a work by Bach or Mozart, a standard contemporary work like *Zoom Tube*, and a new Kingma-specific composition would provide a variety of contexts in which to demonstrate the Kingma’s versatility. The presenting flutist could mention that he or she is using a Kingma flute, and between each piece, could explain how the Kingma compares to a standard Boehm flute. This sort of performance – or informance – would systematically dispel many of the commonly held misconceptions outlined in this document. Observers could then see how the instrument does not interfere with the performance of standard repertoire, how it greatly aids the performer on pieces that push the boundaries of the Boehm system mechanism, and how a performer can play exciting new Kingma-specific works that access a new palette of timbres and effects.

At this moment, composers have never been more pivotal in the acceptance of the Kingma System flute. The vast majority of Kingma-specific pieces are written by composers who are flutists themselves, many of whom own and play on a Kingma System flute. This in itself is representative of one of the central problems hindering the Kingma System flute and its advancement. While these pioneering flutist-composers
have given the flute community many groundbreaking new works, the potential of this innovative instrument will ultimately suffer if it remains confined to the microcosm that is the flute community.

This is precisely why non-flutist composers must be involved at this important stage of the Kingma System flute’s development. Composer involvement is tremendously important, but only if Kingma-specific works are commissioned and, most importantly, performed. Capable performers playing quality Kingma-specific repertoire are going to be far more effective at promoting this instrument than even the most skilled salesperson. If flutist and non-flutist composers alike are willing to work in tandem with dedicated performers to promote the Kingma System flute, its obvious superiority over the current Boehm system flute will be apparent. This will require more individuals to work closely with composers or provide resources similar to those that Rees and Ziegler have created, demystifying the first steps of the process for composers who are unfamiliar with the Kingma System flute. As Libin asserts, performers and composers alike “must gain experience with unfamiliar instruments before [they] can fully exploit their potential.”

The activities suggested here should help create more interest in the Kingma System flute. However, once there exists more interest in the instrument, more flutists will want to purchase one for themselves, and, currently, the Kingma is still too expensive for most would-be customers. Herein exists the complex, cyclic nature of the problem: most of the issues confronting the Kingma System flute are interrelated and, thus, must be remedied in some coordinated fashion. The power to address these issues lies with many different individuals and entities: the affiliate companies, their sales

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representatives, composers, and Kingma flutists can each only address some of the issues apart. However, if a cooperative, coordinated attempt is made to generate awareness of the Kingma System flute, this remarkable instrument may be brought back into serious discussion in the flute community.

Conclusion

For some time now, flutists have been honing creative techniques to provide imperfect approximations of what composers have specified, but the Kingma mechanism achieves the exact effects desired with ease. The Kingma System flute is better suited for contemporary music than its predecessor in every way. Through her close work with composers and performers, Eva Kingma was able to create a mechanism that is comfortable to play, versatile in performance, and beautifully suited for the emerging repertoire. The Kingma System flute not only offers the performer unprecedented musical possibilities, it has yet undiscovered expressive potential.

Nevertheless, it seems that the flute community has yet to warm to the new instrument en masse. This has little to do with any specific quality of the instrument itself; rather, it likely results from general misinformation and limited composer involvement. It is my hope that once common misconceptions are addressed, marketing strategies are optimized, and the fervent support of composers is gained, the flute community will give this remarkable instrument a second chance. Although it may never replace our beloved Boehm, the Kingma System flute is here to stay.


Brokaw, Roberta. “Performance of Extended Flute Techniques of the Twentieth Century Based on Aspects of Traditional Flute Technique.” DMA diss., Indiana University, 1980.


Heiss, John. “For the Flute: A List of Double Stops, Triple Stops, Quadruple-Stops and Shakes” *Perspectives of New Music* 5, no. 1 (1966), 139-41.


Musical Scores:


Promotional Materials:


Eva Kingma, Low Flutes, DVD, with Matthias Ziegler (Netherlands: Zappabach.tv, 2009).

Web sources:


