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**Circular breathing as a means of expression
in 20th- and 21st-century works**

**as part of the proceedings for the award of the title of doktor
in the field of arts, in the discipline of musical arts**

advisor: Professor Dr h.c. Barbara Świątek-Żelazna

Kraków 2023

Declaration of the advisor of the doctoral thesis

I declare that this doctoral dissertation was prepared under my supervision and I affirm that it meets the conditions to be presented in the proceedings for the award of an academic degree.

Place, date Kraków
2023-IX-25 Advisor's signature Barbara Świątek-Żelazna

Declaration of the author of the doctoral thesis

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Artistic work – programme

1. Natalia Jarzabek - *Infinity* (2023)
2. Pablo Martínez Teutli (Mexico) - *Promise of Wind* (2020)
3. Paweł Siek (Poland) - *Cathédrale Électronique* (2020)
4. Adam Porębski (Poland) - *FluteDiving* (2020)
5. Jailton De Oliveira (Brazil) - *Floating Landscapes* (2020)
6. Leszek Hefi Wiśniowski (Poland) - *Blues for N.* (2020)
7. Natalia Jarzabek (Poland)- *Windspire* (2020)
8. Marcel Chyrzyński (Poland) - *Haiku no. 3 for flute solo* (2018)
9. Ilio Volante (Italy) - *La Musica delle forme* (2018)
10. Zoran Novačić (Croatia) *Fish in an Aquarium* (Chorwacja, 2017)
11. Ian Clarke (Great Britain) *The Great Train Race* (1993)
12. Robert Dick (USA) - *Flames must not encircle sides* (1980)
13. Istvan Matuz (Hungary) *Studium 1/974* (1974) (transcription for glissando headjoint, excerpt)

Performed by:

Natalia Jarzabek – flute

Dominika Grzybacz – piano

(in: *Windspire, La Musica delle forme, Fish in an Aquarium*)

Dominika Peszko – piano (in: *Promise of Wind*)

Paweł Siek – piano (in: *Cathédrale Électronique*)

Sound production:

Paweł Łyżwa

Recordings were realized:

13.07.2020 in Manggha Museum of Japanese Art and Technology in Kraków

15.04.2023 in Concert Hall of Władysław Żeleński Secondary Music School in Kraków

Recordings of pieces number 4-7, 9, 10 were realized under the scholarship program of the Minister of Culture and National Heritage *Kultura w sieci* 2020.

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Introduction

Circular breathing is a technique of playing wind instruments that allows to sustain sound for a long time. It requires drawing air quickly in through the nose simultaneously pushing the air collected in your mouth into the instrument. Although the technique boasts a history of several hundred years, the first mentions of its application in classical music come from the late 19th and early 20th centuries. That was the time when composers created numerous works that require circular breathing. The technique is also increasingly popular in the performance of contemporary music. Moreover, as the skill of employing circular breathing provides instrumentalists with broader phrasing possibilities, it is also useful in selected pieces from all periods. This makes the circular breathing technique an essential tool that every ambitious performer should possess.

This doctoral thesis aims to investigate into the subject of circular breathing as a means of expression in 20th- and 21st-century flute music. It discusses both historical and contemporary pieces, including the ones developed as part of research conducted by the author in collaboration with composers. Selected compositions, indicated by the symbol , have been recorded and included as an artistic achievement on a CD.

The thesis is organized into five chapters. The first briefly presents the history of circular breathing technique in flute playing – a subject that the author has personally researched and published in an expanded version as Chapter I of *Infinity: Circular Breathing* (Natalia Jarzabek and Barbara Świątek-Żelazna, published by Jarmuła Music, PCMA, Kraków 2021). The second chapter describes the methodology of circular breathing for flutists and the impact of applying the technique on flute performance, based on the author's research and teaching experience with flutists. The third chapter discusses the applications of circular breathing technique in works for the flute. The quintessence of the thesis is the fourth chapter dedicated to the role of circular breathing as a means of expression in 20th- and 21st-century flute music. The final chapter serves as a summary of the *Infinity: Circular Breathing Project*.

CHAPTER 1

History of the circular breathing technique.

Ancient times

Although the technique of circular breathing is associated with 20th-century music, it had been known a few hundred years earlier in various cultures. In Europe, it was used at least since the 10th century in playing such instruments as the alboka (Basque Country)¹, the launeddas (Sardinia)², the shawm (today's France)³, and the zurna (the Balkans)⁴. The largest number of instruments that require this technique, however, originate from Asia and include ancient traverse flutes, the Chinese dizi flute⁵, the Mongolian limbe⁶, the Armenian duduk⁷, the Turkish mey⁸, and the Vietnamese kèn-bầu⁹.

Moreover, circular breathing is also a fundamental technique for playing the didgeridoo, an instrument hailing from Australia, considered one of the world's oldest music instruments, as it was invented by the Aborigines at least a thousand years ago¹⁰. Playing the didgeridoo requires modulating the sound with lip vibrations. Thanks to circular breathing, the sound can be sustained as long as required. Contemporary musicians, for example Mark Atkins, Lies Beijerinck, and Stephen Kent, can play the instrument non-stop for over 40 minutes¹¹.

As the embouchure is similar in contemporary traverse flutes and the Mongolian limbe, the history of using circular breathing in playing that instrument may be worth some attention. Circulating was a special skill of 13th-century Mongolian smiths producing vessels and other trinkets decorated with silver and gold. The smiths producing them had to blow uninterruptedly through a sharp-ended reed on the fire, so that the flames caressed the hard metal long enough to melt it. They learned how to exhale without intermissions, pushing the air continually into the reed, simultaneously drawing the air through the nose. The technique was observed and adopted by the local musicians specialising in playing the limbe flute, who used it for their performances. To this day, circular breathing is linked for good to the Mongolian school of the limbe flute, which helps to paint the infinite expanses of the Mongolian steppe with sound. Centres teaching circulating in Mongolia pass the skill from generation



Fig. 1.1. *Tsevegsuren Tserenbaljir playing the Mongolian limbe flute*

to generation. The tradition of playing the limbe flute was entered on the UNESCO List of Intangible Cultural Heritage¹².

The similarity of embouchure in playing the limbe flute and the modern flute, as well as the ease and natural fluency of employing circular breathing by Mongolian musicians, lead to a reflection on why mastering this technique in Boehm flute playing is still so rarely encountered among flutists. The question is whether this is caused by technical difficulties or results from a lack of performance tradition and a straightforward method of knowledge transmission in this field.

Samuels' aerophor

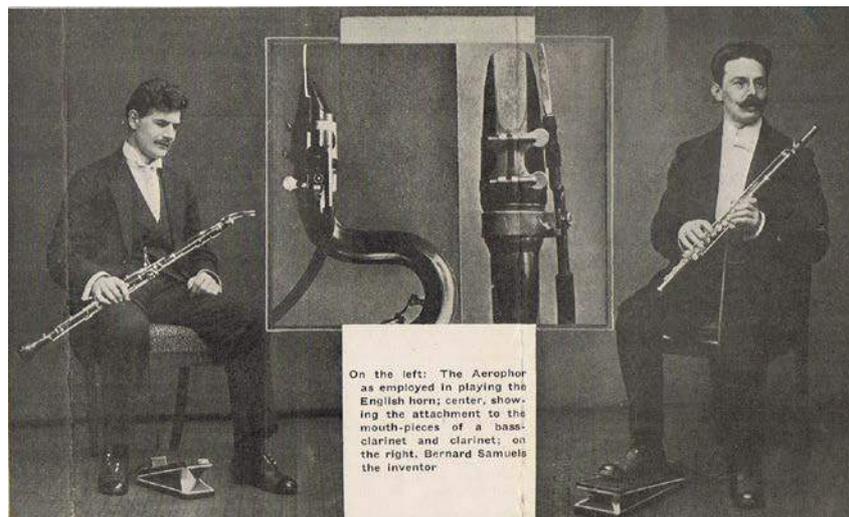


Fig. 1.2. Samuels' aerophor

Independence from physiology of the breath while playing wind instruments has long been pursued by both instrumentalists and composers. Research ran along two tracks: one group pursued increasing the physiological capacity of the performer (e.g. via circular breathing) and the other sought after a device that would supply air to the wind instrument. An example of the latter is Samuels' aerophor from ca. 1911–1912, devised by a Dutch flutist, Bernard Samuels (1872–1944). The device comprised

of a foot-operated bellows and a tube feeding directly into the player's mouth. While drawing breath through the nose, the player could pump air into the instrument, thus sustaining continuity of sound. The device was requested by Richard Strauss (1864–1949) for his Festival Prelude Op. 61 (1913) and An Alpine Symphony Op. 64 (1915). Samuels' aerophor did not make a career in performing on wind instruments despite the initial appeal to musicians¹³.

Antonio Pasculli – Paganini of the oboe



Fig. 1.3. Antonio Pasculli

The first references to circular breathing in classical music date back to the 19th century. Antonio Pasculli (1842–1924), one of the musicians who mastered the skill, was tellingly nicknamed “Paganini of the oboe”. Inspired by contemporary operas, the Italian oboe player and composer contributed to the vast development of the technical aspects of playing the oboe. His career began at fourteen with a tour of Italy. In 1860–1913 he was professor of the oboe and cor anglais at the Music Conservatory in Palermo. Renowned for extraordinary technical fluency, Pasculli was one of the first composers who required the use of circular breathing from performers. The most popular of his

works validating the statement is *Le Api (The Bees)*: a composition of around five minutes based on an infinite sequence of semiquavers, in which the artist has no opportunity to draw a natural breath¹⁴.

It is worth mentioning another oboist and composer who greatly contributed to the development of new performing opportunities while playing the oboe. The prizes at prestigious international music competitions in Geneva and Munich propelled the international career of Heinz Holliger (b. 1939), and took him to the world's prime concert halls. In his compositions, Holliger emphasised the development of new performing techniques in contemporary oboe music. Circular breathing is required for his *Studie über Mehrklänge* for solo oboe (1971) and *Lied for Amplified Flute* (1974)¹⁵.

Circular breathing in playing the flute was not a popular technique at the turn of the 19th and in the early 20th centuries, which caused a gap in the repertoire of solo pieces using this technique from the time. The research conducted by the author within the scope of research for this work on the possibilities and methods of employing circulation of air in flute playing indicates that the piece entitled *Le Api* can successfully be performed on the modern transverse flute – by proper use of

circular breathing while preserving its artistic merits. The technique can also be applied for transcribing other works from the period, e.g., Niccolò Paganini's *Moto perpetuo* and his violin caprices. The validity of these conclusions is supported by the recordings included in the *Infinity* album (DUX, 2019) and the musical transcriptions published in the *Infinity. Circular Breathing* course book and collection of exercises and works (Jarmuła Music, PCMA, Kraków 2021).

Jazz music



Fig. 1.4. Rahsaan Roland Kirk

Circular breathing entered jazz in the mid-20th century. One of the first artists to apply the technique was Harry Carney (1910–1974), an American saxophonist and clarinetist performing in Duke Ellington's band. Carney used circular breathing in *Sophisticated Lady*, a standard composed by Duke. In recordings, the last note of the piece, which Carney sustained for over a minute, can first be heard as the background for a piano, double bass, and cello improvisation before rising dynamically to close the piece¹⁶. Another virtuoso of circular breathing in jazz was Rahsaan Roland Kirk (1935–1977), an American multi-instrumentalist influenced by Carney and specialising in playing the saxophone. Famous for playing multiple instruments at once – an array of saxophones, clarinets, and flutes – Kirk provided his own accompaniment during performances, with a variety of acoustic effects

and instruments that he modified himself. He used circular breathing to produce sustained, static sounds, as well as for infinite improvisation. His album *Prepare Thyself to Deal with a Miracle* features experimental recordings that make use of circular breathing while simultaneously playing multiple instruments, notably his proprietary creation: the nose flute¹⁷.

Circular breathing in flute history and performance

One of first classical flutist to apply the technique was Antonín Mach. In the first stage of the prestigious Prague Spring competition in 1959 he performed *Allemande* from J. S. Bach's *Partita in A minor* for solo flute without any break or interruption to draw a natural breath, which shocked both the jury and the audience¹⁸.

In the 1970s, Zdeněk Bruderhans (b. 1934) included in his recitals transcriptions of Nikolai Rimsky-Korsakov's *Flight of the Bumblebee* and Niccolò Paganini's *Moto perpetuo* arranged for solo flute with circular breathing. Bruderhans demonstrated his skills in a number of courses and workshops that also took him to the United States and Europe, and made them the subject of many articles in music journals¹⁹.

Works for the flute specifically calling for circulating were written in the second half of the 20th century. Due to the great variety of courses pursued by 20th-century composers and the vast body of their compositions, it is exceedingly difficult to identify the first piece written for the flute with the intention. However, a handful of significant items in flute literature are certainly worth mentioning in this context.

One of the first pieces that require the performer to resort to circular breathing is *Drei Stücke* written in 1972 by a German composer, conductor, cellist, and flutist, Konrad Lechner (1911–1989). It was dedicated to French flute virtuoso, Aurèle Nicolet (1926–2016), who included the work in his *Pro Musica Nova. Studium zum Spielen Neuer Musik* (1973). Nicolet wrote descriptions and guidelines for each individual performing technique, also for reading and applying them. The score collection also includes Heinz Holliger's *Lied*, another piece in which circular breathing is useful²⁰.

In 1974, a Hungarian flutist István Matuz (b. 1947) composed *Studium 1/974* after several years of looking for new effects in sound and honing the circular breathing technique. He subsequently recorded the piece and released it on his *The New Flute* CD in 1992. *Studium 1/974* is one of six pieces that Matuz summarised as follows:

While composing *Studium* I realised that a flutist not only can but is simply obliged to compose for his instrument. Moreover, today new sounds and techniques are discovered more often than ever before. The results of that continuous experimentation and discovery should be made public in new compositions – études²¹.

Studium is certainly one of the first pieces intended to make the flutist apply circular breathing. Its essence is the uninterrupted sustainment and modulation of a nearly nine-minute-long sound that provides the base for other acoustic effects. These effects are introduced simultaneously and include singing while playing the instrument as well as the use of multiphonics.

Another piece worth mentioning is *Projections* (1992–1993) composed by Gergely Ittzés (b. 1969), and dedicated to a Hungarian flutist Zoltán Gyöngyössi but inspired by István Matuz. This virtuoso piece is based on the play of lights. The intervals, proportions, and timbres in *Projections*²² differ in the way apparent distances do in perspective, similar to the shadows cast by physical objects when the source of light moves. In the central section, the sound is infinitely sustained with circular breathing. At the same moment, successive tones, performed in pitch and rhythm set by the composer, are added on the base of the continuing sound. The effect is similar to that obtained by multi-reed instruments, such as the launeddas and the arghūl. In these instruments, one reed sustains the continuo, and the melody is played on other reeds. However, Ittzés achieved the effect using the single body of the contemporary flute.

Permanent breath also inspired other Hungarian composers. Worth mentioning among them is László Sárosi (b. 1940) with his *Voices* (1975), lasting for 144 minutes.

A figure worth special attention in the context of applying the circular breathing technique while performing contemporary music is Robert Dick: an American flutist born in New York in 1950.

He learned to play the flute as a child, with his main teachers being Henry Zlotnik, James Pappoutsakis, Julius Baker, and Thomas Nyfenger. Robert Dick's education prepared him to work as an orchestral musician, however, with time, he realised he should develop as a soloist and composer. Dick changed the perception of the sound of the flute, significantly expanding its capacity, and creating a huge number of new timbres. From the 1970s, when he started composing and improvising, he entertained the idea that contemporary instruments offer unlimited sound and expression capacities, stepping far beyond the traditional roles assigned to them in the music of previous periods.



Fig. 1.5. Robert Dick, photo by Günter Horn

Dick made a vast impact on the development of the art of performing the flute through his educational pursuits, including a great deal of masterclasses in the Americas, Europe, Australia and Asia, and through his breakthrough book publications *The Other Flute, Tone Development Through Extended Techniques* and *Circular Breathing for the Flutist*, and two volumes of études: *Flying Lessons*²³.

An important resource in contemporary flute playing and circular breathing is his book *Circular Breathing for the Flutist* (1987). His method includes descriptions of the embouchure and coordination necessary to master proper air circulation. This is how Robert Dick describes the history of individual application of the technique and the process of development of his method:

I worked at IRCAM in Paris from August 1977 through January 1978. (IRCAM is the institute that Pierre Boulez founded to coordinate research in acoustics and music.) During that time, I met several flutists who could circular breathe. On listening carefully, I must admit I had my doubts. I remember thinking “If this is as good as circular breathed flute playing can sound, I’m not sure it’s worth the trouble.” During my time at IRCAM, I received an invitation from Aurèle Nicolet to give a class for his students at the Musikhochschule in Freiburg, Germany. My first European class! I was so excited, especially to meet Nicolet himself, whose recordings I much admired.

While in Freiburg, I asked Prof. Nicolet about circular breathing, because I had heard that he could do it. When he demonstrated playing with circular breathing, I

was convinced! His tone was perfectly seamless and the breathing was audibly “invisible”, there was no way to tell from the sound that he was circular breathing. This was the level that I aspire to in all technical work – that the technique never calls attention to itself but is there as a conduit of musical expression.

Prof. Nicolet gave me his explanation of circular breathing. It was short and simple, and actually the same explanation I had heard from other players, woodwind and brass, that could circular breathe. I realized that the difference was because of Nicolet’s musical vision and his dedication to fully realizing. He asked me if I thought I understood and I replied that I did. He then said “Good. It is yours for the doing. If you do it!”.

As I was soon to be returning from Paris to my position in the Creative Associates, a contemporary music ensemble based in Buffalo, New York, I decided to make learning circular breathing my top priority when I got back to Buffalo. I really worked hard at it, but was frustrated by the slowness of my progress. I had been playing the flute for twenty years at that point, and had a good idea of what I could accomplish in an hour of practice. With circular breathing, I was making a tiny percentage of that expected progress. Not being the type to quit, I kept at it and found, eventually, that I had passed some sort of mysterious threshold and circular breathing began to work and began to become easy!

I started to incorporate circulate breathing into the music I was creating and also in classical music at spots where I felt the a “breath assist” would help me phrase the way I believed the music should go, rather than having the phrasing shaped by the physical need to breathe. Everything was working in a positive light and I was delighted with the developments in my playing, interpretively and flutistically.

And then students started to ask me to teach them how to circular breathe. This was infinitely more frustrating than the learning process that I had gone through by myself. With only a brief description of the mechanics of circular breathing, there was no real pedagogy, not step-by-step plan. As I teacher, I was reduced to cheerleading: “You can do it! You can do it! Just keep working! I know you can do it!”

I hated this pathetic excuse for real teaching and was intensely thinking about better ways to teach and learn circular breathing. I began to realize that, for the flute, the traditional approach to learning circular breathing was backwards. Everyone started with the breathing itself. Perhaps the easiest instrument to learn circular breathing on is the oboe, the diametric opposite of the flute in terms of pressure and airflow. The oboe uses very much less air than the flute, under much higher pressure – and circular breathing is truly easy on it. The oboist can have three to five seconds (or more) to play with the air that is in the mouth, loads of time to inhale. (It's a mystery, frankly, that so many oboists persist in turning bright colors followed by gasping instead of using the natural breathing rhythm that circular breathing would easily make available to them.)

The flute is the instrument that uses the most air of all the wind and brass instruments (including the tuba) under the lowest pressure. Flutists have no reed to hold onto, no mouthpiece to support the embouchure, and virtually no back pressure to help regulate the airflow. I came to understand that concentrating on the breathing before the embouchure was developed to handle the many stages of circular breathing was simply illogical and ineffective.

Once I had this core insight, I was able to create a step-by-step method for flutists to learn circular breathing, and I'm happy to report that very many flutists have successfully learned the technique from my book *Circular Breathing for the Flutist*.

Over the decades – twenty years of playing back in 1978 have continued to over sixty years at present – I have continued to refine circular breathing and apply it to ever growing musical ideas. I've developed circular breathing in staccato passages and also in constantly evolving multiphonic musical languages that demand embouchure techniques that I couldn't even have imagined back in the 1970s.

And that is the joy of a creative life. That we can always be learning new things and following our music to the farthest places it wants to go is our privilege and purpose.

Robert Dick, 2020²⁴

Robert Dick has composed many works that use circular breathing. One of the most attractive and most frequently performed pieces, spectacularly combining multiphonic music and circular breath, is *Flames Must not Encircle Sides* (1980). Its uninterrupted sequence of various trills of specific timbre gives an illusion that the piece is being performed by multiple instrumentalists scattered around the room. It was included in the repertoire of the Internationaler Musikwettbewerb der ARD in 1990.

A composer who has exploited the unconventional sounds of the instrument is British flutist Ian Clarke. His works are inspired by film, oriental and jazz music, and he often intertwines these sounds between cantilena or improvised sections. One of his most famous pieces is *The Great Train Race* (1993), which imitates the sounds of a train in motion. Of particular interest is the culminating moment, in which the composer calls for a microtonal trill. By indicating “circular breathe if able!”, Clarke only calls for circular breathing as an additional effect rather than a required technique.

Another expert in the circular breathing technique is a French flutist, Patrick Gallois (born 1956), who made use of this skill in his arrangements for solo flute of Niccolò Paganini’s caprices. The technique is also present in the compositions and course books of such flutists as Wil Offermans, Tilmann Dehnhard, and Rogier de Pijper²⁵.

Contemporary composers reaching for circular breathing more and more often in their works are notably Efraín Amaya, Dimitri Arnauts, Marcel Chyrzyński, Tim Mulleman, Jailton de Oliveira, Eduardo Luís Patriarca, Adam Porębski, Pablo Martínez Teutli, and Salvador Torr .

The course book and collection of  tudes entitled *Infinity. Circular Breathing* (Jarmu a Music, PCMA, Krak w 2021) by Natalia Jarz bek and Professor Barbara  wi tek-Żelazna were published in 2020 (in Polish) and 2021 (in English). It is the second ever comprehensive instructional book on learning circular breathing technique. The method of circulating air presented by the Polish authors differs from what Robert Dick described, as it uses tongue movements and adapts the flutist’s individual embouchure for applying this technique. The publication won the first prize in the Pedagogical Work category at the Newly Published Music Competition organised by the National Flute Association (US) in 2022.

The objective of the Infinity project, besides creating a course book for learning circular breathing, is to collaborate with composers to produce new compositions inspired by the technique that will fill the gap in existing flute literature. The number of flute compositions in whose structure circular breathing plays a crucial role is relatively small, a fact caused by the lack of awareness among both

flutists and composers that circular breathing in playing the flute can be both simple and natural. The project outcome is a series of compositions that use circular breathing and have left their mark on the history of world flute literature. Worth mentioning among them are *Fish in an Aquarium* by Zoran Novačić (Croatia, 2017), *Floating Landscapes* by Jailton de Oliveira (Brazil, 2020), *Haiku no. 3 for flute solo* by Marcel Chyrzyński (Poland, 2018), *Promise of Wind* by Pablo Martínez Teutli (Mexico, 2020), *Blues for N.* by Leszek “Hefi” Wiśniowski (Poland, 2020), *FluteDiving* by Adam Porębski (Poland, 2020), *Cathédrale Électronique* and *385 × 40 Mpx. Luca Marenzio but wide, filtered and reversed* by Paweł Siek (Poland, both 2020), and my own composition *Infinity* for solo flute (2023), which gathers together the ideas presented in this dissertation.

Chapter IV of this dissertation contains a detailed analysis of the works listed above, while a selection of diverse recordings can be found on the CD that contains the artistic achievement being the essence of doctoral thesis.

CHAPTER 2

Methods of circular breathing for flutists

Necessary for a thorough understanding of the essence of circular breathing technique and its impact on the final form of performed pieces is at least a brief discussion of the method of circulating the air that was extensively described in the course book *Infinity. Circular Breathing* by Natalia Jarzabek and Professor Barbara Świątek-Żelazna. The excerpts from the book presented below demonstrate the practicality and helpfulness of circular breathing and its positive influence on various aspects of a flutist's technique, emphasising that when applied correctly, it does not alter the colour of sound during the process of air circulation. This, in turn, contributes to a significant increase in the instrumentalist's potential for producing longer phrases and improving intonation control. This chapter also seeks to answer the question why circular breathing is so rarely employed in playing the contemporary transverse flute, while highlighting the innovative nature of the method presented and the advantages it offers to flute compositions.

How does circular breathing work?

It is essential that you realise the role of the diaphragm and the muscles between ribs when breathing. The diaphragm is the muscle that separates chest from abdomen. The work of the diaphragm results in the change of the shape and volume of chest, which lets to inhale and exhale. Inhaling is an active process. The contraction of muscle fibres results in lowering the diaphragm and decreasing the pressure inside the chest, which allows air to be drawn in and the lungs to be expanded, mostly vertically. The horizontal expansion of lung volume is also helpful, and is achieved by the muscles situated between the ribs (intercostal) that move them apart. Humans breathe out by raising the diaphragm through contracting their abdominal muscles. The ribs come closer to one another without additional control. Natural breathing out is unconscious, however, to control the air through a wind instrument, the player should engage appropriate sections of the muscles in the process of exhaling²⁶.

While starting to learn the circular breathing technique, it is necessary to realise an obvious fact, namely that air cannot flow in both directions, that is up and down the trachea (wind pipe), at the same time. The idea of circular breath is to collect air in your tightly sealed mouth, and then to push

it out with the muscles of tongue, cheeks, and throat, whilst breathing in the air through the nose at the same time.

Why is circular breathing so rarely used in playing the contemporary transverse flute?

Circular breathing is ever more often a part of contemporary wind instrument performance, commonly applied in instruments such as oboe, saxophone, and trumpet. The continuous flow of air in these instruments can be maintained through the use of cheek muscles and the reed or mouthpiece. However, in the case of the transverse flute, circular breathing has not been widely adopted as a standard technique due to the unique construction of the instrument and the playing technique. Attempts to use it in a manner similar to reed and brass instruments often run into technical challenges, discouraging instrumentalists from learning and mastering the technique. One of the primary difficulties lies in sustaining the continuous air flow, as the pressure produced and maintained solely by cheek muscles is relatively low. Another significant hurdle encountered by flutists attempting to incorporate circular breathing is air consumption. While playing the flute, the breath pressure is even and relatively low, and most of the air the flutist exhales does not enter the instrument²⁷. That is the reason why it is a challenge to maintain an appropriate pressure of the air expelled from the oral cavity for proper circular breathing. Drawn from the experience of the author while studying and developing the manual on circular breathing, these observations are shared by other flutists attempting to understand and apply this technique.

The first flutist to have written a comprehensive manual on teaching this technique for the flute was Robert Dick, and his *Circular Breathing for the Flutist* was published in 1987.

As the author himself remarks while discussing his work, the method designed for flutists encompasses learning the proper embouchure and breath coordination required to master circular breathing. This is where he perceives the difficulties in adopting this technique by flutists:

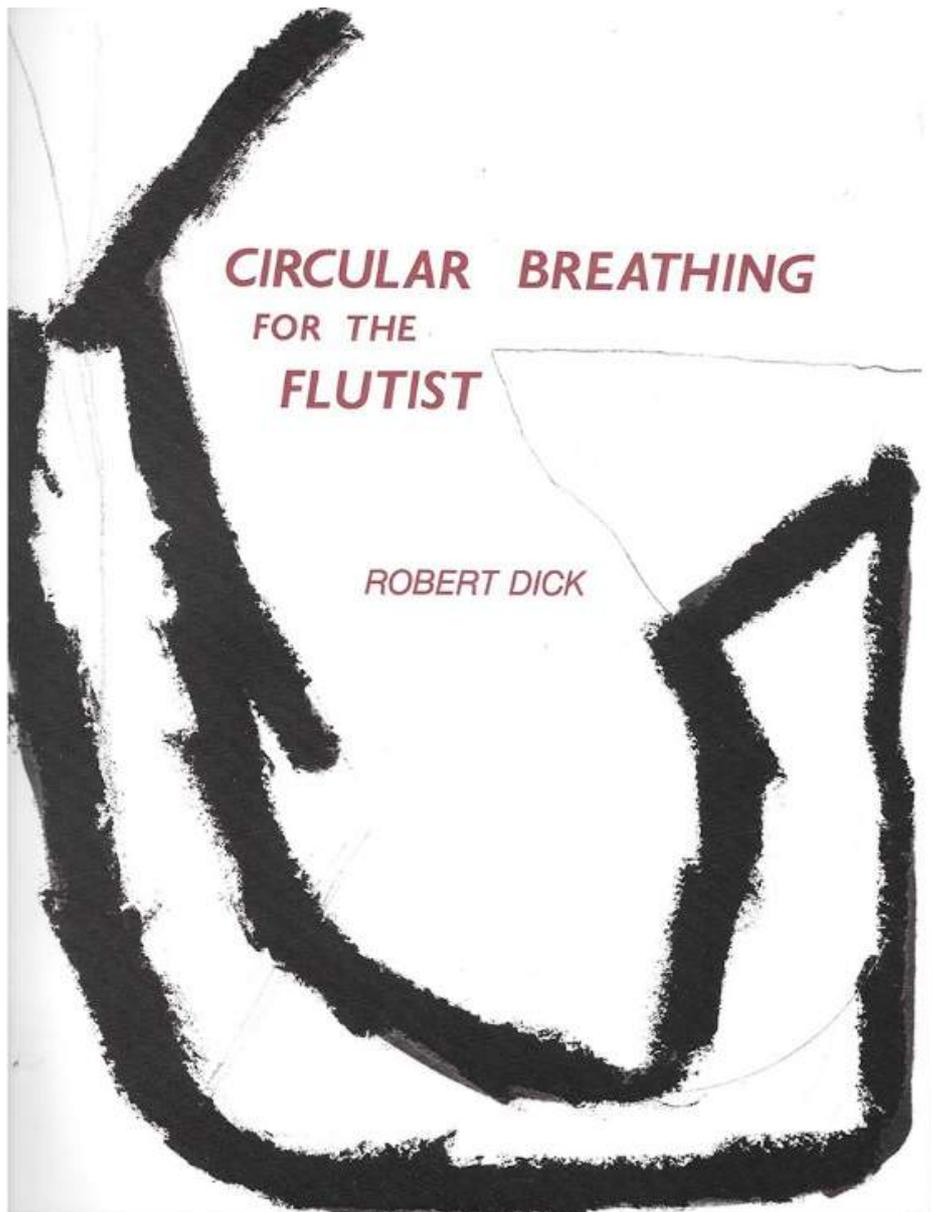


Fig. 2.1. The cover of *Circular Breathing for the Flutist* by R. Dick

Tubaists have long used circular breathing without fanfare, as have the occasional single and double reed player. Why is the player of the Boehm flute so rarely able to circular breathe? The answers to this question lie in the realms of acoustics and pedagogy. Of all the wind instruments, including the lower brass, the flute uses the most air under the lowest pressure. Since circular breathing is made easier by playing an instrument that uses little air and provides back pressure (the oboe being ideal in this way), the flute is problematic. Further, the flute has no mouthpiece to

support the lips and no need to hold to help keep the embouchure shaped correctly while the checks are in motion²⁸.

Changing the embouchure, interfering with the technique developed over the years, and the need to work on the muscles necessary to produce the sound are problematic for flutists. Perhaps these are the reasons why circular breathing has not become a standard flute playing technique. Despite these challenges, Robert Dick emphasises the undeniable benefits of employing this technique and the value it brings to the performer. He points out that circular breathing has for centuries been used in ethnic music by non-professional musicians and that it is by no means an exotic technique reserved for the few select individuals.

A proof of the above comes in playing the limbe flute, mentioned in Chapter I above. In playing it, the use of circular breathing has a centuries-old tradition. Usually, limbe players are not professionals but self-taught musicians, for instance shepherds, as in the case of the documentary recordings made by UNESCO²⁹. Examples of circular breathing applied to ethnic instruments demonstrate that achieving independent breath control has been desired by performers for centuries, and for the limbe players, it became a natural part of their playing technique long ago.

Methods of learning circular breathing technique in flute playing

There are currently (in 2023) two comprehensive course books available on the market for learning the circular breathing technique: *Circular Breathing for the Flutist* by Robert Dick (1987) and *Infinity. Circular breathing* by Natalia Jarzabek and Professor Barbara Świątek-Żelazna (2021).

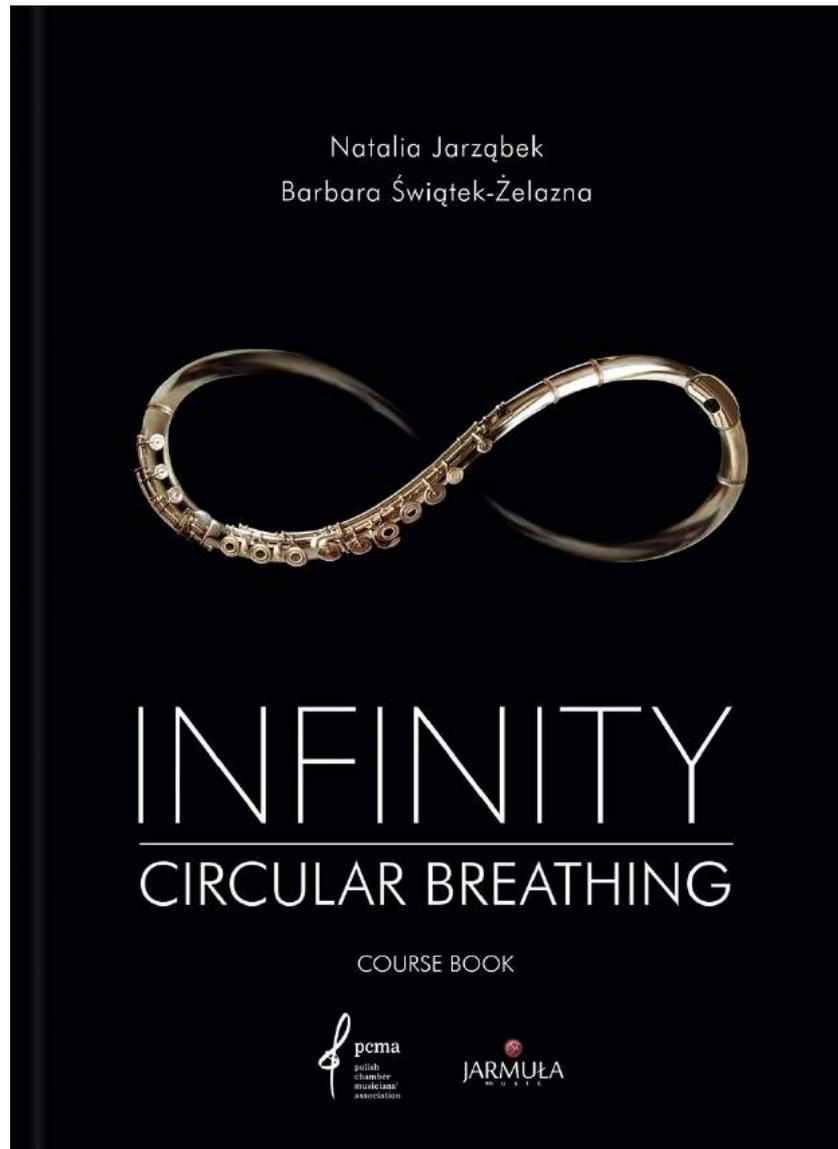


Fig. 2.2. N. Jarzabek, B. Świątek-Żelazna, *Infinity. Circular Breathing*, cover of the English version

The following part of the chapter discusses the similarities and differences between the publications. They both emphasise the undeniable value of circular breathing skills for flutists. In *Infinity. Circular Breathing*, we notice that:

The contemporary world of musicianship continuously changes its visage and becomes enriched with new means of expression. That poses major challenges for the performer, at the same time provoking the search for new ways of discovering the secrets of your instrument.

Circular breathing is a magic technique, which is not always necessary, as music should use natural breath. However, armed with that skill, we give ourselves an opportunity to develop and control what is broadly construed as the art of playing the flute. Our book focuses on the method of mastering the skill and lists the examples of its use in music composed in different periods. We consider the advantages that stem from our method as additional tools in the flutist's performing toolbox.

Contemporary composers also react to the consequences of the phenomenon, and increasingly often reach for such a technique to obtain new means of expression. The possibility of inspiring composers writing for the flute is a privilege of a performer, which our publication is a proof of.

In learning the technique of permanent breath, we propose a method of employing it, and share it with flutists eager to participate in the development of the aesthetics of contemporary flute music³⁰.

While in his book Robert Dick writes:

In all aspects of our lives as human beings and as flutists, we find ourselves in an environment where the pace of change is accelerating. It is sensible to look ahead and to do our best to prepare for the future. The flute sound of the future will be yet more powerful and colorful, and more capable of projection with presence. Flutists will find themselves needing to answer technical demands of increasing orders of magnitude. Opportunities for flutists to perform as recitalists and concerto soloists will continue to expand, with the concurrent need to project to listeners who have become increasingly acclimated to the presence of recordings, and expect the live sound to match the expectations set up by recordings made with close microphones placements. In addressing these challenges, flutists who can circular breathe will find themselves with a distinct technical advantage over those who cannot ³¹.

Both publications provide numerous examples from both solo and orchestral literature, demonstrating how useful circular breathing is to maintain the continuity of the phrase proposed by the composer.

The main difference between the publications lies in the actual technique of circulating the air. Robert Dick begins his course book with considerations on the technical aspects of the learning process, and focuses on developing the appropriate embouchure that allows maintaining airstream pressure:

In trying to learn circular breathing, many have overestimated the importance of the coordinations involved, and focused practice on the coordinations instead of the embouchure development needed. This should be done first, and then the coordinations should be applied ³².

As Robert Dick points out, his method uses exercises that adjust the flutist's embouchure to maintaining the continuity of the airstream during circular breathing. This requires the flutist to fill their cheeks with air, which often results in a change of the tone colour and intonation caused by insufficient pressure during playing. However, none of the works offering know-how on circular breathing for flutists published before 2020 addressed the use of the tongue in the circulation process, while this is precisely the tongue that allows to maintain a stable airstream without the need to change the embouchure during circular breathing. This is the foundation of the technique developed by the author of this dissertation during her research. The approach she proposes does not require changing the embouchure but rather adapts it to conducting the circulation, while additionally engaging the tongue.

This difference constitutes the fundamental distinction between the circular breathing method described by Robert Dick and the one studied and proposed by the author.

As mentioned earlier, a characteristic feature of the described method is the fact that it does not require the flutist to change their embouchure while conducting circular breathing. The position of the tongue, throat, mouth, and cheek proposed by the author are adapted to the individual embouchure of each performer. The starting point for grasping the knowledge presented in the course book is to learn proper natural breathing and correct performance of other essential technical elements necessary for proper sound production.

Writing a course book for learning the circular breathing technique with her supervisor, Professor Barbara Świątek-Żelazna, was a natural consequence of the research conducted by the author during her doctoral studies. Their objective was to let every ambitious flutist acquire this skill by adapting their individual embouchure to circular breathing. Bearing in mind the challenges that may arise from applying a technique analogous to that used in reed instruments, the authors of the course book developed a method that allows to avoid such issues.

The result of their research was the publication of *Infinity. Circular Breathing* (2020, English edition 2021). This course book for flutists is designed for learning the technique and is accompanied by *Infinity*, a collection of exercises, études, and compositions commissioned from the composers by Natalia Jarząbek. The main inspiration for all the pieces in the collection was the use of circular breathing by performers.

The collection of exercise won the Second Prize in the US National Flute Association's competition for the best flute pedagogical publication/étude collection of 2020, while the course book *Infinity. Circular Breathing* won the First Prize in the National Flute Association's Newly Published Music Competition in the Pedagogical Work category in 2022.

The publication emphasises the paramount value of musical phrasing, exceeding technical virtuosity as unjustified use of circular breathing, working against musical phrasing, does disrupt the narrative. In turn, incorrect use of the technique may affect the performance, resulting in issues such as audible breathing through the nose, changes in intonation and tone colour, audible accents during circular breathing, and illogical phrasing, all of which make a negative impact on the final shape and reception of the piece.

The development of the method for learning circular breathing described in *Infinity. Circular Breathing* resulted from numerous regular, and individual sessions with flutists from various academic and artistic centres whose levels of proficiency in playing the instrument differed significantly. The sessions aimed to assess the effectiveness of the method, devise optimal and comprehensible exercises, and observe the learning process. Engaging a diverse group of musicians in the consultations enabled the author to tailor the knowledge that needs conveying to all learner groups. The wide range of experiences and reflections resulted in a comprehensive course book that is a valuable source of information on circular breathing technique for every flutist who has mastered proper natural breathing and all the technical elements essential for proper sound emission.

Remember that, between drawing the air in through the nose and moving to exhaling, the tongue still pushes the air for a fraction of a second, while the rib and abdominal muscles prepare an appropriate pressure for the air you are going to exhale. Note that while exhaling you produce a rich and sonorous tone, yet when you shift to pushing, the intonation drops down, and the sound is weaker. When you return to exhaling you can hear an impulse (the sudden punch of a faster air column flowing from the lungs) accompanied by intonation sharpening.

In further chapters, this book also presents methods for equalising the timbre of the tone and intonation, and also elimination of the impulse while shifting from pushing to exhaling.

Air circulation diagrams



Fig. 4.4. Exhaling the air from the lungs, tongue in position U, and throat, windpipe and jaw in position O



Fig. 4.5. The tongue moves to position G, the air is pushed into the instrument, in parallel with drawing of the air in through the nose

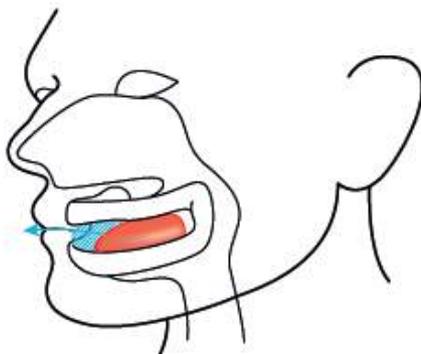


Fig. 4.6. Further pushing of the air, after completing inhaling through the nose



Fig. 4.7. Switching to exhaling the air from the lungs, and retracting the tongue (return to the position U)

Fig. 2.3. A sample page from *Infinity. Circular Breathing* course book

The learning process. Conclusions

A system of successive steps developed during the classes enables logical and effective communication of information and instructions for mastering the circular breathing technique. The classes begin with a lecture briefly presenting the history of circular breathing technique and its applications. The following step involves discussing the process of breathing – first, the natural breathing, taking into account the anatomical structure of the respiratory system, and then the circular breathing, which allows to highlight and emphasise the differences between them. Another element is building the awareness, where the student must collect the air necessary for conducting the circulation. An animation prepared by the author proves particularly helpful here, as it allows to observe the movement of the tongue in action. It is publicly available on the project website www.fluteinfinity.com and also at <https://youtu.be/h2rdVEDy50s>.

Practical classes, following the theoretical part, are conducted in small groups, of maximum four participants. The essence of the exercises is to learn how to circulate the air: first without the flute, then using the mouthpiece, and eventually the entire instrument.

The main problems flutists encountered are:

- failure to maintain appropriate air pressure in the oral cavity while inhaling through the nose
- lack of coordination between inhalation and pushing air with tongue
- failure to maintain proper pressure of their air forced from the oral cavity caused by improper tongue work
- interrupting the airflow when merging the pushed and exhaled airstream caused by insufficient work of intercostal muscles and diaphragm, and/or excessive extension of the tip of the tongue
- change in intonation or lack of sound stability during the circulation caused by the difference between the pressure of the pushed and exhaled air
- lack of coordination between circular breathing and fingering changes.

It is worth noting that mastering the rudiments of circular breathing was easiest for flutists who had a relaxed embouchure, a proper tongue position (“suspended” in the oral cavity), and a conscious

diaphragmatic and chest breathing. Any unnecessary tension and improper embouchure (especially when the tip of the tongue touches the lower teeth) as well as shallow inhalation hindered the understanding and delayed the mastering of the circular breathing process. Importantly, the proposed exercises not only provided flutists with the rudiments of the circular breathing technique but also allowed them to become aware of the proper breathing technique, and of the correct positioning of the tongue, lips, and throat.

The advantages of circular breathing

Its use makes a positive impact on numerous elements of your performance and increases the awareness of their application. Their number includes:

- » ability to perform long phrases assured that you can play them smoothly to the end
- » awareness of the role of the tongue: its position, and flexible operation and movement
- » keeping your ribs apart, active operation of diaphragm and muscles between the ribs
- » awareness of appropriate pressure and direction of the airstream, helpful in proper sound production
- » control of the intonation, especially in decrescendo dynamics
- » appropriate arrangement and flexibility of the lips
- » appropriate position of the jaw, and its flexible operation
- » keeping your throat open
- » keeping proper posture
- » loosening the muscles of the face, throat, neck, and tongue
- » ability to perform clearly contrasting dynamics
- » giving your body a near-natural breathing pattern
- » learning and perfecting the skill of drawing quick and efficient breaths through the nose

Like any other new skill, perfection in circular breathing requires patience and regular practising. The skills you have mastered can be improved with the use of the exercises, études, and works enclosed

to this book, useful for circular breathing. They cover various articulation contexts, dynamics and register changes, and also the use of extended techniques of playing. You should also realise that an improper circulating technique may have a negative impact on how you perform. Circular breath “for the fun of it” and against the phrase will disturb its narrative. Similarly, a variety of imperfections including audible loud breathing through the nose, intonation fluctuations, changes of timbre, audible impulse while circulating, and illogical construction of the phrases also make a negative impact on the final form of the work performed and its reception. The following chapter presents examples from music literature, in which the correct use of circular breathing may be exceedingly helpful, and in some cases downright necessary, for the instrumentalist.

Flutists on circular breathing

While considering the technique of circular breathing, it is worthwhile to do so from the perspective of individuals who brushed their shoulders with it, and participated in lectures and workshops as part of the *Infinity Project*.

I first came across circular breathing during my studies at the Turku Conservatory of Music in Finland. I remember it as a unique experience in my flute development journey. I find the organisation of the *Circular Breathing Technique* workshops for students of the Academy of Art in Szczecin crucial for expanding not only their skills but, above all, their horizons. Every young flutist strives for perfect mastery of their craft, dedicating countless hours to this process day in day out. Awareness of the body and the processes occurring within it while you play is crucial for the proper development of an instrumentalist. In my opinion, working on circular breathing technique required that students focused immensely, and became aware and in control of their bodies in a particular “chilling” practice. It became evident how hard it was among the hustle and bustle of daily activities, to stop, focus on yourself, and answer simple questions and perform seemingly straightforward exercises. The ability to apply the circular breathing technique is certainly a vital tool in every flutist’s toolbox. What I find the key added value of the workshops honing this technique is the increased awareness and control of my body.

Magdalena Morus-Fijałkowska, Ph.D.

Academy of Art in Szczecin

I organised the Project Infinity conference on circular breathing at the Academy of Art in Szczecin not only for the students but also for myself. I had made a few unsuccessful and brief attempts to learn the circular breathing technique earlier. The lack of progress discouraged me from practicing, and each attempt made me think it was not meant for me. During the two-day workshop, we had the pleasure of attending a lecture on the history and physiology of circular breathing, and participating in practical exercises in small groups under Natalia's watchful eye of. Thanks to the workshops, I gained knowledge of the theory and physiology of circular breathing, and became aware of the mistakes I make while attempting to breathe in this way. I now know the way to improve my skills, so one day I could apply this technique without much effort. I am convinced that, this time, only time and persistent practice stand between me and success, as in the workshop I overcame the most significant barrier in my head (namely that running out of breath means that I stop blowing) and now I can continuously blow air onto my outstretched palm. I also noticed a deepening of my natural breathing after the exercises in improving the circular breathing. I believe that simply practicing circular breathing improves and deepens your natural breath.

Joanna Kowalczyk, Ph.D.
Academy of Art in Szczecin

The ability to perform circular breathing while playing the flute has significantly enhanced my skills in controlling my respiratory and muscular system. Through this technique, I have become more aware of my body and its functioning, which has also improved the quality of my playing. I understand that this technique involves inhaling through the nose while simultaneously exhaling the air stored in the cheeks. The above requires maintaining maximum diaphragmatic support and full coordination. I believe that, in future, circular breathing may facilitate my performance of demanding solo and orchestral passages that require precise breath control.

Magdalena Chudzikiewicz
a 5th-year student of the K. Szymanowski Academy of Music in Katowice

My first encounter with circular breathing was in 2019, during a meeting with Natalia in Mexico City. I tried to learn this technique during the sessions – unfortunately, with little success. However, I was deeply impressed by her concert, so I told myself, “I would like to play like that one day too”. During the pandemic, I had the opportunity to participate in Natalia’s online circular breathing course, and watching the explanatory video on how to apply this technique, the graphical representation of tongue positioning, exhaling air, and arranging the oral cavity was immensely helpful to me. The transition from being unable to perform circular breathing to the second stage of applying this technique consciously was almost immediate. I am convinced that this new technique will let me work on new repertoire using circular breathing and also execute long phrases in standard repertoire. Mastery of new techniques is today essential.

Alex Ruiz

a graduate of the Escuela Superior de Música del Instituto Nacional de Bellas Artes y Literatura,
Mexico City

I learned the fundamentals of circular breathing technique using Robert Dick’s book, but Natalia Jarzabek’s method seems much more practical. My greatest discovery is that the cheeks don’t need to move while applying circular breathing, as only the diaphragm and throat are engaged. This approach allows to maintain the pitch and tone of the sound. Thanks to Natalia’s book, my control over the sound and intonation while using circular breathing is better. The book itself is very well designed, and it also provides information about the history of the technique, as well as various exercises, études, and pieces composed specifically for the *Infinity* Project.

Daryna Bachyńska

a graduate of the Krzysztof Penderecki Academy of Music in Kraków
and a student of the Conservatoire royal de Liège

Glissando headjoint

The independence of air supply sought after – and found – by composers and flutists, has made it possible to experiment with sound colour and tonal variety on a broader scale. Further questions arose as far as the possibility of achieving a fluent sound throughout the wide spectrum of flute tones is concerned. It is fascinating to expand the consideration from just the 12 notes of the chromatic scale of the well-established European tonal system to the quarter-tones and tonal texture nuances between them – which, in combination with circular breathing, open incredible expressive possibilities before the flutist.

The glissando headjoint is a flute headjoint designed by American flutist Robert Dick. It allows producing smooth glissandos spanning up to a minor third. It was developed in 1984–2003 with Eva Kingma, Kaspar Baechi and Brannen Flutes, and premiered during the National Flute Association convention in the US in 2003. Exploring the flute's tonal capacity using both circular breathing and the glissando headjoint results in interesting solutions, a new palette of colours, novel sound and expressive effects, for instance, sustaining ascending or descending sounds for a longer time without the interruption needed for drawing a natural breath. The possibility of expanding the flute's tonal range by the use of a special microphone is considered additionally.

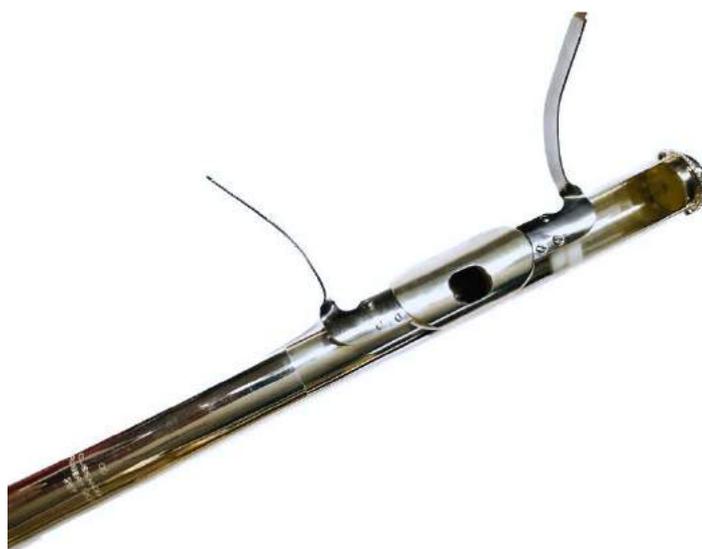


Fig. 2.4. The glissando headjoint

The glissando headjoint was not yet available when István Matuz and Gergely Ittzés composed the first flute works that require circular breathing. However, this incredibly intriguing invention complements the application of circular breathing perfectly well, as evidenced by examples of using the glissando headjoint in the transcription of István Matuz's *Studium 1/974* and in Paweł Siek's *Cathédrale Électronique*.

CHAPTER 3

Circular breathing. Use

The author's purpose in the previous chapters was to demonstrate that circular breathing is an incredibly valuable technique, providing the performer with freedom in playing and interpreting. The methods discussed above allow every ambitious musician, who has mastered proper drawing of breath (inhalation) and the correct functioning of all technical aspects, to acquire the skill of circular breathing effectively. This technique can be used for performing works from past periods written for the flute, transcriptions of pieces originally intended for other instruments (e.g., César Franck's *Violin Sonata in A major* and Aram Khachaturian's *Violin Concerto in D minor*), as well as contemporary compositions by composers who increasingly often require the skill of circular breathing as one of the flutists' performance techniques.

Additionally, circular breathing finds many applications in orchestral playing, which calls for the skills of cooperation, adaptation to joint interpretations, uniform articulation, achieving coherent sound and intonation, and flexibility in performing both solo and accompanying parts. An instrumentalist should possess a range of technical skills to meet the requirements of the performed works and create cohesive sound material with other members of the orchestra or ensemble. For the performer, the ability to use circular breathing opens up possibilities to achieve better sound emission and intonation, perform long phrases, and obtain freedom in creating coherent accompaniment sound to support solo parts of other instruments.

This dissertation places a particular emphasis on the application of circular breathing in works of the 20th and 21st centuries, which are discussed in greater detail in the following chapter. To present a broader perspective on the subject discussed, this chapter briefly discusses the potential to use this technique in Baroque, Classical, Romantic, and Impressionist works, as well as in transcriptions of pieces for other instruments.

Baroque and Classicism

Although circular breathing was not a popular technique in Baroque, it proves extremely useful in performing works from that period on modern instruments.

Baroque flutes, not unlike other woodwind instruments from that period, were made in a way that set them apart from their modern counterparts in terms of material, hole sizes, and mechanics. All these required a much smaller amount of air to produce a satisfactory sound, compared to modern instruments. Additionally, Baroque orchestras were much smaller than contemporary symphonic ensembles. They consisted of perhaps a dozen musicians, essentially being an extended combination of a string quartet (or quintet) with woodwinds, accompanied by the harpsichord and, should a need arise, percussion instruments. The ensemble was often so small that it did not even require a conductor. Consequently, the volume requirements for Baroque and Classical flute players were smaller than those faced by flutists performing in large symphonic orchestras with an extensive instrumental lineup. Moreover, the venues where they performed, chiefly Baroque churches and palaces with resonant acoustics, did not require the same amount of air as modern flutists need to exhale to produce sound while playing in concert halls that can accommodate several hundred, if not more, people.

The Baroque period was marked by the dynamic development of instrumental music. A great deal of suites and sonatas were composed, and the form of instrumental concerto evolved. Progress in improving the construction and expanding the technical potential of instruments resulted in the increased difficulty of performing the music written. Compositions included imitations of the sounds of nature: albeit with less complicated harmonies, these were pieces that required virtuoso musicianship, especially exceptional technical proficiency, which, for wind instruments, also meant breathing capacity.

The role of harmony and the structural quality of the composition are exceptionally important for the Baroque period. Virtuoso scales are characteristic of the quick sections in pieces, in which every note may have an important role in the harmonic sequence modulating to another key. The attached excerpts from Pierre-Gabriel Buffardin's *Concerto in E minor* (3rd movement) and J.S. Bach's *Flute Sonata in E minor*, BWV 1034 (2nd movement) may serve as examples.

(126) **Vivace**

pp

133

139

f

146

tr

152

158

tr

Fig. 3.1. P.G. Buffardin's *Concerto in E minor* (3rd movement)

Fig. 3.2. J.S. Bach's *Flute Sonata in E minor*, BWV 1034 (2nd movement)

Circular breathing can also be used for the works of the Classical period, especially orchestral compositions. A good example can be found in Ludwig van Beethoven's *Leonore Overture No. 3*, which requires the skill of effective management of the airflow. To play properly long phrases performed simultaneously with other wind instruments, control of intonation, volume, and adaptation to the collective interpretation of the piece are crucial. Similar challenges can be encountered in other compositions by Ludwig van Beethoven, such as the sustained notes at the opening of his *Symphony No. 4 in B-flat major*, Op. 60 and the flute solos in its second movement.

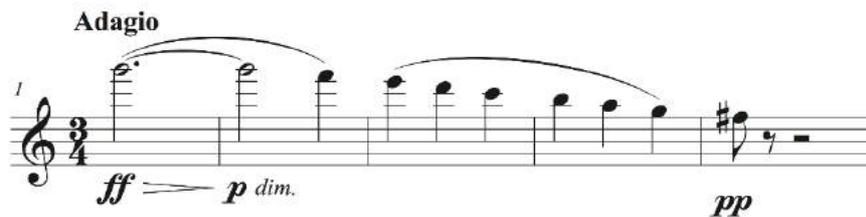


Fig. 3.3. L. van Beethoven, *Leonore Overture No. 3* Op. 72b



Fig. 3.4. L. van Beethoven, *Leonore Overture No. 3* Op. 72b

Romanticism

In 1832, Theobald Boehm (Böhm), a flutist and goldsmith from Munich, revolutionised the construction of the flute. The German inventor defined the length of the tube, matched the proportions of its length and diameter, and added a system of keys. This also changed the amount of air needed to obtain satisfactory sound.

Allegretto
rf
energico

(66)

69

71

73

Fig. 3.5. G. Briccialdi, *Il Carnevale di Venezia* Op. 78

Circular breathing can prove highly useful in Romantic and Impressionist works, performed on the Boehm flute. Rhythmic patterns, figurations, modulations, density of the sound, and the quick tempo of the virtuoso parts in the works of the Romantic era call for appropriate air management skills to sustain the required expression of the narrative and long phrases.

Impressionism

Impressionism is the time of colours in sound, in which timbre was treated as an independent means of expression. New timbres were sought, and dynamic and articulation differences were amplified. Modulation of a single sound in a piece from that time may develop the phrase in various ways. Depending on interpretation and context, a note may close a phrase as well as initiate another.



Fig. 3.6. A. Roussel, *Joueurs de flûte* Op. 27 nr 4: *Monsieur de la Péjaudie*

The opening of the *Prelude to the Afternoon of a Faun*, even though not encompassed with a single phrase mark by the composer, inspires the performer and the conductor to run it as an uninterrupted long musical thought. There are consummate interpretations of this solo part in which breath is drawn naturally, however, the skill of performing this orchestral fragment with the use of circulating is a precious advantage both for concert performances and orchestra auditions.



Fig. 3.7. C. Debussy, *Prélude à l'après-midi d'un faune*

The most important flute works in history whose composers make the performers use circular breathing technique are presented in Chapter 4. The scarcity of pieces using circular breathing composed before 2020 results from the lack of general awareness of the possibilities that the technique offers among performers and composers alike. One of the goals of the author's doctoral studies research was to fill this gap by working with composers and, together, discovering the value of circular breathing as a means of artistic expression and a performing skill. The effects of these works are presented in the next chapter and recorded on the doctoral CD as an artistic work that is the quintessence of this research.

Transcripts

Mainly due to the small number of works for flute using this technique, research and reflections on circular breathing started with the transcription of works composed for other instruments. Some of them are recorded on *Infinity* CD (DUX, 2019), which marks the beginning of the author's studies on circular breathing in playing the flute.

N. Paganini, *Moto perpetuo* Op. 11 for violin and piano (1835), *24 Caprices* Op. 1 for violin (excerpts)

The image displays a musical score for N. Paganini's *Moto perpetuo* Op. 11, consisting of eight staves of music. The tempo is marked 'Allegro'. The score begins with a treble clef and a common time signature (C). The first staff starts with a rest followed by a series of eighth notes, marked with a piano (*p*) dynamic. The second staff continues the eighth-note pattern, marked with a circled '4'. The third staff continues the pattern, marked with a circled '7'. The fourth staff begins with a circled '1' and continues the eighth-note pattern, marked with a piano (*p*) dynamic. The fifth staff continues the pattern, marked with a circled '13', and includes a *cresc.* (crescendo) marking and a *pp* (pianissimo) dynamic. The sixth staff continues the pattern, marked with a circled '16', and includes a *cresc.* marking. The seventh staff continues the pattern, marked with a circled '19', and includes a circled '2' and a *mf* (mezzo-forte) dynamic. The eighth staff continues the pattern, marked with a circled '22', and includes a *pp* dynamic. The music consists of a continuous eighth-note figure with various accidentals and dynamics.

Fig. 3.8. N. Paganini, *Moto perpetuo* Op. 11

According to the first and second law of thermodynamics, the construction of a perpetuum mobile – a self-sustaining mechanism – is not possible. The idea of such a machine, however, provided an inspiration for 19th-century composers, who sought to create a piece offering an impression of never-ending continuity. Written in 1835 by the renowned virtuoso of the violin, Niccolò Paganini, *Moto perpetuo* Op. 11 deserves the acclaim of a work that allows listeners to taste a fragment of eternity. The piece mesmerises, keeps the audience in full tension and focus without a slightest pause, modulating and searching constantly for an escape from the labyrinth of tonalities. Its technical difficulties require flawless performance skills and the ability to use a wide range of dynamic nuances and colours. Another challenge is the need to maintain sharp, distinct articulation. The piece is a technical challenge for strings, let alone the winds, who – besides the articulation, dynamic, and tonal difficulties – must constantly remember about the continuity of the airflow. The *Moto perpetuo* transcribed for the flute by the author of this dissertation became the opening piece for *Infinity*, the album inspired by the circular breathing technique. Paganini’s idea was to achieve an uninterrupted, undisturbed, and constantly modulating melodic line that seems to have no end. Any disturbance to this flow of notes – even being just taking a breath – would, therefore, disrupt his narrative.³³

Circular breathing can also be successfully used for many of Paganini’s caprices transcribed for solo flute.

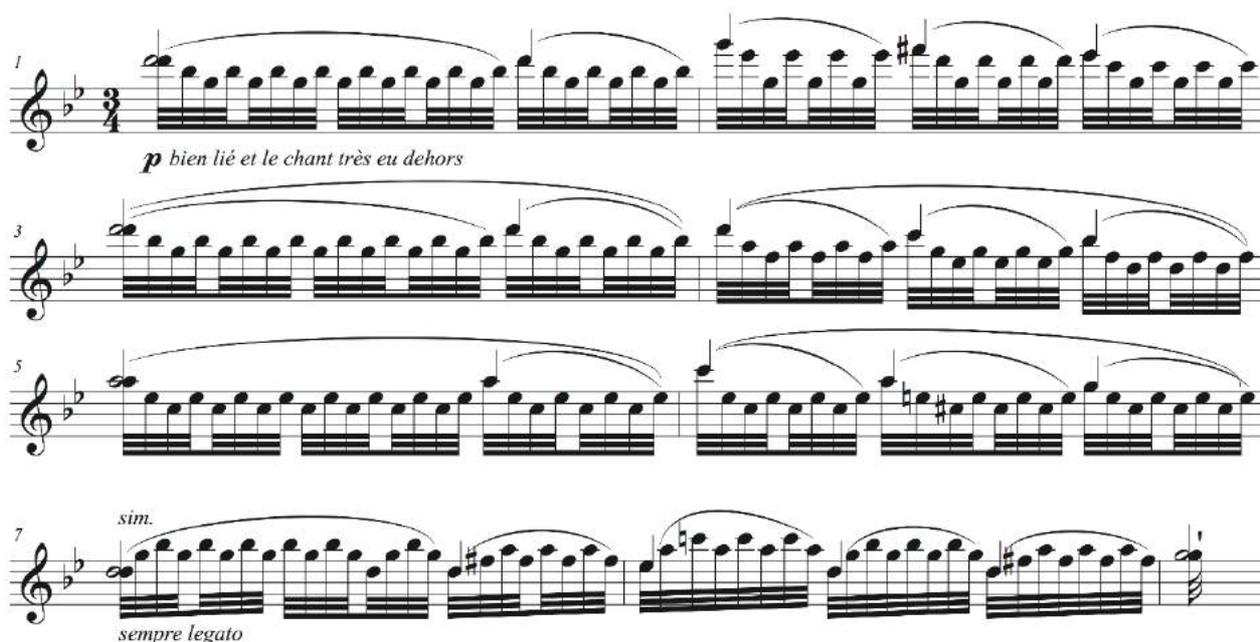


Fig. 3.9. N. Paganini, *Caprice No. 6* Op. 1 (transcription for solo flute)

An expert in exploiting the technique is also the French flutist Patrick Gallois, who has used circular breathing in his own transcriptions of Paganini's caprices for solo flute (No. 5 and No. 6 are worth special mention). *Caprice No. 5*, conceptually similar to the previously described *Moto perpetuo*, forces the performer to maintain a logical and uninterrupted phrasing in an unending stream of sixteenth notes. *Caprice No. 6*, in Gallois's transcription, uses two layers: the accompanying part played on the flute, and the singing part. Circular breathing is an excellent tool for sustaining an uninterrupted accompaniment line.

A. Pasculli, *Le Api* for oboe and piano (ca. 1905)

The image shows a musical score for A. Pasculli's *Le Api* for oboe and piano. The score is in G major and 2/4 time. It consists of six staves of music, numbered 11 through 26. The right hand plays a continuous stream of sixteenth notes, while the left hand plays a more melodic line. Performance instructions include *ppp e senza mai rallentare*, *ppp*, and *ppp senza rall.*. There are also annotations for "versione originale (oboe)" and "versione originale (oboe) - e sim.".

Fig. 3.10. A. Pasculli, *Le Api* (transcription for flute and piano)

The piece *Le Api* (*The Bees*), one of the most virtuosic works written for the oboe, is exceptional and worthy of special attention. The composer requires the performer to breathe permanently for several

minutes – imitating the buzzing of bees, depicting them through fast melodic and rhythmic passages interrupted by only one short pause.

This work has been transcribed many times for other instruments, including flute and piano (Jarzabek N., Świątek-Żelazna B., *Infinity. Circular breathing. Exercises, Etudes and Pieces*, 2020). The lack of a pause for taking a natural breath means that the performance of this piece on a wind instrument requires the use of the technique of circular breathing.

T.A. Vitali, *Chaconne in G-minor* for violin and piano

Fig. 3.11. T.A. Vitali, *Chaconne in G minor* (transcription for flute and piano)

The monumental, poignant opening section and the ensuing variations gradually build up tension, with each variation communicating a different mood and image, and therefore arousing a whole array of deep emotions in the listeners. The composition is known from its only extant copy, which was made most probably in Dresden between 1710 and 1730. It bears the name of Tomaso Vitalino. Its authenticity, however, has not been confirmed as some of its stylistic features, notably the modulations to the distant keys of B minor and E flat minor, go beyond the conventions of the Baroque period. Despite this, Vitali's *Chaconne*, published for the first time in 1867 by Ferdinand David, a violinist and Mendelssohn's friend, is enjoying enormous popularity among violinists, violists and cellists alike. Transcriptions of the piece for wind instruments are rare because the

variations, coming as they do directly one after the other, create a uniform, uninterrupted melodic line which does not allow the performer to take a breath. Moreover, it is also necessary to achieve an appropriate density of sound and to employ a rich timbral palette that would allow the expressive nuances to be differentiated. *Chaconne* was recorded by Natalia Jarzabek (flute) and Emmy Wils (piano) on the CD *Infinity* (DUX, 2019).

A. Pärt, *Spiegel im Spiegel* (1978)

Spiegel im Spiegel is among the most instantly recognizable works by the Estonian composer Arvo Pärt, in large measure due to the fact that it was used in soundtracks for many films, television programmes, as well as incidental music for the theatre and ballet. Written in 1978, shortly before the composer made Berlin his home, it was originally scored for piano and violin, but numerous versions for other instruments also exist. The work is an example of minimal, meditative music, whose hallmark is simplicity, both in terms of structure and tonality.

The title *Spiegel im Spiegel* in German can mean both ‘mirror in the mirror’ and ‘mirrors in the mirror’, and refers to the infinity of images produced by parallel mirrors. This effect is achieved by the composer through endless repetition of fragments of the piano part, with small variations, as if reflected back and forth. The texture is enriched by high, recurring notes in the upper register – *tintinnabuli* (from Latin *tintinnabulum* meaning ‘little bell’). The part of the violin (flute) is based on a slowly flowing melodic line, alternately rising and falling, descending to the note A. On each ascending and descending movement a successive note is added to the statement thus formed. It is this continuity and constant inversion, and the expansion of the melodic line coupled with the piano part, that creates a mood of perfect calm. There is no trace of dramatic tension or ambiguity, because of a sense of conviction that the music will always return to its ‘home’ tonality. The emotional character of the piece is derived from an atmosphere created by the music’s simplicity and pure tone. As a result, the music speaks for itself, without any need for over-interpretation. The path charted by the composer should be followed, while communicating a part of oneself in the music. The present CD features a transcription of the work for alto flute and piano. The use of circular breathing makes it possible to perform long phrases without dividing them in order to take a breath, something that could break up

the continuous line of successive notes, as marked by the composer's articulatory directions, and in this way distort the character of the piece.

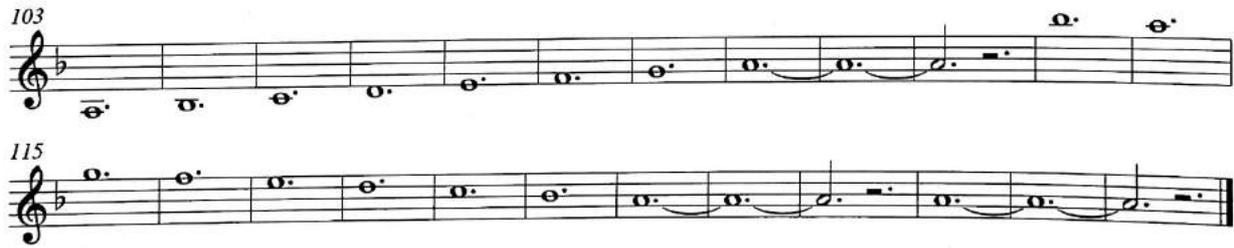


Fig. 3.12. A. Pärt, *Spiegel im Spiegel* (transcription for alto flute and piano)

Circular breathing is used in many other transcriptions, such as César Franck's *Sonata in A major* for violin and piano or Aram Khachaturian's *Violin Concerto in D minor*³⁴.



Fig. 3.13. C. Franck, *Sonata in A major* for violin and piano (transcription for flute and piano)

119 **Allegro**

sempre *ff* *dim.*

123 *dim.*

126

129

Detailed description: The image shows a musical score for a flute and piano transcription. It consists of four staves of music. The first staff starts at measure 119, marked 'Allegro'. The key signature is D minor (one flat, one sharp). The time signature is 4/4. The first staff contains a melodic line with a 'sempre ff' (sempre fortissimo) marking and a 'dim.' (diminuendo) marking. The second staff starts at measure 123 and features a rhythmic pattern of eighth notes with a 'dim.' marking. The third staff starts at measure 126 and continues the melodic line. The fourth staff starts at measure 129 and concludes the passage.

Fig. 3.14. A. Chaczaturian, *Violin Concerto in D minor* (transcription for flute and piano)

CHAPTER 4

Circular breathing as a means of expression in 20th- and 21-century works

With the advent of the 20th century came a plethora of diverse quests for a new musical language. Composers have sought seek individual solutions and colours, and new performing techniques on instruments, presenting performers with ambitious challenges in phrasing and the application of contemporary playing techniques. The multitude of directions in these explorations requires that instrumentalists master various performing techniques. At times, the composer leaves the performer with freedom regarding the execution of particular fragments: for example, in music with graphic notation. In such cases, the performer's imagination and extensive skills have a strong bearing on the final form and sound of the piece.

Presented below are examples of compositions from the 20th and 21st centuries, in which composers indicate the possibility, and sometimes the necessity, of employing circular breathing. They are accompanied by an analysis and description of the influence of this technique on their final form. The most diverse of them (marked ) that also present various perspectives on circular breathing, have been recorded and included as artistic achievement on the enclosed album.³⁵

Past works

Konrad Lechner, *Drei Stücke* (1972)

One of the first pieces written for the flute, in which the composer requires that the instrumentalist applies circular breathing, is Konrad Lechner's *Drei Stücke*. Aurèle Nicolet included it in the collection *Pro Musica Nova. Studium zum Spielen Neuer Musik*, and its third movement – *Kontinuum* – is an exercise in circulation.

This is how Nicolet describes his exercise:

Kontinuum – exercises for improving the skill of circular breathing:

1. Do not use the flute, but insert a straw into a glass of water: blowing into the straw, draw the air in through the nose, continuing to blow at the same time, using the air gathered in your mouth.
 2. Do the same, using an oboe or bassoon reed.
 3. Using only a flute headjoint, start making sound with trumpet embouchure, and follow on to a regular attack.
 4. With you flute assembled completely, start making the sound with trumpet embouchure, and follow on to play long piano sounds in the third octave.
- » Maintain a constant *legato*, either without dynamic changes or, at most, with tiny, imperceptible impulses on the suspended notes.
- » If *Kontinuum* is performed without circulating, the intention of the continuum must nonetheless be clear: the pauses for breath should be as short and inaudible as only possible (you need to breathe through the nose!). The breath should take place between the suspended notes or in moments that are not dynamically accented (between the waves of the melody).
- » To keep an ordered flow of time in the piece, it helps to use your pencil to divide the seven bars into seven equal parts.

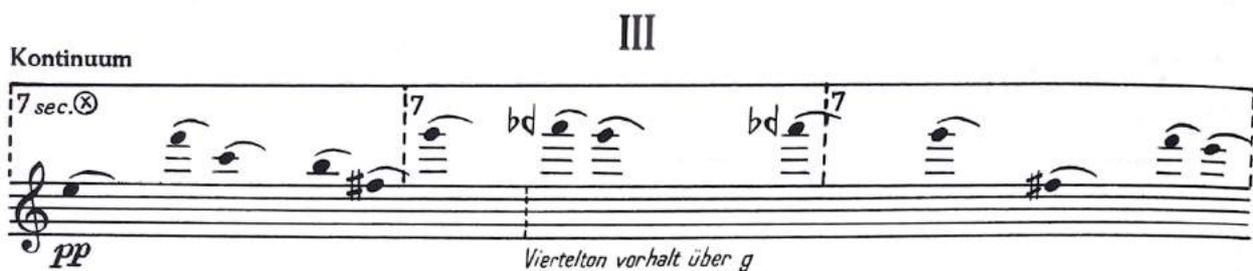


Fig. 4.1. K. Lechner, *Drei Stücke*, 3rd movement: *Kontinuum*

Circular breathing as a means of expression in a composition

This piece (particularly the *Kontinuum* movement) exhibits distinct characteristics of an étude. The composer treated circular breathing as an innovative technique (especially among flutists), and this simple exercise aims to refine this technique without other technical difficulties. Performing *Kontinuum* as intended by the composer allows for the creation of a long phrase, impossible to achieve when pausing to draw a natural breath. The composition straightforwardly demonstrates how circular breathing enhances the performer's phrasing possibilities. The exercise employs dissonant

intervals seeking resolution (which never comes), quarter tones, as well as pure intervals only making brief appearances. The harmonic structure of *Kontinuum* justifies its name as the melody never reaches a final tonal resolution, and circular breathing serves as a tool allowing the flutist to maintain a coherent musical narrative.

István Matuz, *Studium 1/974* (1974)

The following piece, *Studium 1/974* by a Hungarian composer, István Matuz, is exceptional as its entire construction is built and maintained by circulating. The composition shows the mutual interpenetration of the artist and the piece he performs. The structure of the composition accounts for the musician's natural breath, his or her heartbeat, and unity with the sound. The innovative use of fingering, preparation of the instrument, and the performing techniques made it possible to write an exceptional piece that is an important item in the history of world flute literature.

This is how the author explained the process of composition in the introduction to his piece:

On 20th January 1974, after three weeks of intense searching, thinking and experimentation, I managed for the first time to blow and inhale simultaneously without the sound stopping. (...)

It was a marvellous moment... and I suddenly had the idea for a flute piece based on this new technique, circular breathing. Within a couple of hours the first version of *Studium 1/974* was ready. (...)

L(élek)zem is a beautiful Hungarian word (coined from *lélegzem* meaning "I am breathing"). In this coinage the first two syllables mean "spirit, soul", and without the initial "L" the meaning is "I live".

Time indications are approximate but the performer should take into consideration their respective proportions. In case of difficulties performing time can be shortened by following *ossia* passages. Since high registers require greater and greater energies, the pulsing of circular breathing becomes faster and faster. This is done on purpose, and originates from the essence of the piece. Volume depends on the given fingering, multiphonics and the breathing. (...)

L(élek)zem is a challenge not only instrumentally and physically but also mentally. Its performance is a test of fight and will-power.

Fig. 4.2. I. Matuz, *Stadium 1/974 ...L(élek)zem...*

Circular breathing as a means of expression in a composition

The piece begins symbolically with audible inhalations and exhalations. About 50 seconds into it, it smoothly transitions from noise to the note E¹, which marks the beginning of a 10-minute glissando, climbing up to B³. This is an exceptionally intriguing compositional idea, which fluidity remains unachievable without the application of circular breathing and proper fingering. The composer suggests multiple fingerings, even three or four within a half-step, to achieve seamless connections between notes. The construction hinges on the use of circular breathing, as it allows continuous delivery of sound throughout the piece. The ingenious incorporation of singing in a way masks the imperfections in the quarter-tone connections when fingering is being changed. However, the composer does not indicate specific breathing points, leaving this choice to the performer's discretion. Innovative performance techniques make it possible to adhere to the composer's intention and portray not only the human body while performing the piece, but also the breath – both circular and natural – singing, the unity of the flutist and the instrument, maintaining infinite tension throughout the performance. Such a performance of this piece is a significant challenge for the flutist in terms of endurance, as it requires exceptional control, knowledge of their body's capabilities and capacity, and proficient use of circular breathing appropriately distributed in time to the like of a long-distance run.

Transcription of *Studium 1/974* for glissando headjoint (excerpt)

The glissando headjoint, which could significantly contribute to smoother glissando execution between certain notes, did not yet exist in 1974. The author of this dissertation decided to use it creatively for creating a transcription of a short excerpt from *Studium 1/974* – involving a glissando spanning a perfect fifth performed on the glissando headjoint. This concise excerpt serves as an excellent example of applying circular breathing in microtonal connections of notes. The transcription also considers the change in the way singing is used for connecting notes. Whereas two scales can be chosen from, the original version was designed for male flutists and does not fit within the female range.

Circular breathing as a means of expression in a composition

This technique enables sustaining uninterrupted sound during a smooth performance of a glissando, thus becoming fundamental for the composition. It makes it possible to hear microtonal connections between notes, not only within the spectrum of the 12-tone scale. The simultaneous use of singing and glissando produces an extraordinary sound effect.

Karlheinz Stockhausen, *In Freundschaft* (1977), *Xi* (1986)

In Freundschaft (*In Friendship*) is a composition by Karlheinz Stockhausen for a solo instrument. Initially written in 1977 as a birthday gift for clarinetist Suzanne Stephens, it was performed in its flute version on her birthday (28 July) in 1977. Subsequently, at the request of musicians, the piece was arranged for almost all wind instruments used in the orchestra.

The work is an example of a formula composition, starting with a basic motif that is later augmented by two contrasting, cyclical layers interrupted by cadences.³⁶

Xi with microtones was composed in 1986, and its flute version followed in 1987. The title comes from the Greek language, and indicates an unknown quantity. The opening of the piece evokes a sense of fluctuating waves, rising clouds, soaring seabirds, swelling waters, and eye-dazzling horizons with dark, heavy contours of passing vessels. The impression results from the use of microtonal glissandi along the instrument's range³⁷.

Fig. 4.3. K. Stockhausen, *In Freundschaft*

Circular breathing as a means of expression in compositions

This technique primarily aims to create seamless connections between the notes in sustained glissandi and achieve extended phrases using multiple contemporary playing techniques.

Robert Dick, *Flames Must not Encircle Sides* (1980)

By using continuous circulation of air and proprietary fingerings for harmonics, Dick obtained a new palette of timbres and continuity of narrative in his *Flames Must not Encircle Sides*.

To quote the composer:

Flames Must not Encircle Sides is made of multiple tremoli. These are sustained by means of circular breathing. The flutist must use circular breathing, as breaking up the flow of the long phrases is not musically acceptable. The flutist has a high degree of freedom in this work, both in improvising melodic lines using given pitch as timbral materials, and, to some extent, in shaping proportions within the work's sections. The performer must strive to create an interpretation that is logical and musically tasteful throughout. (...) The piece is concerned with elisions between trills of pitch and trills of timbre, and with the illusion as to how many players seem to be performing and where they appear to be located in space³⁸.

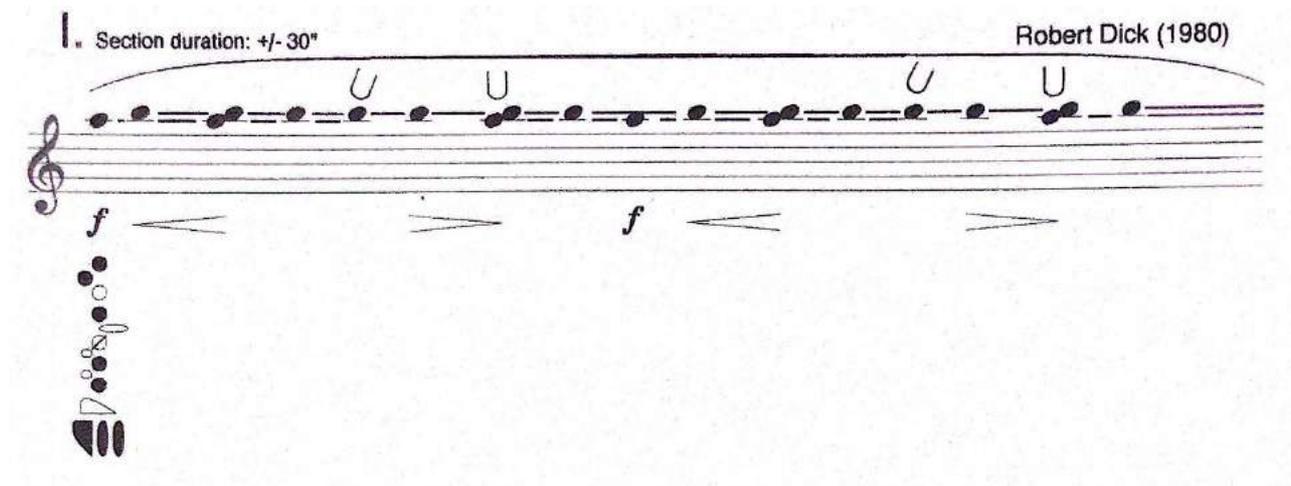


Fig. 4.4. R. Dick, *Flames Must not Encircle Sides*

Circular breathing as a means of expression in a composition

Robert Dick divided the composition into nine sections, each of them being an autonomous musical idea that should be performed with the use of circular breathing. The composer provides fingerings that allow achieving the appropriate harmonics, overblowings, multiphonics, and quarter tones. Successive notes seem to evolve from the previous ones thanks to the precise shaping of the airflow, a feat that would be impossible over such extended passages without the use of circular breathing. The flutist can smoothly transition through a series of harmonics free from the concern about running out of breath. In this way, circular breathing grants the flutist an expressive freedom while performing, and the space the composer left for improvisation allows for the creation of an individual interpretation of the piece, particularly as far as building tension and tonal colours are concerned. In this piece, circular breathing serves as a tool to extract a unique palette of tonal colours from the instrument.

Gergely Ittzés, *Projections* (1992–93)

The composer remarked in the introduction:

Projections borrows both its title and the structure of its elements from visual patterns. An object casts different shadow depending on where the light comes from, apparent distances change in perspective; intervals, durations and timbres are varied here in the same way. In the centre of the piece there is a section where all

twelve chromatic notes appear over a continuously held A. This gesture symbolises the completion of the two-part possibilities of the flute³⁹.

The image shows a musical score for a flute. The top staff is in treble clef with a key signature of one sharp (F#). It begins with a whole note A (C2) marked 'senza vibrato'. At measure 122, marked 'cca. 122', a chromatic scale of twelve notes is played over the sustained A. The notes are: Bb, B, C, C#, D, D#, E, E#, F, F#, G, G#. The chromatic scale is marked 'pochissimo cresc. continuamente'. The sustained A is marked 'sempre tenuto'. The bottom staff shows a chromatic scale of twelve notes: Bb, B, C, C#, D, D#, E, E#, F, F#, G, G#. The notes are marked with fingerings: Bb (b), B (a), C (Ds), C# (b), D (a), D# (E), E (D), E# (b), F (a), F# (Ds), G (b), G# (E). The bottom staff also has a '(poco cresc.)' marking.

Fig. 4.5. G. Itzès, *Projections*

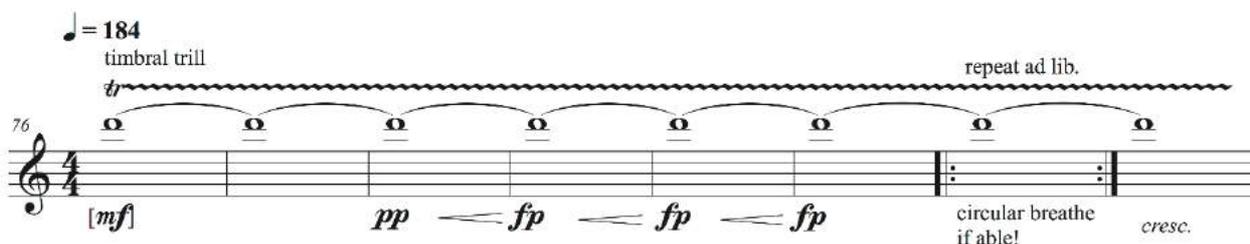
The intervals, proportions, and timbres in *Projections* differ in the way apparent distances do in perspective, similar to the shadows cast by physical objects when the source of light moves.

Circular breathing as a means of expression in a composition

The sound is sustained continuously by circular breathing in the middle section of the composition. At the same time, based on the continuing sound, additional tones, executed in the pitch and rhythm specified by the composer, emerge. This results in an effect similar to that achieved on instruments built of multiple pipes, e.g., the launeddas and the argmul. In their case, one pipe maintains a continuous sound, while another delivers the melody. Yet Itzès achieves this effect using a single body of a modern flute. Circular breathing makes a reference to the tradition of playing ethnic instruments while providing a contemporary flutist with the ability to produce two independent melodic lines.

Ian Clarke, *The Great Train Race* (1993)

This is one of Ian Clarke's most famous pieces. The composer himself called it the "showpiece for the flute as you don't usually hear it". Clarke perfectly exploits contemporary performing techniques: multiphonics, harmonics, flutter-tonguing, and playing with simultaneous singing to present the image of the great train race indicated in the title. The culmination comes in the microtonal trill, in which the composer gives the performer a liberty to sustain it – potentially by circular breathing – as long as it is feasible. This is how the familiar view of a train passing by an infinite number of sights on its way is reflected in music.



The image shows a musical score for a flute part. It begins with a treble clef, a 4/4 time signature, and a tempo marking of quarter note = 184. The score starts at measure 76. The first measure has a dynamic marking of *[mf]*. The following measures show a series of notes with slurs and dynamic markings: *pp*, *fp*, *fp*, and *fp*. Above the notes, there is a wavy line labeled "timbral trill". The final measure of the sequence is marked "repeat ad lib." and includes the instruction "circular breathe if able!". The score ends with a *cresc.* marking.

Fig. 4.6. I. Clarke, *The Great Train Race*

Circular breathing as a means of expression in a composition

The culminating moment of the composition is a microtonal trill, in which the composer leaves the possibility of sustaining it up to the performer – potentially with the use of circular breathing – for the longest possible time. In this way, the familiar sight of an endless passing train, passing by various objects along the way, finds an evocative reflection in the music. The application of this technique here is tour de force for the flutist's skill as the passage represents the climax of a consistent *accelerando* imitating the train's acceleration, and the trill itself illustrates its full speed. Ever so often, the train passes by an object, which the composer reflects through sudden accents, that can only be rendered through circular breathing, after gathering an ample supply of air. The trill should be sustained as long as possible, and just when the listener believes that the flutist has reached the limit of their capacity, contrary to all expectations – thanks to this "magic" technique – the flutist still possesses enough air to slow down the trill until the train has come to a complete standstill, and subsequently continue playing, without any sign of fatigue.

Isang Yun, *Étude No. 5 (Allegretto)* (1974)

Étude No. 5 Allegretto for solo flute by South Korean composer Isang Yun is an East Asian piece that uses 20th-century European composing techniques. Even though the use of circular breathing was not indicated by the composer, it is a technique that can become handy to increase the dramatic tension, expand the palette of timbre, and ensure correct information in fragments that require special attention. Despite the lack of formal division into movements, the composition consists of three contrasting sections. Two of them, fortissimo, consist of fast scales connected with long tones, which gives an impression of a never-ending phrase and offers a variety of interpretation options for the performer. The contrasting central part is peaceful and yet highly colorful in its use of various contemporary performing techniques ranging from glissandi via flutter-tonguing to harmonics.

Circular breathing as a means of expression in a composition

Although the use of circular breathing technique is not indicated by the composer, the performer can use it to build a greater dramatic expression, expand interpretive possibilities and tonal range, and also to maintain proper intonation in particularly demanding passages. Due to the harmonic structure of some sections, the piece offers a splendid example of the different ways how the performer can shape the phrase depending on the treatment of sustained notes. Circular breathing allows the accumulation of an air supply sufficient to make the long notes vibrant, engaging, and evolving into further passages. This is the interpretation that the composer himself indicates with dynamic signs.

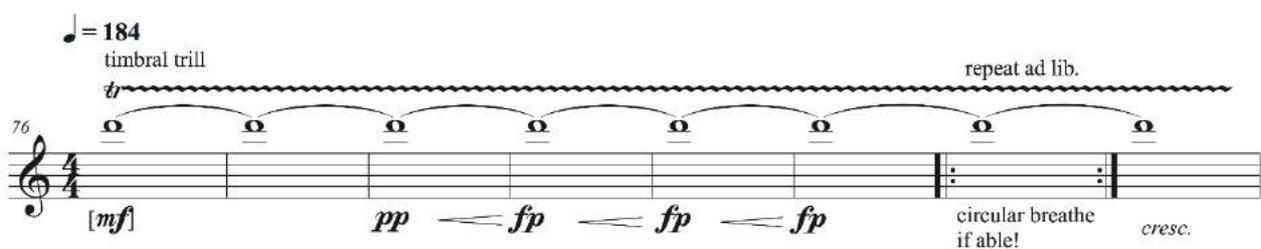


Fig. 4.7. I. Yun, *Étude No. 5*

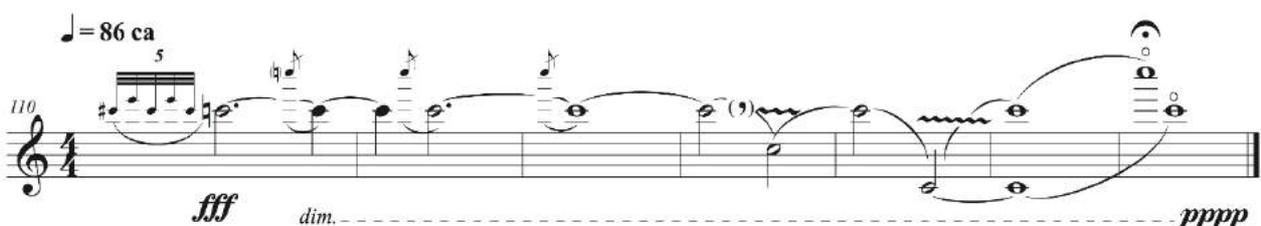


Fig. 4.8. I. Yun, *Étude No. 5*

Leszek Wojtal, *Z głębi pustej doliny* (2019)

The piece *Z głębi pustej doliny*, i.e. “from the depth of an empty valley” is an expression of sonorous inspirations in searching not for new ways of producing music but rather for developing the shades of the timbre and mood, and a plastic music image. The sonic actions are limited by sections of defined duration. This is one of few parameters to be precisely defined. The others are improvisable, to be created according to the interpreter’s inventiveness. Circulating is a particular artistic value serving continuity of the action and phrases, and a significant assistance in cooperating with the pianist.

The image displays three systems of musical notation for flute (fl.) and piano (pf.). Each system consists of a flute staff and a piano grand staff. The first system features flute dynamics of *mp (mf)*, *f (sf)*, *mp*, *sf*, *mp*, *f*, *mp*, and *sf*. It includes markings for 'ord.', 'frull.', and durations of 3", 2", and 3". The piano accompaniment starts with *f* and includes a '8' marking. The second system shows flute dynamics of *mp*, *sf*, *p*, *f*, *mp*, and *p*. It includes 'frull.', 'ord. b', and durations of 3", 4", 3", and 2". The piano accompaniment features 'sempre f' and an '8' marking. The third system has flute dynamics of *f*, *mp*, *sf*, *sf mp*, and *sf*. It includes 'frull.', 'ord.', and an '8' marking. The piano accompaniment includes an '8' marking.

Fig. 4.9. L. Wojtal, *Z głębi pustej doliny*

Circular breathing as a means of expression in a composition

This composition is a perfect demonstration of how circular breathing arms the flutist with full readiness to take action – together with the pianist – after an improvised passage. This example clearly demonstrates that the flutist is responsible for maintaining the narrative and the tension through tremolos following a short, accented vertical chord performed with the pianist. This section is meant to evoke sudden, poignant punches disrupting the static musical texture. Circular breathing allows the melding of these layers and an immediate reaction from the performer. The continuous flow of action and phrases make the use of circular breathing a particular artistic advantage as it also greatly facilitates collaboration with the pianist.

Pieces dedicated to *Infinity Project*

Zoran Novačić, *Fish in an Aquarium* (2017) 

The piece illustrates the adventures of fish in an aquarium. Carefully selected harmony “of the deep”, changes of registers, and varied dynamics give the piece its form, as well as lightness and positive disposition. Various configurations of articulation (especially in the highest register, most convenient for such practice) help to improve the combination of natural and circular breathing.

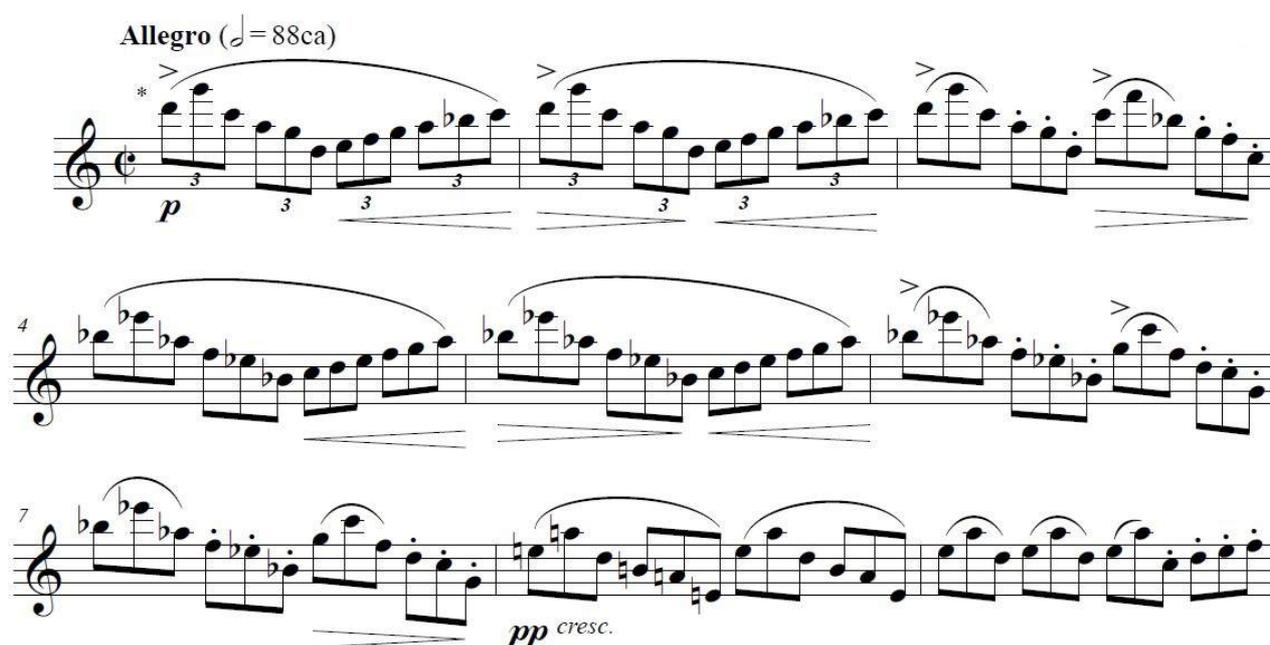


Fig. 4.10. Z. Novačić, *Fish in an Aquarium*

Circular breathing as a means of expression in a composition

A piece was commissioned by Natalia Jarzabek from Croatian composer and conductor Zoran Novačić as a short composition: an étude alluding to the technical challenges that a flutist may encounter, for instance, in *Étude No. 3* from Joachim Andersen’s collection of *24 Études for Flute* Op. 15. Both works make it hard to find appropriate places to draw a breath, as the way the melodic line modulates forces the performer into an uninterrupted continuation of the musical idea. Novačić selected the harmony skilfully to maintain the progressing narrative and at the same time convey its “submarine” character. The piece is included in the collection of exercises, études, and compositions

titled *Infinity. Circular Breathing*, where it is accompanied by circular breathing instructions and has the optimal places for employing circular breathing indicated.

Dimitri Arnauts, *Weird Bird* (2018)

Weird Bird is a piece composed by Dimitri Arnauts. The Belgian composer dedicated it to the *Infinity Project* as a surrealistic portrait and a humorous contemporary version of the tradition of imitating and portraying bird songs in music. The bird it presents is quite peculiar as it quickly escapes the cage of classical piano harmonies to fly freely, singing strange chromatic melodies over unconventional and restless piano chords. The longest flute phrase in this score consists of nearly 290 notes, which does mean that the composer makes use of the capacity offered by circular breathing and the performer has new expressive options opening before them. This piece was recorded by the author of this dissertation on *Infinity CD* (DUX, 2019).

163 a tempo

mp *cresc.*-----

The musical score consists of four staves of music. The first staff begins with a treble clef, a key signature of three sharps (F#, C#, G#), and a 3/4 time signature. The tempo marking is 'a tempo'. The dynamics are marked 'mp' (mezzo-piano) and 'cresc.' (crescendo), with a dashed line indicating the crescendo continues. The melody is highly chromatic and features many slurs and ties. The second staff continues the chromatic descent. The third and fourth staves show a shift in the melodic contour, with some notes marked with an asterisk (*), possibly indicating specific performance techniques or breath marks. The overall texture is dense and rhythmic.

Fig. 4.11. D. Arnauts, *Weird Bird* (excerpt)

Circular breathing as a means of expression in a composition

As composer Dimitri Arnauts combines contemporary performing with the echoes of Baroque tradition in his works, the author of this dissertation asked him to compose a piece for the *Infinity* Project that would make a reference to the use of circular breathing in Baroque compositions yet in a contemporary form. The harmony chosen by the composer is sufficiently suggestive to evoke associations with early music, even if the natural melodic flow is from time to time disrupted by a note from outside the tonality, creating a musical joke consistent with the title of the piece. Circular breathing allows for uninterrupted execution of the longest passages, analogous to the excerpts from Baroque music discussed in Chapter 3 of this thesis.

Marcel Chyrzyński, *Haiku no. 3* (2018)

Haiku No. 3 for solo flute, composed by Marcel Chyrzyński and dedicated to an author of this book, alludes to the original Japanese poetic form. The manner of performing individual fragments and the mood that the composer builds are clearly defined. That is why the performer has little space for exaggerated interpretation of the piece that stimulates various emotions in the listener. The composer builds contrasting images, based on the idea of a never-ending phrase and continuous pursuit of the harmonic tonic, emphasising the continuous passage of time. That intention can only be rendered by a performer applying circular breathing, as it allows to avoid all disruptions⁴⁰.

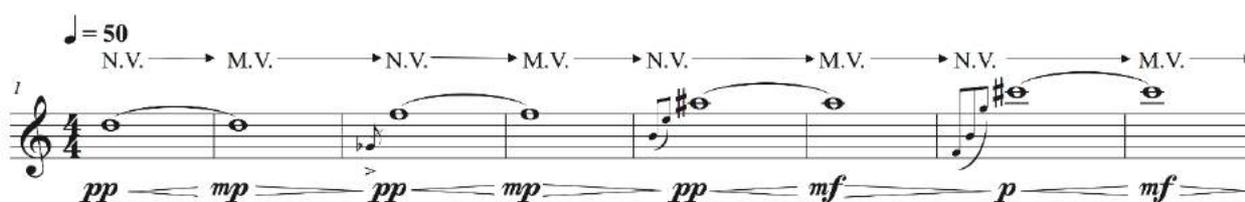


Fig. 4.12. M. Chyrzyński, *Haiku no. 3*

Circular breathing as a means of expression in a composition

The piece consists of five internal quasi-movements separated with clear musical breaths, and a return to the local tonality. From the point of view of circular breathing, the first and last sections are of particular significance, as they only assume their full form when conducted by a coherent musical thought without interruptions for natural breathing. In the first excerpt, the progressively added notes – especially the ornaments – create harmonies that strive for resolution that does not occur nonetheless. This is the circular breathing that allows to maintain their continuity. The local climax

of this section comes in bar 12, which the composer constructed using dynamics and pitch of the notes, one resulting from another. The last excerpt is a series of sixteenth-note sextuplets that constantly accelerate and modulate, allowing the performer to demonstrate their full technical capacity and lose themselves in the ever-changing harmony. At an appropriately fast pace of performing, the sounds imitate arpeggios spread across violin strings, enabling a purely harmonic treatment of this part of the piece, and circular breathing enables smooth transitions from one harmony to another. Thus, it significantly enhances the performance capabilities of the flute. After a wild progression, the flutist slows down, gradually returning to what seems to be the tonic. However, just at the moment when the listener expects to hear the resolution of the final chord, a suspended arpeggio comes, its last chord posing a question that you need to find the answer yourself.

Tim Mulleman, *Take My Breath Away* for flute and piano (2018)

To quote the composer:

Take My Breath Away was written for Natalia Jarzabek and Emmy Wils in 2018 to commemorate the centenary of Poland's regained independence. Indeed, that breath had been taken away from the Polish people by the oppressive partitioning powers for 123 years. On the other hand, the *Infinity* Project draws inspiration from the technique of circular breathing, rarely used in flute playing. With each circular breath, the flutist not only extends their phrases and pleas but also symbolically postpones the drawing of their last natural breath. It is a noble attempt to delay and hoodwink fate, an effort to surpass yourself while giving the impression that the breath has been taken away from both the performer and the listener.

The author of this dissertation recorded the piece on *Infinity* CD (DUX, 2019).

Circular breathing as a means of expression in a composition

The essence of the piece lies in running two equally important parts of the flute and the piano, consistent in developing a shared musical phrase. By applying circular breathing, the flutist can match the pianist's phrasing without the need to interrupt it with natural breaths. This technique also allows the performer to sustain long continuous notes and trills, and also to explore interesting timbres and their combinations, as proved in the flute cadenza. Last but not least, circular breathing also holds a symbolic significance in the piece, a fact the composer mentioned in his description of the piece.

Calmly floating (♩ = 70)

11 *pp* int. air NV int. air breathy *p* very smooth, no accents

13

14 free acc. 4:3 gradual overblowing into harmonics *sf*

15 ord. *p* very smooth again 4:3 poco cresc. 5:3

16 gradually aggressive overblowing. Experiment! 5:3 6:3 7:3

Fig. 4.13. T. Mulleman, *Take My Breath Away*

Ilio Volante, *La Musica delle forme* (2018) 

The work originated from the composer's love of quantum mechanics, describing the structure of the universe as a model of multi-dimensional vibrating strings. The title, "the music of the shapes", describes the form of the composition and provides an allusion to quantum theory. Application of

circular breathing helps to maintain the continuity of the narrative and harmonic transformations. The trills and scales in the piece are suggested moments for starting circular breathing. Numerous changes of the dynamics are intended to increase the awareness of applying circular breath in different dynamics.

Circular breathing as a means of expression in a composition

The small-range passages and trills in the composition suggest potential places for initiating circular breathing. The numerous dynamic changes intend to enhance the performer's awareness of circulating their breath in various dynamics.

The musical score is written in 4/4 time. At the top left, it specifies a tempo of $\text{♩} = 110$, which then changes to $\rightarrow \infty$. The score is divided into four systems, each starting with a measure number (1, 5, 8, 11). The first system begins with a piano (*p*) dynamic and a trill. The second system begins with a forte (*f*) dynamic. The third system begins with a piano (*p*) dynamic and a trill. The fourth system begins with a mezzo-forte (*mf*) dynamic and a trill. The score includes various slurs, trills, and dynamic markings.

Fig. 4.14. I. Volante, *La Musica delle forme*

Natalia Jarzabek, *Windspire* for flute solo (2020)

The étude aims to make the performer aware that circular breathing is independent from playing on both melodic and rhythmical planes. The slurs are placed to shift the accents of the melody at a

quick tempo, requiring circulating to take place in the middle of the slurred phrases. The étude should be performed lightly and smoothly, with an appropriate swing and yet with superb musicianship, with contrasting dynamic differences.

The image displays a musical score for N. Jarzabek's 'Windspire' in treble clef. The score is divided into six systems, each starting with a measure number in the left margin:

- System 1 (Measures 6-8):** Starts with a dynamic of *mp* (mezzo-piano) and transitions to *mf* (mezzo-forte). The music features slurred eighth-note patterns with accents.
- System 2 (Measures 9-11):** Features a dynamic of *f* (forte) with slurred eighth-note patterns and accents.
- System 3 (Measures 12-14):** Features a dynamic of *espressivo* with slurred eighth-note patterns and accents.
- System 4 (Measures 15-17):** Features a dynamic of *ff* *brillante* (fortissimo brillante) with slurred eighth-note patterns and accents.
- System 5 (Measures 18-20):** Features a dynamic of *meno mosso* (meno mosso) with slurred eighth-note patterns and accents.
- System 6 (Measures 21-23):** Features a dynamic of *mf* (mezzo-forte) with slurred eighth-note patterns and accents.

Fig. 4.15. N. Jarzabek, *Windspire*

Circular breathing as a means of expression in a composition

Circular breathing provides the performer with the liberty and independence in executing fast passages, at the same time allowing to maintain narrative continuity.

Jailton de Oliveira, *Floating Landscapes* for flute solo (2020) 

To quote the composer:

The piece was composed as an étude to practice the technique of circular breathing. It has a single movement divided into five long phrases. The title is a metaphor for the form of the piece and for the way the sounds are normally produced on the flute, where landscapes are represented by the musical phrases that contain sounds that “float” in the air in a flow that is produced and controlled by the performer. However “floating” also has connotations with something that circulates, e.g. an idea, providing an analogy to circular breathing. There are no bar lines in the piece. The rhythmic combinations have a freer, asymmetrical flow as they follow the internal structure of each phrase. The piece explores various nuances of dynamics (from ppp to f) in a slow rubato tempo, with a predominance of softer sounds. The piece aims to increase the performer’s awareness of applying circular breathing over large intervals, and to develop phrase-building logic and its application.



Fig. 4.16. J. de Oliveira, *Floating Landscapes*

Circular breathing as a means of expression in a composition

The composition follows the style of Impressionistic music as it extends the instrument's range by incorporating quarter-tones. Circular breathing serves as a tool for the construction of musical phrases lasting c. 30 seconds (similar to the examples provided in the Impressionism section in Chapter 3). The harmonic structure of each sentence is designed to lead to a tonic resolution, which is achieved in each case. Circular breathing allows for control over intonation and dynamics, and also manipulation of the tone colour of sustained notes, with no concern about running out of breath. This grants the performer freedom and significantly expands their capabilities.

Adam Porębski, *FluteDiving* (2020)

To quote the composer:

The title *FluteDiving* is an allusion to the freediving technique. The idea is to go under the water on a single breath without any equipment. *FluteDiving* for solo flute portrays that form of diving in which the diver strives to reach the greatest depth. This requires withholding the breath, going down under and remaining under the water for many minutes. In a symbolic manner, the piece speaks of the trip into the deep and leads the listener/viewer through successive stages:

- » initial hyperventilation, alluded to by increasingly shorter phrases, separated with pauses for inhaling
- » the leap into the water: the high, long and piercing tone b3
- » going down into the depths of the ocean: series of semiquavers played ever lower and lower, and slower and slower, until the lowest register has been reached
- » the slow decompression: development of the motif from c
- » increasing speed, while swimming up to the surface: a gradual reduction of the motif to two repeated tones turning into a trill
- » drawing your desired breath.

For objective reasons, it is impossible to play a three-minute-long demanding phrase on a single breath. This can, however, be obtained thanks to circular breathing, which also offers (not only visual) simulation of the diver's bated breath.

The image displays a musical score for a piece titled "Flute Diving" by Adam Porębski. It consists of four staves of music, each beginning with a measure number (26, 28, 30, 32) and a tempo marking (♩ = 100, ♩ = 90, ♩ = 80). The score is written in treble clef and includes various dynamics such as *mf*, *mp*, and *p*. It also features performance instructions like *rit.* (ritardando) and *gliss.* (glissando). The music is characterized by complex rhythmic patterns and a continuous flow of notes, typical of a piece designed for circular breathing.

Fig. 4.17. A. Porębski, *FluteDiving*

Circular breathing as a means of expression in a composition

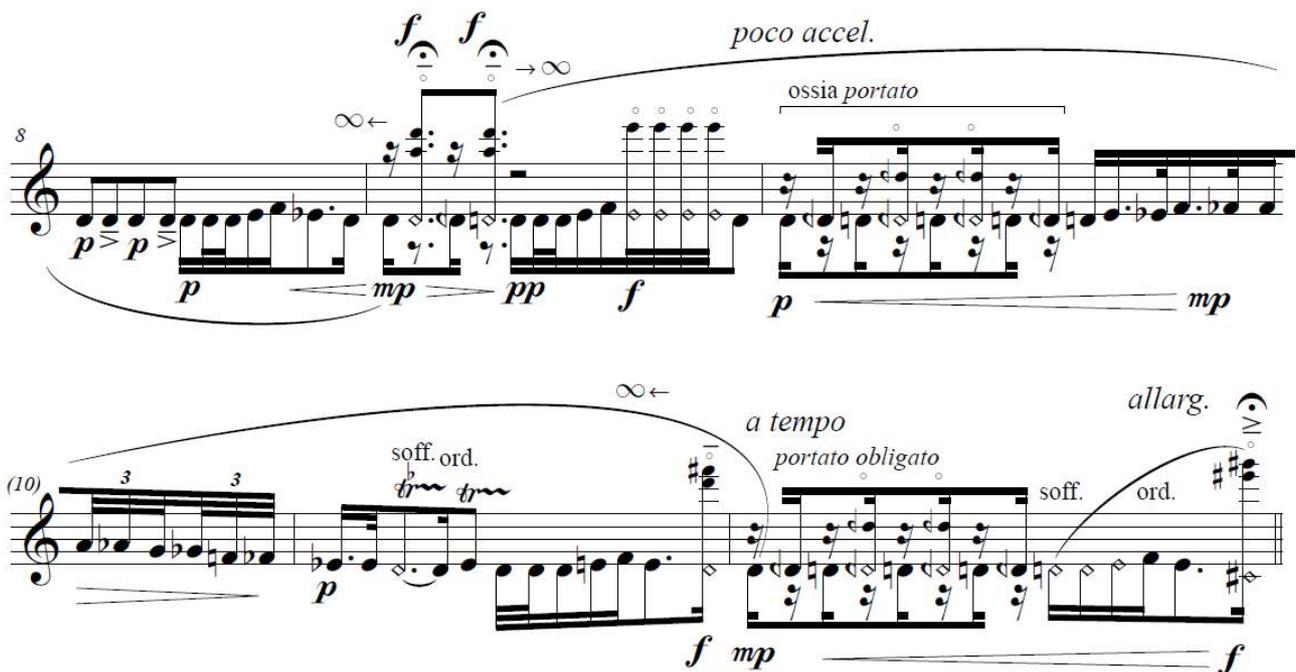
The piece was commissioned by Natalia Jarzabek from the Wrocław-based composer Adam Porębski. The goal was to create a composition treating circular breathing as one of the contemporary performance techniques, the whole forming a colourful musical story impossible to reproduce without the use of this technique. The composer took these guidelines quite literally and he wrote a piece that takes away the breath from the performer, like it happens to a diver during freediving. For objective – physiological – reasons, it is impossible to play a three-minute phrase on a single breath. A trick that therefore allows the execution of this piece is the circular breathing technique, which also

reflects the state of breath suspension experienced by a diver visually and with the use of harmonic and colouristic tools.

Pawel Siek, 385 × 40 Mpx. Luca Marenzio but w i d e , filtered and reversed (2020)

To quote the composer:

In June 2020 the new category of w i d t h (always in frame) emerged to dominate the proportions of many contemporary online artefacts. The inspiration for the e x t e n s i o n was an Italo Disco Song for Denise (Maxi Version) (1985). In 385 × 40 Mpx that piece becomes the “receptacle” of extension. The rising chromatic sequence from *Solo e pensoso* is “filtered” in the piece through the layers of *Song for Denise*, which focuses the image of the Renaissance madrigal in contemporary times (i.e., June 2020) like a lens. Circulation continues: the focused falling chromatic progressions from *Song for Denise* (reversed Luca Marenzio) e x p a n d e d in time again.



Rys, 4.18. P. Siek, 385 × 40 Mpx. Luca Marenzio but w i d e , filtered and reversed

Circular breathing as a means of expression in a composition

This technique enables the performance of challenging phrases involving various contemporary flute playing techniques such as multiphonics, frullato followed by classic sound, and tongue rams.

Leszek Wiśniowski, *Blues for N.* (2020) 

Blues for N. is a jazz piece that makes references to circular breathing, a technique used by some jazz flutists (e.g. Rahsaan Roland Kirk). Until the 36th bar, the composition follows the 12-bar form of jazz blues. The quavers should be swung, and the central section – based on the progression of semiquavers with circular breathing. Uniform tempo is recommended until bar 46. Apart from the marked sections, the composer leaves a certain liberty in dynamics⁴¹.

37

39

41

43

45

48

∞ ← percussive sounds – gradually closing the embouchure hole

rall. embouchure hole completely closed

D.C. al Segno 
e poi Coda 

Fig. 4.19. L. Wiśniowski, *Blues for N.*

Pablo Martínez Teutli, *The wind's promise* (2020) 

The wind's promise is a musical tale about the adventures of a gust of wind encountering fire and promising the fire that it will now be able to burn eternally – which is symbolised through circular breathing. The piece composed by the Mexican composer Pablo Martínez Teutli contains fragments characteristic of the folklore and history of his native country. Its form illustrates events presented in a textual history that the composer appended to his music. The work is dedicated to musicians who rekindle the spirit of music, devoting their lives to contemporary compositions.

Figure 4.20 shows two staves of musical notation. The first staff, starting at measure 16, is in 7/8 time and features a (2-2-3) fingering pattern and a 'Z!' marking. It includes dynamic markings *f* and *pp*, and performance instructions for 'Flz.' and 'ord.' with a 'Wind sound' effect. The second staff, starting at measure 25, is in 4/4 time and features a (3-2-2) fingering pattern, a 7-measure rest, and dynamic markings *p*. It also includes performance instructions for 'ord.' and triplet markings.

Fig. 4.20. P.M. Teutli, *The wind's promise*

Figure 4.21 shows two staves of musical notation. The first staff, starting at measure 75, is in 4/4 time and features a *p* dynamic marking, a trill ('tr'), and a crescendo leading to *ppp* and then *mf*. It includes performance instructions for '8va' and '8va' with a dashed line. The second staff, starting at measure 81, is in 4/4 time and features a *ppp* dynamic marking and a circled '8' above the staff.

Fig. 4.21. P.M. Teutli, *The wind's promise*

① **Lento, (Slowly),** ♩ = 104

2

ppp *p*

9 *mp* Flz.

14 *ppp*

Fig. 4.22. P.M. Teutli, *The wind's promise*

① 8 *f p*

14 *sf* 8va *sf*

18 *sf* 4

26 *sf*

32 *sf*

37 *f*

Fig. 4.23. P.M. Teutli, *The wind's promise*

Circular breathing as a means of expression in a composition

Circular breathing inspires the melodic development of the flute part and the fantastic narrative of the story: it is there to breathe life into the gust of wind, the main protagonist of the story. Additionally, it allows the instrumentalist to perform endless runs of short and sustained long notes that illustrate the themes and non-musical progress of the piece. They often imitate gusts of wind fueling the fire. Long and intriguingly colourful thoughts in the flute cadenza can only be performed smoothly if you apply circular breathing. The virtuosic sections also call for the use of circular breathing. This technique provides the performer with comfort in terms of endurance: in over 13 minutes, the flutist only has a few short breaks to regulate their natural breath, while circular breathing helps to maintain control throughout the duration of the piece.

Paweł Siek, *Cathédrale Électronique* (2021)

A composition for flute and piano, *Cathédrale Électronique* by Paweł Siek, refers to the aesthetics of water subjected to algorithmic transformations. The starting point are harmonies drawn from Maurice Ravel's *Jeux d'eau* and Claude Debussy's *La cathédrale engloutie*. They are algorithmically processed in software written specifically for the composition to generate consonances offering new qualities. The piece constitutes a study of slow, somnolent, and dangerously beautiful “submersion” into the sound world where no breath exists. Wide-ranging glissandi – that can only be played on the flute thanks to the use of the glissando headjoint – are in perfect consonance with the idea of employing circular breathing for the piece. The piano part is predominantly based on extended and stable sound planes. One of few ways to produce them on this instrument, that also offers further possibilities for modelling the continuous sound, is to apply ebows to its strings.

Circular breathing as a means of expression in a composition

The combination of the glissando headjoint and circular breathing grants the performer with the ability to transition smoothly between harmonic planes, in a manner consistent with the piano part. The composition does not impose any specific structural rhythmic order on the performers, as the aleatoric control of the musical texture in the notation offers a certain frame for the invention of the flutist and pianist, who must consciously respond to emerging harmonic patterns and maintain

continuous tension. Circular breathing allows the flutist to achieve freedom of performance in the glissandi and construct a coherent form for the piece.

The image displays three systems of musical notation for a flute, piano, and cello/bass. System 6 (labeled with a circled 6) features a flute part with a trill (TR) and dynamic markings including *soff.*, *ord.*, *frull.*, *tempo I, subito!*, *p*, *mf*, and *p*. The piano part includes a *pp* marking. System 7 (labeled with a circled 7) shows a flute part with *ord.*, *soff.*, and a repeat sign with *x 2*. The piano part has a *pp* marking. System 8 (labeled with a circled 8) includes a flute part with *sempre accel. schemat*, *frull.*, *ord. soff.*, *ord. soff.*, *ord. bisb.*, *legg.*, *TR*, *soff.*, and a repeat sign with *x 3*. The piano part has a *pp* marking. Each system also includes a cello/bass part with various markings and a 'segue' instruction.

Fig. 4.24. P. Siek, *Cathédrale Électronique*

Natalia Jarzabek, *Infinity* (2023) 

Infinity is a brief musical summary of the author's experiences gained during her research on circular breathing during her doctoral studies. It consists of several musical thoughts connected by a compositional bracket. Each of them should be performed with the use of circular breathing to maintain the continuity of the phrase. The piece makes numerous references: to ethnic music (mainly

due to the harmonies and long, cantabile phrases used), to the virtuoso works of Pasculli and Paganini (cascades of sixteenth notes), to jazz improvisation (the middle section of the *accelerando*, and the use of all registers in the subsequent section giving the performer freedom of execution of fast passages before returning to the initial tonality). In this way it allows the demonstration of the main advantages offered by circular breathing, as discussed in this work.

The image shows a musical score for a single melodic line in treble clef, spanning measures 37 to 49. The key signature has two flats (B-flat and E-flat). The score is divided into several sections:

- Measures 37-38: A phrase starting with a *mf* dynamic and a *cresc.* marking.
- Measures 39-40: A phrase with a *f* dynamic.
- Measures 41-42: A phrase with a *f* dynamic.
- Measures 43-44: A phrase with a *f* dynamic.
- Measures 45-46: A phrase with a *f* dynamic.
- Measures 47-48: A phrase with a *mf* dynamic and a tempo marking of $\text{♩} = 72$ *molto legato*.
- Measure 49: A final phrase with a *mf* dynamic.

Fig. 4.25. N. Jarzabek, *Infinity*

Circular breathing as a means of expression in a composition

The first section is a near-30-second cantabile phrase, reminiscent of oriental music. The harmonic structure prevents its interruption with drawing a natural breath. The following section, also lasting for 30 seconds, consists of a long, suspended, and subtly coloured *molto legato* sounds. The sequence

is then repeated using colourful trills. This demonstrates the ability to manipulate colour and dynamics of a broad range of sound over a long distance, which is only possible thanks to circular breathing. The central cascade of fast scales, with a clearly distinguishable melody in the lowest registers, refers to the sequences of thirty-second notes in the works of Pasculi and Paganini. Circular breathing allows the flutist to match the production of the violinists and, for dozens of seconds, to draw from jazz improvisations and employ fast passages based on a simple scale. The use of circular breathing allows interpretive freedom and conditions a coherent and virtuosic performance of this section in all registers. The last motif returns to the cantabile opening of *Infinity* and connects with the previous fragment, symbolically referring to the title of the piece. In turn, the ending of *Infinity*, seemingly broken off halfway through the first motif, is a suspended question, encouraging the audience to continue the musical idea of the piece in their imagination.

Infinity. Circular Breathing Project

The *Infinity. Circular Breathing Project* embarked on by the author of this dissertation consists a series of activities endeavouring to explore the intricacies of the technique. The name *Infinity* symbolises both the endless possibilities of sustaining sound and the unlimited qualities of the flute as a musical instrument. Much of the research effort within the project had begun even before the author embarked on her doctoral studies. Its objective was to uncover the potential of the circular breathing technique, make transcriptions of compositions, and start discussing new pieces incorporating this technique with composers. The author's endeavours culminate is this doctoral thesis, whose aim is to demonstrate the role of circular breathing in 20th- and 21st-century works, along with an album produced during her studies at the Doctoral School of the Krzysztof Penderecki Academy of Music in Kraków.

Offering a deeper understanding of the author's quest and her endeavours, which extend beyond the scope of this dissertation and yet complement the ideas presented here, this chapter summarises activities conducted as part of *Infinity Project* from 2017 to 2023.

The first stage of research (2017–18) focused on refining the circular breathing skills. The author learnt this technique independently, almost by accident, during a concert. For that reason, it was not executed flawlessly from the start: imperfections could be heard while inhaling through the nose and the sustained sound was far from stable. Honing the skills took several months, with particular effort required to apply the technique in various articulations, dynamics, and tonal colours.

In 2017, the author and the supervisor of this work, Professor Dr h.c. Barbara Świątek-Żelazna, were awarded the *Ars Quærendi Prize* by the Małopolska Region in the Master – Disciple category. Their project was recognised for its idea to write a handbook for learning the circular breathing technique and recording a unique CD featuring compositions where the application of this technique is a significant artistic asset. The prize also marked the start of preparations for the actual work under the project.

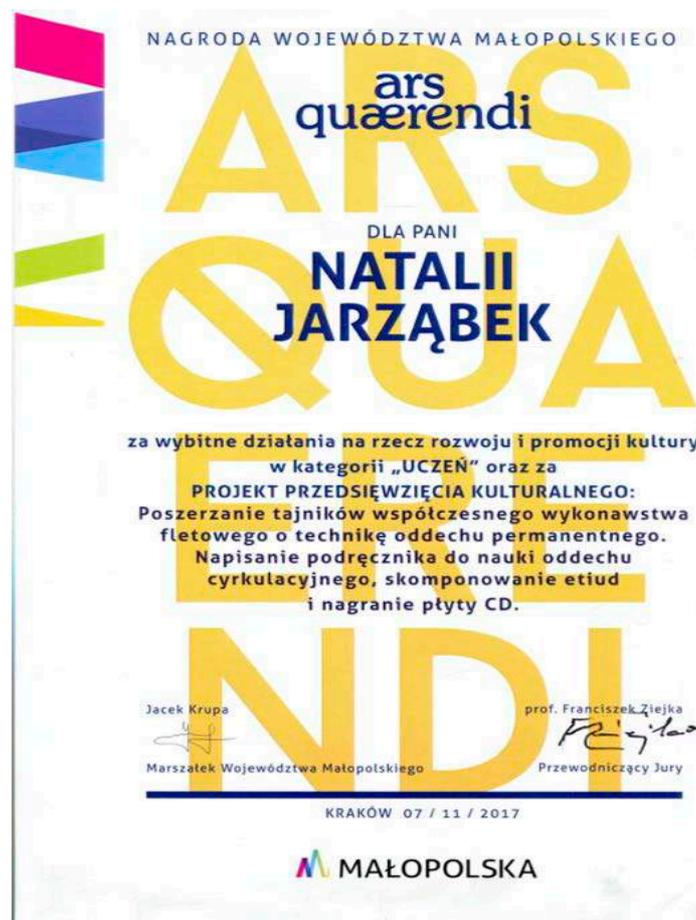


Fig. 5.1. Diploma of the Ars Quærendi Prize

The following step consisted in the selection of pieces whose performance requires circular breathing. Since there were only few original compositions using circular breathing for the flute at that time, it was necessary to create transcriptions of works such as *Moto perpetuo* by N. Paganini, *Spiegel im Spiegel* by Arvo Pärt, and Fryderyk Chopin's études (No. 2 from Op. 10 and No. 2 from Op. 25). The insufficient original repertoire made the author work with composers to fill this repertoire gap and expand the material for the album she recorded. The first compositions dedicated to *Infinity* are the work of Marcel Chyrzyński (*Haiku no. 3* for flute solo, 2018), Dimitri Arnauts (*Weird Bird*, 2018), and Tim Mulleman (*Take My Breath Away*, 2018). A proof to the artistic value of these compositions is the fact that *Haiku no. 3* was published by PWM Publishers (Polskie Wydawnictwo Muzyczne). The pieces inspired further research on the role of circular breathing as an expressive element in new compositions, which this doctoral thesis wraps up and expands.

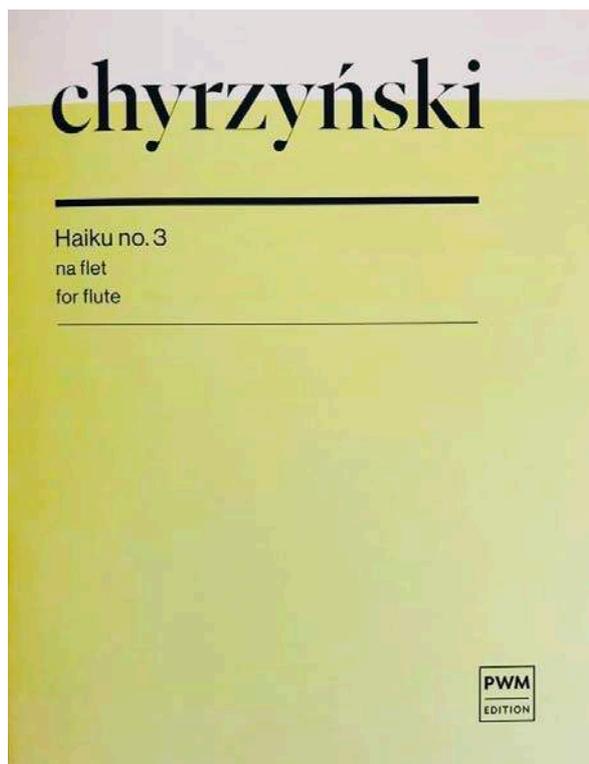


Fig. 5.2. The cover of *Haiku no. 3*

Once the pieces have been assembled, rehearsals with a Belgian pianist, Emmy Wils, began. After several months of work, the *Infinity* album was recorded in November 2018 at the Krzysztof Penderecki European Centre for Music in Luśławice and subsequently released on DUX label in 2019. Following its release, several promotional concerts were held.

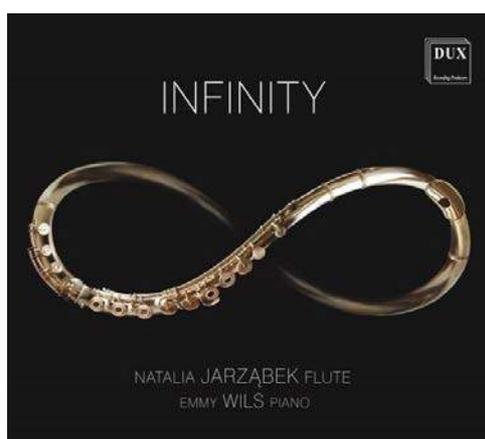


Fig. 5.3. The cover of *Infinity* CD

The following step in the project was to develop a set of innovative methods for teaching circular breathing. In 2018–20, the author conducted circular breathing lessons for flutists with the intention to write a comprehensive manual based on her observations. The lessons allowed her to gain experience in imparting knowledge on this subject and also to address the difficulties encountered by those starting to learn circular breathing. Participants in the lessons included individuals at various levels of flute mastery, from professionals (e.g., Professor Wally Hase from the Universität für Musik und darstellende Kunst Wien) to university and even high-school students. During the pandemic, many of the lessons were conducted online. The author also worked with an international group of composers to gather a collection of études and short pieces to accompany the manual.

In September 2019, the author started her doctoral studies at the Krzysztof Penderecki Academy of Music in Kraków. Her intention was to record an album featuring works from the 20th and 21st centuries in which circular breathing plays a significant artistic and interpretive role, as well as to prepare the present thesis. Since only few such works were available, she decided to invite composers to fill this gap in the flute repertoire. In parallel, she worked on developing her own set of methods for teaching circular breathing to flutists. The period of the pandemic allowed her to make the method coherent and refine it, based on her own experiences and work with flutists.

The result of these actions was the publication of the *Infinity* course book by Natalia Jarząbek and Professor Barbara Świątek-Żelazna in 2020, with the English version following in 2021.



Fig. 5.4. N. Jarząbek, B. Świątek-Żelazna, *Infinity. Circular Breathing*

The course book won the First Prize in the Pedagogical Work category at the Newly Published Music Competition organised by the National Flute Association in 2022.



Fig. 5.5. Certificate of the Newly Published Music Competition Prize awarded by the National Flute Association in the Pedagogical Work category

With the course book published, Natalia Jarzabek received numerous invitations to lecture, conduct workshops, and perform concerts based on the *Infinity* Project at a range of flute conferences and festivals. Their number includes:

- a lecture on circular breathing at the National Flute Association Flute Convention, Phoenix, 2023
- lecture and workshops on circular breathing, Mexico City, 2023
- conference on the circular breathing technique (lecture, workshops, and concert), Academy of Art in Szczecin, 2022
- workshops for students at the Karol Szymanowski Academy of Music in Katowice, 2021–23
- a course at PaMus Masterclasses (lecture, workshops, and concert), Varaždin, Croatia, 2021
- a lecture and workshops on circular breathing for students in Professor Wally Hase's class of the flute, Universität für Musik und darstellende Kunst Wien, 2020, 2022
- a lecture on circular breathing at the National Flute Association Flute Convention, 2021 (online)

- a lecture on circular breathing for Flute Center of New York, 2021 (online)
- a lecture on circular breathing for Adams Flute Center in the Netherlands, 2021 (online)
- a lecture on circular breathing for Syrinx Music, Australia, 2021 (online)
- a lecture on circular breathing during the 1st Masterclasses for Wind Instruments – Dydnia, 2020 (online)
- a lecture on circular breathing for students in Professor Agata Igras’s class of the flute, Fryderyk Chopin University of Music, 2020 (online)
- a lecture and workshops on circular breathing and concert at the Festival Universitario de Flauta Transversa, UNAM, Mexico City, 22–26 July 2019
- a lecture and workshops on circular breathing and concert at the Alexander Arutiunian International Wind Festival, Yerevan, 2019.

The following stage of the project was a scientific investigation of circular breathing in the context of performance, leading to the completion of this doctoral thesis. This batch of work included:

- study of available flute repertoire using circular breathing
- working with composers to inspire them to write works that make circular breathing an essential artistic and performative means
- study of the pieces received
- in-depth study of playing techniques with the glissando headjoint, including its application in the recording of selected works
- composing herself *Infinity*: a piece bringing together the knowledge and experiences gained throughout the *Infinity* Project
- research on how improving circular breathing technique influences other elements of flute performance.

The effort the author put into the *Infinity* Project has been recognised with an invitation from a Japanese flute manufacturer to become a Miyazawa artist, and to present the *Infinity* Project at the largest flute convention of the National Flute Association in Phoenix in 2023.

The activities and achievements within the *Infinity* Project listed above illustrate the author's journey from perfecting her own circular breathing technique, via developing a toolbox for teaching the technique, to its practical application in works dedicated to her. The recognition of the project expressed through the awards it won and the interest of a wide audience emphasise the undeniable value that the *Infinity* Project has brought to the world of flute performance. Its greatest fortes lie in the innovative and highly effective method for learning circular breathing, the creation of valuable flute works that incorporate the technique, and the positive impact of learning circular breathing on other elements of a flutist's skillset.

"Infinity" used as the project name stands for both the endless possibilities of sustaining sound and the unlimited qualities of the flute as a musical instrument. The activities described above demonstrate that the project's potential and the options of its development are also infinite, and depend solely on the author's motivation and dedication to the work she will certainly continue to pursue.

Conclusion

The main objective of this work was to discuss the merits of circular breathing, with particular emphasis on its role as a performance technique.

The brief history of the technique demonstrates its centuries-old tradition and well-established past application in ethnic and jazz music, as well as in contemporary classical music.

The search for the possibilities of using circular breathing in classical music, conducted from the second half of the 20th century, have resulted in the compositions where the application of the technique is required by the composer and essential for achieving the intended artistic expression. However, the repertoire of such works proved to be limited. Therefore, one of the principal objectives of the author of this dissertation was to fill this repertoire gap to enable the examination of circular breathing in various musical styles. The outcome of these efforts is the creation of several compositions in which circular breathing plays a significant role. Selected pieces have been recorded as part of the artistic achievement.

The conclusions drawn from the analysis of these compositions prove the profound value of circular breathing. The fundamental merits highlighted by research and personal practice include:

- the ability to perform long and diverse phrases
- artistic freedom while performing
- fluent transitions between contemporary playing techniques
- attainment of unconventional timbres
- increased awareness of collaboration with the pianist and the capacity for fluent responses to improvisation during joint performances
- enhanced awareness of employing diaphragmatic breathing and individual elements of the performing toolbox.

The profound value derived from the application of circular breathing inspired the author to share her knowledge with all those interested in learning this technique. The outcome of her effort is the book *Infinity. Circular Breathing*, her joint publication with Professor Dr h.c. Barbara Świątek-Żelazna.

All the endeavours mentioned and discussed above comprehensively address circular breathing in playing the flute, while remaining the only such initiative on a global scale.

Worth particular attention is the fact that the book *Infinity. Circular Breathing* and the compositions resulting from doctoral studies have become a permanent part of the canon of flute literature, proving the value of the Polish school of the flute on an international scale.

Notes on the composers

Dimitri Arnauts (*1973) is a Belgian composer following the tradition of tonal and polyphonic music. His oeuvre includes symphonies, tone poems, chamber and solo works, concertos, electronic music, and vocal improvisations. He also composes sacred music, notably cantatas, oratorios, and arrangements of passions and psalms. His list of compositions comprises around eight hundred pieces. He is the founder and artistic director of the newly established Clamavi Ensemble and a lecturer at the Université Populaire d'Anderlecht in Brussels. In 2018, Dimitri conducted the premiere performance of his *Requiem Sancti Michaelis* in Duisburg (Flemish Brabant). In the same year, his suite for piano four hands *Humble Memories* premiered at the BOZAR Concert Hall in Brussels. The suite was performed by Emma Wils and Tim Mulleman on a straight-strung instrument built by Chris Maene to the design of Daniel Barenboim. In 2018–19, Dimitri studied choral and orchestral conducting in Oxford, under the guidance of James Jordan and Steve Pilkington, and in Sherborne with Rodolf Saglimbeni, Denise Ham, and Amy Bebbington. Additionally, he attended a film music composition course by Rens Machielse at the Utrecht School of the Arts. The composer is the founder and a member of the international collective of composers, Muse11.

Marcel Chyrzyński (*1971) – obtained his Master's degree (with distinction) from the Academy of Music in Krakow in 1995, where he studied composition with Prof. Marek Stachowski, orchestration with Prof. Krzysztof Penderecki and computer music with Marek Choloniewski. He also studied with such Fulbright scholars from the U.S. as Richard Boulanger, Cindy McTee, and Rodney Oaks. Chyrzyński perfected his compositional skills on numerous courses, including the Internationale Akademie für Neue Komposition in Schwaz in Austria (1994), Young Composers Summer Course in Bialystok (1995) as well as the Summer Composers' Course in Radziejowice (1996,1997), Internationale Werkstatt für Neue Musik und Computer in Stuttgart (1995) and International Workshop of New Music in Krakow/Stuttgart (1996). He has gained valuable experience and training under the tutelage of composers such as Paul Patterson, Sylvano Bussotti, Claude Lefebvre, Joji Yuasa, Boguslaw Schaeffer, Lidia Zielinska and Hanna Kulenty. Among many Polish awards and citations, Chyrzyński has twice received 1st prize in the A.Krzanowski Competition for Young Composers in Bielsko-Biala for Miniature for solo clarinet (1988) and for Three Preludes for clarinet and piano (1990), 1st prize for Four Love Lyrics for baritone and piano in the 3rd All-Polish Adam Didur Composers' Competition in Sanok (1994), citation for Piece for Orchestra in the Composers' Competition organised by Polish Radio in Warsaw (1996), 3rd prize for Psalm 88 for mixed choir in

the 2nd All-Polish Composition Competition Musica Sacra in Warsaw (1996), 3rd prize for ...similes esse bestiis for mixed choir in the 3rd All-Polish Composers' Competition Musica Sacra in Warsaw (1997) and 1st prize for Ferragosto per tromba, pianoforte e batteria in the Tadeusz Baird Composition Competition for Young Composers in Warsaw (1997). Haiku No. 3 for solo flute received a distinction in the National Flute Association (USA) competition in the Newly Published Music Competition (2021). In 1998, Chyrzyński obtained a doctoral degree in composition at his alma mater; and in 2010, the doktor habilitowany degree (professorial qualification) in music arts. 2014-19 he has been a director of the Institute of Composition, Conducting and Music Theory. Since December 2020, he is employed as a professor at his alma mater. On February 22, 2021, the President of the Republic of Poland awarded him the title of Professor.

Ian Clarke (*1964) – is acknowledged as one of the leading player/composers in the flute world. His compositions are performed across the globe and these wide-ranging published works have established themselves as some of the most exciting flute repertoire of today and are being embraced by internationally acclaimed performers, syllabuses, teachers, colleges & students alike. Ian has performed as a featured guest soloist and teacher at major conventions throughout the world including events in Australia, Brazil, Canada, Iceland, Japan, many European countries, and numerous times for the NFA (National Flute Association) in the USA and for the British Flute Society (BFS) in the UK where he lives. He premiered his new concerto for flute & strings at the 2017 Minneapolis, NFA convention. His acclaimed CD 'Within' has been one the flute world's best sellers and his album Deep Blue reached the top 10 in the UK Classical Artist Chart; thought to be a first for an album of original flute music. He has given master-classes at many of the leading music conservatoires including London's Royal Academy of Music (RAM) & Guildhall School of Music & Drama (GSMD) through to New York's Juilliard & MSM (Manhattan School of Music) and in countries around the globe Through leading, co-leading and contributing to a myriad of flute events, Ian has enjoyed working with all ages and stages in fluteland and beyond.

Robert Dick (*1950) – experienced in classical, free improvisation, and new jazz disciplines, Robert Dick balances a career as composer, performer, improviser, teacher, inventor, and collaborator. His pedagogy for contemporary music spans books, études, compositions, and instructional media. He performs, writes commissionins, and is on the faculty at New York University and the City University of New York Graduate Center. He has taught in residence in hundreds of universities, colleges, music schools, and conservatories throughout the U.S., Europe, Asia, and Australia. He holds a B.A. from

Yale University and an M.M. in composition from the Yale School of Music. He is a frequent performer at NFA annual conventions (including his 1999 performance in Atlanta of his Concerto for Flute/Bass Flute Strings and Percussion to a standing ovation by some 2,000 flutists), a competition judge, a commissioned composer for new NFA competition pieces, a former board member, and a participant in various other NFA endeavors. Drawing inspiration from a wide range of artistic sources that include his classical roots, new jazz, rock, pop, global, electric, and electronic music, Dick has redefined the sonic possibilities of the flute and its music. His performances include flute, piccolo, alto flute, bass flutes in C and F, and the contrabass flute.

Gergely Ittzés (*1969) – a graduate of the Budapest Liszt Academy of Music, Ittzés is one of the most proactive personalities of the flute scene. While being a researcher of his instrument and composer of many experimental flute works applying the most up-to-date flute techniques, especially polyphonic playing, he does not specialize in contemporary music only but tries to connect it with tradition. His large repertoire includes all the important works written for his instrument and a great number of rarities from the past centuries and today. In addition to classical and modern music, several other styles have also influenced his musical idiom, like jazz and free improvisation. For ten years he used to be member and composer of the Talizmán Group. Mr. Ittzés has given concerts and led master classes in many countries all over the world such as Brazil, the United States, Canada, China, Japan and the rest of Europe. Numerous composers have dedicated works for him. He holds a doctorate from the Franz Liszt Academy; his dissertation, written in 2008, is entitled *The Role of Polyphonic Thinking in Flute Playing*. Gergely Ittzés plays a Sankyo Pure Silver flute with a special golden Seder headjoint.

István Matuz (*1947) is a Hungarian flutist and composer. Having graduated from the Ferenc Liszt Academy of Music in 1970, he was assistant professor at the Brussels Superior Music Conservatory until 1972, where he obtained the Prix Supérieur diploma. He taught at the Debrecen school of the Budapest Music Academy since 1975. In 1978, he received a scholarship from IRCAM, to work in the instrumental department under the direction of Vinko Globokar. Matuz won the 1st Prize at the Tenuto Festival Competition in Brussels in 1971, 2nd Prize at the International Gaudeamus Competition in Rotterdam in 1971, 3rd Prize at the Royan International Flute Competition in 1973, and the special prize of the Maria Canals Flute Competition in Barcelona in 1972. His repertoire includes all Hungarian flute compositions, and has received three awards for the premiere performances of contemporary Hungarian flute works, and also for the Hungarian premiere

performances of several foreign works. He is among the first flutists to have used circular breathing (in *Voces*, a 144-minute piece by László Sary, where the flute produces sound without any interruptions).

Tim Mulleman (*1993) is a Belgian composer, arranger, and pianist residing in Brussels. He began his piano education at the age of eleven, studied at the Royal Conservatory of Brussels under Jan Michiels and later at the Universität für Musik und darstellende Kunst in Vienna in the class of Christiane Karajeva. His arrangements have been performed all around Europe by various ensembles, including the Antwerp Symphony Orchestra, Rotterdam Philharmonic Orchestra, Het Collectief, Weiner Ensemble, and Tmesis Ensemble, who also recorded Mulleman's arrangements on the prestigious Etcetera Records label. Mulleman's original compositions have been performed by Sturm Und Klang and Duo Vermeulen Verpoest. As a chamber musician, he has collaborated with soloists from the Rotterdam Philharmonic in numerous radio stations such as Klara, Musiq3, and BBC Radio Three. He has also performed at renowned venues and festivals, to mention BOZAR, Het Zuidelijk Toneel Tilburg, Klarafestival, and Schiermonikoog Festival. He also appeared in a piano duo with Hiu Man Chan at the Festival of Flanders.

Zoran Novačić (*1964) is a Croatian composer and conductor with a degree in conducting from the Academy of Music of the Zagreb University. He studied in the class of Pavle Dešpalj, who also supervised his post graduate studies at the Alma Mater. Zoran also held a Lovro and Lilly Matačić Foundation scholarship to Munich and Vienna with Berislav Klobučar. He was a rehearsal pianist and assistant conductor at the Zagreb Croatian National Theatre Opera, and assistant conductor and choir master of the Croatian Radio Television Choir. As a conductor, he has worked with Croatian and foreign orchestras, and regularly accompanies vocal soloists on the piano. Winner of the Milka Trnina Diploma, he is assistant professor at the Academy of Music in Zagreb, member of the Croatian Freelance Artists' Association, the Croatian Composers' Society, and the Croatian Society of Music Artists.

Jailton de Oliveira (*1964) is a Brazilian composer born in Medina (Minas Gerais) with a Bachelor's degree from the Universidade Estadual de Campinas and Master of Music degree from the Universidade Federal de Goiás. He has composed over 200 works including choral music, songs, pieces for solo instruments, opera, ballet, chamber and orchestral music, and electroacoustic music. His works have been performed in Brazil, Australia, Mexico, Italy, Russia, Argentina, the United States, Spain and Poland, and de Oliveira himself has attended important festivals such as the

International Winter Festival of Campos do Jordão and the Biennial Festival of Brazilian Contemporary Music, and received awards in Brazil and abroad. Oliveira collaborates on new, mostly chamber, works with musicians from several countries.

Adam Porębski (*1990) is a graduate of the Academy of Music in Wrocław, in the class of composition (with a Primus Inter Pares honorary diploma), and in the class of the violin. He broadened his knowledge at composing courses in Apeldoorn (the Netherlands), Rēzekne (Latvia), Radziejowice, and Kraków. In 2016, he was conferred a doctorate in musical arts. Winner of international and Polish composing competitions, Porębski has had his works performed in many European countries, the United States, and Australia.

Paweł Siek (*1993) is a composer born in Lublin. He studied at the Academy of Music in Kraków with Wojciech Widłak and Marek Chołoniewski, in the Milan Conservatory in the class of Alessandro Solbiati, and at the University of Louisville under Steve Rouse and Krzysztof Wołek. Siek worked in the electroacoustic studios of Lviv, Kraków, Louisville and Milan, and his works have been performed in 11 European countries. Champion of DYCE – Discovering Young Composers of Europe (2019), he won the 1st Prize at the 10th Zygmunt Mycielski Composing Competition (2019), 2nd Prize at the “Warsaw Polonaise for Independent” Composing Competition in 2018 and the international Concert Études for Piccolo Composing Competition in Denver, the 1st and 3rd prize in the Marek Jasiński Composing Competition and was a finalist of the Stanisław Moniuszko International Composing Competition for micro-opera “12 Minutes for Moniuszko” (2019). Besides the above, he is an Italian translator, music editor, and snowboarder.

Pablo M. Teutli (*1992) is a young Mexican composer focusing his explorations on observing the society around him, and presenting it through allegorical and highly imaginative musical narratives. He studied composition at the Music Department of the Universidad Nacional Autónoma de México, Jacobs School of Music at the Indiana University, and the University of California, Berkeley. He has also participated in numerous masterclasses with distinguished composers such as Lucía Álvarez, Arturo Márquez, Ken Ueno, P.Q. Phan, and Maria Granillo. In 2020, the National Fund for Culture and the Arts was awarded him the Young Creators Scholarship. Pablo has won several national composition awards, including the Salvador Contreras Composition Competition for Symphonic Orchestra (2020) and the Arturo Márquez Composition Contest for Chamber Orchestra (2017). His notable works include *El circo de las luces*, *Un beso en la herida*, and *El eco de la sangre*.

Ilio Volante (*1964) is an Italian composer of classical music and jazz. He started his music studies playing the saxophone, showing a particular flair for composition and jazz from the beginning. At the age of 19, Ilio won the audition for the Italian Army Music Band stationed in Rome. He served there for ten years under the direction of colonel Marino Bartoloni to move to the Grenadiers of Sardinia Military Band (Rome) and was the 1st Tenor Saxophone at the SHAPE International Band being the official NATO band in Mons, Belgium, for three years. In his career, Ilio has written over 200 tunes for several music formations.

Leszek Wiśniowski (“HeFi”, *1965) – is a flutist, saxophonist, composer, and teacher. A graduate in the class of the flute of Professor Jerzy Jarosik at the Faculty of Jazz and Popular Music at the Academy of Music in Katowice and doctoral studies at the Academy of Music in Kraków. He teaches the Jazz Flute Class at the Department of Contemporary Music, Jazz, and Percussion at the Academy of Music in Kraków. He runs unique projects with icons of world jazz and avant-garde flute: Jamie Baum and Robert Dick. Leader of HeFi Quartet, he has performed and recorded in Europe, Asia, and America.

Leszek Wojtal (*1980) is a graduate of the Chopin Music Secondary School in Kraków (1999), the Instrumental Department (the class of guitar of Michał Nagy), and the Department of Creative, Educational, and Musical Interpretation (the class of composition of Marcel Chyrzyński). He also studied electronic music under Marek Chołoniewski. As a composer, he works in various musical forms and genres, showing a penchant for chamber works that are often inspired by the mental condition of the human vis a vis the rugged landscape and mountain airs. He also creates pieces for solo instruments, chamber ensembles, orchestras, and choirs for children and youth. His compositions have been performed at numerous national competitions and festivals, notably the International Festival of Kraków Composers. As a guitarist, he mainly performs 20th- and 21st-century music, including his own compositions and improvisations. He currently teaches guitar at the Primary Music School in Gdów. He enjoys rock climbing and is a passionate aficionado of analogue photography.

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Fig. 5.4. N. Jarząbek, B. Świątek-Żelazna, *Infinity. Circular Breathing*, (Jarmuła Music, SPMK, Kraków 2021), cover, author's collection.

Fig. 5.5. Certificate of the Newly Published Music Competition Prize awarded by the National Flute Association in the Pedagogical Work category, author's collection.

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