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Circular Breathing:

Expanding Musical Possibilities for Flute Players and Composers

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Introduction

Breathing is as vital to the act of creating music with a flute as it is to producing a sound with the human voice. Not only does breathing allow for sound to be produced, projected, and interrupted, but it also permits a myriad of expressive effects to be realised. Unfortunately for both wind players and singers, it is physiologically impossible to inhale and exhale from the lungs at the same time. The intrinsic need to take a breath in order to sustain human life can also place considerable limitations on performers by restricting the duration and intensity of musical phrases. The most effective method for sustaining sound on most wind instruments beyond the duration of a natural breath and whilst still inhaling regularly is to employ the technique known as 'circular breathing'[1]. This technique requires the performer to periodically expel air that is stored in the mouth whilst simultaneously inhaling into the lungs through the nose, thus eliminating the need to stop the sound in order to take a breath (White 2014). In this way, circular breathing frees the performer from the limitations imposed by their lung capacity and the composer from the constraints of writing phrases that are bound by the confines of the natural breath.

Circular breathing has been an essential part of many wind instrument traditions for centuries. For example, it is commonly used by players of the Balinese *suling* (bamboo flute); the Sardinian *launeddas* (a triple idioglot clarinet); the Eastern *surnāy*, or *zurnā*, (a type of shawm); the Egyptian *arghūl* (a double clarinet); and the Australian Aboriginal *didjeridu*, to name only a few (Kartomi 2014; Leydi 2014; Poché and Sultanova 2014; Conner and Howell 2014). It has also frequently been used in jazz since the early 1960s; saxophonist and clarinettist Harry Carney (1910–1974) and multi-instrumentalist Roland Kirk (1935–1977) pioneered the technique and it was then adopted by numerous other jazz wind players, including saxophonist Sonny Rollins (b. 1930) and trumpeter Wynton Marsalis (b. 1961)[2]. In addition, some classical trumpeters, saxophonists and clarinettists have employed circular breathing in order to perform transcriptions of compositions originally written for string instruments with phrase lengths that would otherwise be unplayable on wind instruments without the use of the technique. Perhaps surprisingly, it has only been since the latter decades of the twentieth century that composers and performers have begun to explore with any regularity the application of this technique in Western concert flute playing[3]. One

possible explanation for the slow adoption of circular breathing among composers and performers of Western flute music is related to the considerable challenges in mastering this technique on the instrument. As Robert Dick (1987b: 62) observes, 'Learning circular breathing takes a long time, not because it is hard to do, but because the lip muscles must develop for the proper embouchure'. In *Circular Breathing for the Flutist*, Dick describes the process of mastering circular breathing on the flute as a two-year commitment (Dick 1987a: 9). Therefore, the acceptance of circular breathing as a flute technique has been a very gradual process. Nevertheless, since the 1970s, a number of contemporary flautist-composers have used this technique to great effect in their compositions. István Matuz (b. 1947), Robert Dick (b. 1950), Ian Clarke (b. 1964) and Gergely Ittzés (b. 1969), for example, have all incorporated circular breathing into their compositions and performances, finding different and innovative ways to explore the musical freedom this technique makes possible.

The aim of this article is to examine the various ways in which circular breathing has expanded (and is continuing to expand) the creative opportunities available in flute music composition and performance. It begins with an overview of the history of the use of the technique and a brief survey of the literature in the area in order to illuminate the background and current state of knowledge on the subject of circular breathing, before exploring a series of key works by the composers Matuz, Dick, Clarke and Ittzés that employ this device. Each of these composers approaches circular breathing from a different technical and musical standpoint. Four examples provide a cross-section of the different ways in which the technique has been employed to date as well as potential starting points for the use of circular breathing in future compositions. Significantly, this research may have implications for future composers and performers of flute music in the Western art tradition by increasing knowledge of the technique of circular breathing and its applications within the existing flute literature, which may in turn serve to suggest possibilities for its future employment within music for this and other wind instruments.

Circular Breathing and the Flute: Background and Scholarship

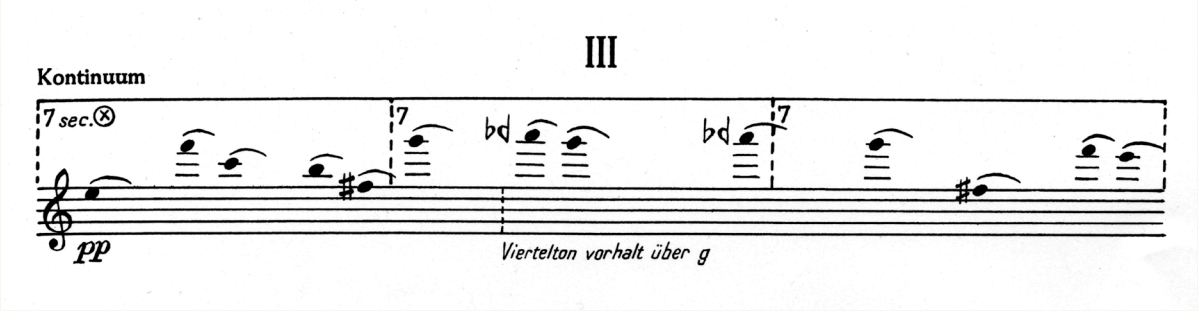
Due to the relatively slow uptake of circular breathing in connection with the flute, there is a dearth of scholarly literature on the subject compared with that relating to the use of other extended techniques on the same instrument. In Nancy Toff's *The Flute Book: A Complete Guide for Students and Performers*, which provides a broad overview of flute resources, repertoire and scholarship, the first reported uses of circular breathing by flautists are identified as a 1959 performance by Czech flautist Antonin Mach and a 1977 recording by Zdenek Bruderhans (b. 1934), who was then the flute teacher at Adelaide's Elder Conservatorium (Toff 1996: 87). This matches Bruderhans' own account, in an article he wrote for *The Instrumentalist* in 1981:

> To my knowledge Czech flutist Antonin Mach mastered this technique in the late 1950s and was the first person to do so. He shocked a panel of judges at the 1959 International Competition of Wind Instruments in Prague, when he performed Bach's 'Allemande' from the unaccompanied *Partita* without interruptions. Mach explained the basics of circular breathing to me and after some work I was able to sustain a single note. I resumed practising this technique in 1976 and in 1977 employed it when performing the 'Flight of the Bumble Bee' and Paganini's 'Moto Perpetuo' (Aquitaine Records Toronto), and in 1979 played it in masterclasses, recitals and at the National Flute Association convention in Dallas (Bruderhans 1981: 34).

Independently of Mach and Bruderhans (and not mentioned by Toff), Hungarian flautist István Matuz (1990: II) claims to have mastered circular breathing on his own in January 1974, during a period of 'intense searching, thinking and experimentation'. That same year, he composed and performed the piece *Studium 1/974*, which he describes as 'the first piece written for circular breathing' (Matuz 1990: II). However, as the following discussion will reveal, while *Studium 1/974* is one of the earliest pieces for flute to have utilised circular breathing, it is not actually the first to feature this technique. *Studium 1/974* will be discussed in more detail later in this article.

The earliest instructional text on circular breathing is a very brief guide written by Swiss flautist Aurèle Nicolet that appears in a collection of avant-garde flute music published in 1973, titled *Pro Musica Nova* (Nicolet 1973: Appendix, 4). This collection includes a work, *Drei Stücke* by Konrad Lechner, dedicated to Nicolet that was written in 1973 and which requires circular breathing in the third movement, 'Kontinuum' (Nicolet 1973: 11–14). While circular breathing is not referred to directly in the score itself, free-hanging slurs after each note, as well as the evocative title of the movement, suggest that the performer should aspire to create an unbroken sound throughout (see Fig. 1). This effect can only be achieved successfully through the employment of circular breathing.

Figure 1. Lechner, *Drei Stücke*, Movement III, 'Kontinuum', Stanza 1 (Nicolet 1973: 14). From *Studien zum Spielen Neuer Musik für Flöte*, Aurèle Nicolet, ed. BG 843 © 1974 by Musikverlag Hans Gerig, Köln 1980 assigned to Breitkopf & Härtel, Wiesbaden. Used with permission.



Nicolet's performance instructions, in which he refers to 'Kontinuum' as 'a study for continuous breathing (circular breathing)' (Nicolet 1973: Appendix, 4) and the inclusion of his circular breathing guide, leave little doubt that this piece was intended to be performed using circular breathing. Given that it predates Matuz's composition by a year, it is quite likely that 'Kontinuum' is, in fact, the first piece to have been written for the concert flute that requires the technique. There is no evidence to suggest that Nicolet, Matuz or Bruderhans knew of each other's experiments with circular breathing at this time; however, Matuz reports that he taught masterclasses on new flute techniques, including circular breathing, at the Institut de Recherche et de Coordination Acoustique/Musique (IRCAM) in Paris in 1978, noting that Robert Dick and Pierre-Yves Artaud were in attendance (Matuz 1990: III). In the same year, Dick (1987a: 7) claims to have learnt the technique from Nicolet following a class in Freiburg. These statements suggest that the general climate of experimentation in flute playing that existed in the 1970s provided the ideal environment, including opportunities and further impetus, for exploring the possibilities that circular breathing offered to the flautist, as well as to the composer.

Trent Kynaston's *Circular Breathing: For the Wind Performer*, published in 1978, is more extensive than Nicolet's guide, but is not written specifically for any one wind instrument (Kynaston 1978). Kynaston's guide is useful for understanding the mechanics of circular breathing and he offers some insights into how the technique can be applied musically. However, he does not address any of the challenges specific to mastering this technique on the flute, beyond mentioning that circular breathing will be more difficult to achieve on the flute than on the oboe or bassoon due to its different air-pressure demands (Kynaston 1978: 12).

Published just three years later, Bruderhans' article (1981) discusses the unique difficulties in learning to circular breathe on the flute and provides a useful step-by-step guide for mastering the technique. In addition to addressing technical concerns, Bruderhans describes the circumstances in which he considers circular breathing to be musically appropriate. He goes into even more detail on this topic in his 1989 book, *Music, Tectonics and Flute Playing* (Bruderhans 1989).

Following the publication of his treatise, *The Other Flute*, five years earlier, Robert Dick was already established as an expert on extended techniques when, in 1980, he wrote *Flames Must Not Encircle Sides*, a difficult piece for solo flute that is impossible to perform as notated without circular breathing (Dick 1989; Dick 1980). Dick then went on to contribute some of the most significant literature on the subject of circular breathing, writing an article on the technique for *The Instrumentalist* and publishing the book *Circular Breathing for the Flutist* in 1987 (Dick 1987b; Dick 1987a). Today, *Circular Breathing for the Flutist* is still the most comprehensive resource available on this subject and is the only source that really explores the technique in depth. Dick outlines a detailed and extensive method for learning and refining the technique, providing musical and technical exercises and discussing the challenges of circular breathing in a variety of contexts. He also explores the ways in which circular breathing can be applied in the traditional solo flute and orchestral repertoire and discusses the musical advantages that can be gained through circular breathing.

Since the publication of Dick's writings on the topic, circular breathing guides have also appeared in technique books by other flautists. For example, Australian flautist Vernon Hill's *The Flute Player's Book* (Hill 1995) contains a brief section on circular breathing and, more recently, German flautist Tilmann Dehnhard's workbook of extended techniques, *The New Flute* (Dehnhard 2013), contains a more extensive guide to learning circular breathing.

There have also been numerous short articles written that discuss circular breathing, such as those by Alexa Still (2008), John Barcellona (2005), and one of the authors of the present article, McPherson (2013). But, these articles tend to deal more with the challenges of learning to circular breathe, than with the musical applications of the technique. Recently, a number of *YouTube* videos discussing circular breathing have emerged, such as those by Rogier de Pijper (2012) and Helen Bledsoe (2011). However, like the articles, they tend to focus on technical challenges over musical application.

Some of the most useful sources for learning more about the art of circular breathing and how to execute it successfully are the performance instructions for pieces written with circular breathing in mind. Matuz's *6 Studii Per Flauto Solo* (Matuz 1990), Dick's *Flames Must Not Encircle Sides* (Dick 1980), Clarke's *The Great Train Race* (Clarke 2001) and Ittzés's *Multiphonique Sound Poems* (Ittzés 2008) all provide useful prefaces and performance notes that clearly convey the composers' intentions with regard to circular breathing. Despite the enthusiasm that these composers have demonstrated for circular breathing, the scholarship undertaken to date in connection with their work tends to only touch on this particular technique very briefly. For instance, while Monier (2010) is otherwise quite thorough in her examination of Ian Clarke's *The Great Train Race*, she makes only a passing reference to the fact that Clarke recommends the use of circular breathing in performing the piece, without explaining exactly how this technique affects or enhances a performance of the work. Budai (2014) in her dissertation, *The Flutist as Co-Creator: Composer-Performer Collaboration in the Flute Music of Hungary*, provides important background information about the work of Matuz and Ittzés and mentions circular breathing in relation to their compositions. However, the technique is not the focus of her study and her discussion of the subject is, therefore, only brief.

This article addresses some of these identified gaps in the literature by discussing the ways in which circular breathing has been used by composers within specific works to achieve effects that would otherwise be impossible on the flute. The works by Matuz and Dick will be discussed first, as they represent the first generation of flautist-composers to employ circular breathing in their compositions. An examination of Clarke's and Ittzés's works will follow, because both figures acknowledge the influence of the more senior composers on their technical and musical approaches.

István Matuz — *Studium 1/974* (1974)

Matuz's *Studium 1/974* for prepared flute is the first of a set of six études that explores 'newly discovered technical and performance possibilities' available on the flute (Matuz 1990: II). Written shortly after he had mastered circular breathing on the flute in 1974, Matuz claims that *Studium 1/974* helped to consolidate his approach to exploring and disseminating new possibilities on the instrument:

> During [the composition of *Studium 1/974*] it became clear to me that for the flautist to compose for his own instrument was not only a possibility, but quite simply a duty. More, in fact, nowadays than at any other time, when new sounds and techniques are constantly being discovered. The results of this continuous experimentation and discovery should be made public through etude-compositions (Matuz 1990: II).

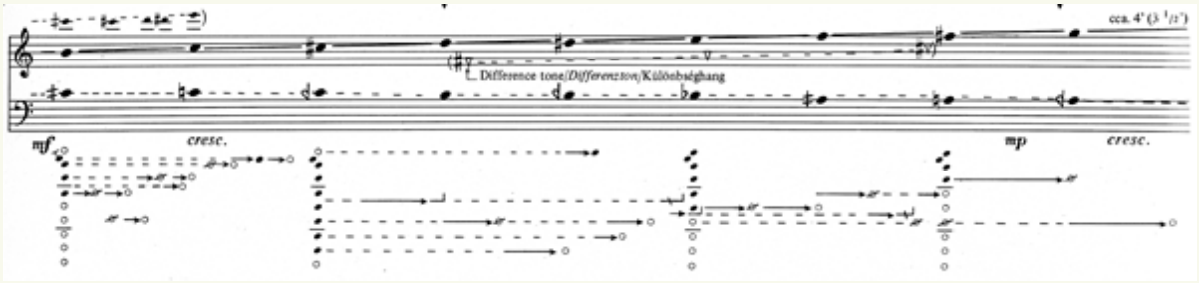
Named *Studium 1/974* for its significance as the first study Matuz composed and for the year of its composition, this particular étude emerged directly from the composer's exploration of circular breathing and represents one of the earliest, and to this day one of the most difficult, experiments in the use of the technique. In his performance instructions, Matuz (1990: 8) writes, '[*Studium 1/974*] is a challenge not only instrumentally and physically, but also mentally. Its performance is a test of faith and will-power'.

Studium 1/974, is subtitled '…L(ÉLEK)ZEM…', which Matuz describes as:

> 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' (Matuz 1990: 8).

The étude requires the flute to be prepared by 'pushing a rubber plug or cork hermetically, 4-5 millimetres deep, in the lower end of the flute', and it is playable only using a C foot-joint (Matuz 1990: 8). The piece begins and ends with the flute at the level of the waist, the

Figure 2. Matuz (1990: 6), *Studium 1/974,* Stanza 3. Published by Akkord Music Publishers. Used with permission.



flautist breathing in through the nose and out through the mouth. A microphone is attached to the performer's chest, positioned to pick up the flautist's heartbeat, and in the last minutes of the piece 'the microphone signal should be increased to an audible level' (Matuz 1990: 8). Budai (2014: 180) writes:

> In a way then, this piece is life personified. Matuz reinforces the bracketed statement from the title (I'm alive) through the continuous breath and the amplified heartbeat of the performer that becomes audible towards the end of the piece.

The music itself consists of a long, unceasing glissando, requiring the flautist to sustain a sound using circular breathing for over ten minutes. Against this gradually ascending drone, the flautist sings intermittent notes, which produce shifting, dissonant harmonies and difference (or resultant) tones (see Fig. 2). The effect is a chillingly slow but inexorable increase in intensity. Referring to a work written for Matuz the following year by Hungarian composer László Sáry, Budai (2014: 162) writes, '*Voices* unites a new compositional approach to the treatment of time with circular breathing, a technique enabling the player to expand sound indefinitely, without interruption'. This applies equally well to *Studium 1/974*, which subverts the listener's sense of time and pacing through the elimination of natural breaths. As the work's subtitle suggests, breathing and circular breathing are both important themes in this work, and the pulses in the flute sound that result from the circular breathing are integral to the building of tension within the piece. As Matuz (1990: 8) writes, '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 this piece'. This pulsing, which in most other instances of circular breathing the flautist would seek to disguise or hide completely, is similar to the pulsing that forms a distinctive element of the texture of didjeridu music. Fletcher (1996: 11) observes:

> [Circular breathing] is now used routinely by oboists and even flute players to play without breath breaks for as long as several minutes. In these instruments, with their much smaller breath demand, the objective is to maintain an even tone and cover up any effect of the breathing. With the *didjeridu*, however, the player makes a virtue of necessity and emphasises the rhythmic breathing cycle to produce a pulsating drone.

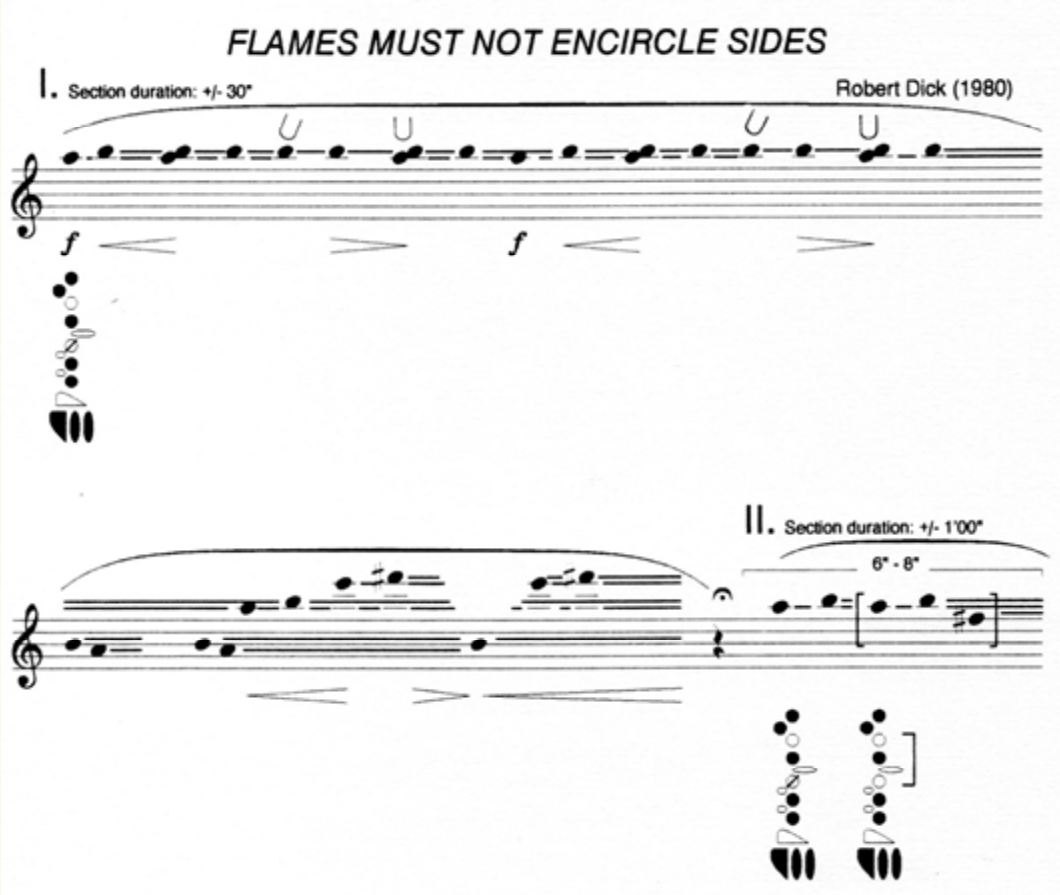
Matuz's use of circular breathing in *Studium 1/974* to achieve a pulsating effect and to build tension runs counter to Vernon Hill's later claim in relation to the flute that 'circular breathing is only really effective if no-one knows you are doing it' (Hill 1995: 104). Despite being one of the earliest pieces to require circular breathing, *Studium 1/974* is still one of the most extreme and unconventional experiments using the technique. In addition to exploring the freedom the flautist gains by being able to breathe without interrupting the sound, Matuz has harnessed the idiosyncrasies of the circular breathing process, making it an essential and meaningful part of the music.

Robert Dick — *Flames Must Not Encircle Sides* (1980)

In *Circular Breathing — You Can Do It*, Dick (1987b: 62) writes:

> In contemporary music circular breathing makes possible the performance of pieces designed to have phrase lengths longer than breath lengths. As a composer I find this freedom invaluable; and as a performer, indispensable.

Figure 3. Dick (1980: 1), *Flames Must Not Encircle Sides,* Stanzas 1 and 2. Used with permission.

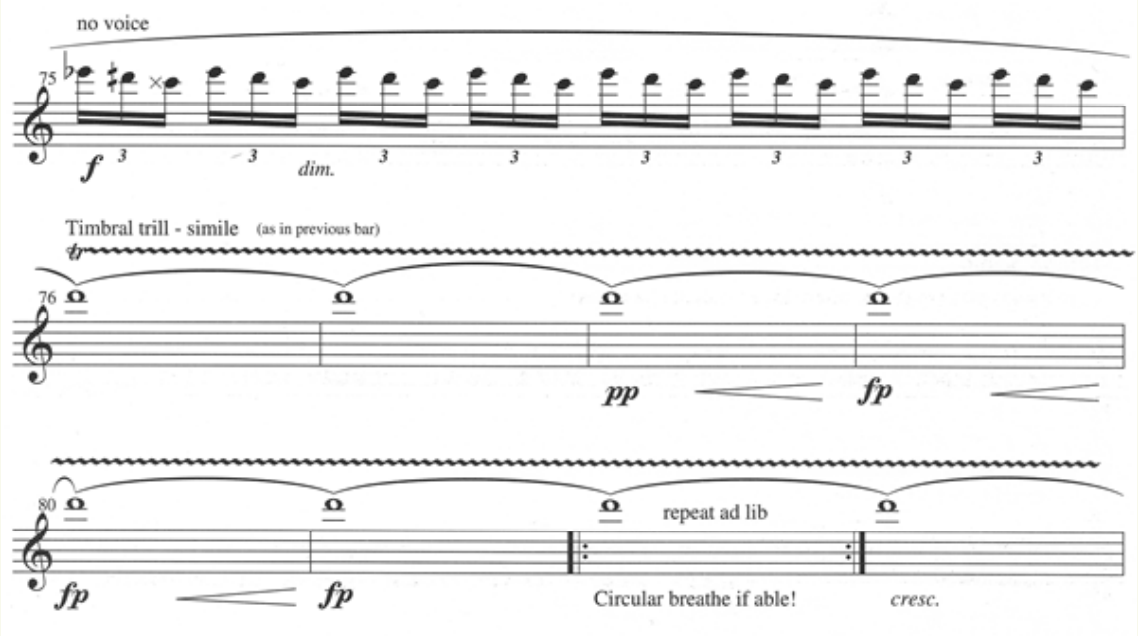


His composition, *Flames Must Not Encircle Sides*, is a perfect example of the freedom granted by circular breathing. The piece comprises long, semi-improvised phrases consisting of sets of multiphonic tremolos that the flautist oscillates between at her or his discretion (see Fig. 3). *Flames Must Not Encircle Sides* relies entirely on multiphonic and timbral effects and never requires the flautist to use what could be considered the normal or traditional flute sound. Each phrase is marked with an approximate timing and many of the phrases require the flautist to sustain an unbroken sound, at varying dynamics, for several minutes. As Dick (1987b: 62) notes, 'The effect on the listener is dramatic. As continuous streams of sound enfold him, he becomes increasingly involved in the texture, quality, and shape of the flute sonority'. Being both a performer and a composer, Dick pays careful attention to the relationship between the music and its technical execution. In the performance instructions, he writes: 'The flutist must use circular breathing, as breaking up the flow of the long phrases is not musically acceptable' (Dick 1980: Preface). While *Flames Must Not Encircle Sides* is technically an incredibly demanding piece for solo flute, it does not draw attention to the techniques involved in its performance in an overt way. It could be said that *Flames Must Not Encircle Sides* requires circular breathing but, unlike *Studium 1/974*, is not actually about circular breathing. In *Circular Breathing for the Flutist*, Dick (1987a: 31) writes:

> Runs and trills are optimal places for circular breathing. Indeed, the trill is the perfect spot to begin, as the rapidly alternating notes can be very effective in covering imperfections in circular breathing.

Consisting of trills and tremolos, *Flames Must Not Encircle Sides* provides ample cover for the flautist's circular breaths, allowing the technique to remain beneath the surface of the composition, facilitating its performance, without becoming a feature of the music or texture of the piece. Dick's only instruction regarding when to use circular breathing comes in the preface: 'circular breath inhalations should be taken frequently, as needed' (Dick 1980: Preface). In contrast to *Studium 1/974* (in which the central themes are circular

Figure 4. Clarke (2001: 11), *The Great Train Race*, Bars 75–83, Timbral Trill. Used with permission.



breathing, breath and life, and the heartbeat and respiration of the flautist are central to the performance), *Flames Must Not Encircle Sides* requires the flautist to become a bellows, using circular breathing to pump oxygen into the music so that the flames can burn brighter, hotter and longer.

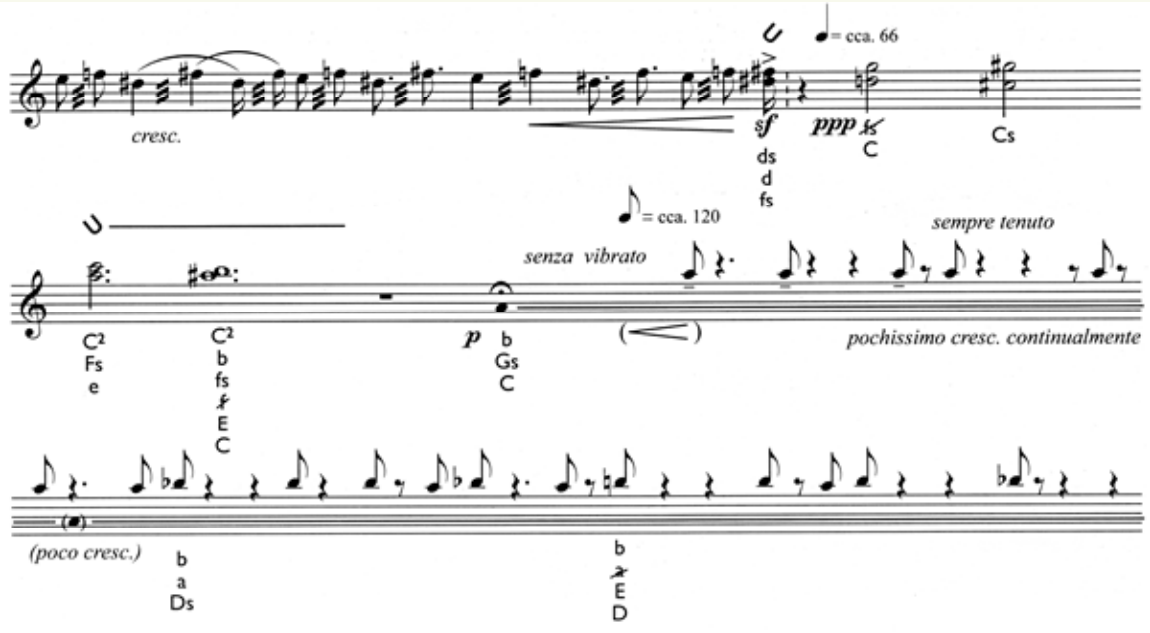
Ian Clarke — *The Great Train Race* (1993)

British flautist-composer Ian Clarke describes his composition *The Great Train Race* as 'a showpiece for the flute as you don't usually hear it' (Clarke 2001: inside cover). Inspired by Dick's work with multiphonics and Clarke's own experiences performing in a rock band, *The Great Train Race* cleverly uses extended techniques, including singing and playing, multiphonics, harmonics, and note-bending, to evoke the scenario suggested by the title, mimicking the sound of steam trains and whistles[4]. In this work, Clarke employs circular breathing similarly to Dick in *Flames Must Not Encircle Sides* by depicting a subject that requires oxygen but does not breathe in the same way as living creatures. Unlike Dick, though, Clarke deliberately and self-reflexively draws the listener's attention to the unusual techniques required to perform this piece and capitalises on the novelty of these techniques to surprise and delight the audience. These surprises culminate in a cadenza-like passage: a timbral, microtonal trill that is extended indefinitely through the use of circular breathing (see Fig. 4). Clarke is also more realistic than Dick about the number of flautists who have embraced circular breathing: his score instruction reads, 'circular breathe if able!' (Clarke 2001: 5). Performing *The Great Train Race* without circular breathing, while possible, robs the piece of much of its drama, at what is essentially its climax. Fortunately for flautists learning to circular breathe, *The Great Train Race* provides a fairly forgiving context in which to use the technique. The trilling provides ample cover for imperfections in the circular breathing and the rock n' roll nature of the piece means that a rougher tone-quality and any unintended snorts can actually enhance the musical effect. Throughout *The Great Train Race* Clarke deliberately exploits the dissonance between the listener's expectations (i.e. that the flute sounds a certain way, or that phrases will not last longer than a natural breath) and the modern capabilities of flutes and flautists to create a piece that is at once humorous, virtuosic and exciting.

Gergely Ittzés — *Projections* (1992–1993)

Hungarian flautist-composer Gergely Ittzés attended lectures by Matuz on the acoustics of the flute and extended techniques in the late 1980s, and describes in an interview in 2013 how he 'followed' Matuz and learned from him everything he could (Pattillo 2013: 4). Ittzés

Figure 5. Ittzés (2008: 12), *Projections*, Stanzas 5–7. Published by Akkord Music Publishers. Used with permission.



also acknowledges Dick's influence on his work as a flautist-composer in a 2009 interview for the magazine, *Flute Talk* (Koidin 2009). Ittzés builds on the work of both composers, incorporating circular breathing into his music in even more sophisticated and elaborate ways.

In her review of Ittzés's album, *Extended Circles* (2008), professional flautist Molly Barth (2013: 60) writes that *Projections* 'is the first composition that I have heard that really compels me to want to learn to circular breathe'. Like Dick and Clarke, Ittzés has also taken inspiration from a subject that would not normally be constrained by natural human breaths for this particular work. Ittzés (2008: 5) writes, '[*Projections*] borrows both its title and the structure of its elements from visual patterns'. In this piece, Ittzés seeks to vary intervals, durations and timbres in the same way that the shadows cast by an object vary according to the position of the light source (Ittzés 2008: 5). As in Dick's *Flames Must Not Encircle Sides*, circular breathing is a technical requirement in *Projections*, without being a feature of the music. Circular breathing is used to sustain a drone tone in an extended passage in which all twelve chromatic notes are sounded, using multiphonic fingerings, in harmony above a continuous A natural. Ittzés (2008: 5) writes, 'this gesture symbolizes the completion of the two-part possibilities of the flute'. The beginning of this passage is shown in Fig. 5. Interestingly, the resulting sound is similar to that achieved by instruments that comprise multiple pipes, such as the *launeddas* and *arghūl*, where one of the pipes is used to sustain a continuous drone while the melody is played on the other pipe or pipes (Leydi 2014; Conner and Howell 2014). In this case, though, Ittzés has achieved the effect using the single tube of the modern flute. While Ittzés's sound-palette is certainly influenced by ethnic flute traditions (though he rarely refers to the music of specific cultures), this effect appears to have emerged from his own experiments with multiphonics and a desire to systematically explore all the possibilities of a single technique or concept. The performance of this passage is particularly challenging: the flautist must circular breathe smoothly and unobtrusively, without trills under which to hide, while changing between various multiphonic fingerings. Circular breathing has allowed Ittzés to craft this passage without having to compromise to accommodate for natural breath-lengths, fashioning one of the most sophisticated (and technically challenging) implementations of circular breathing in the repertoire.

Conclusions

Despite its as yet limited adoption in Western concert flute performance, composers have already begun to use circular breathing to expand the musical possibilities of the flute. Circular breathing can work both as a timbral and musical feature of flute compositions, as well as a technical feature that allows both composers and performers to transcend the confines of the natural breath. With the exception of

Matuz, each of the composers discussed in this article has used circular breathing to musically depict subject matter (whether mechanical or natural) that does not breathe as flautists, or any humans, do. Matuz, however, makes breathing itself his subject matter, pushing the boundaries of what can be achieved with the human breath.

With growing interest in extended techniques, circular breathing is becoming increasingly significant, and, as more flautists and composers become familiar with the technique and its applications, there is bound to be even greater exploration in this area in the future. Wider adoption of the technique will mean that the flautist's need to breathe will no longer set limitations upon the composer. Instead, composers will be able to approach the task of writing for the flute with the same degree of freedom as when composing for any instrument that is not reliant upon the human breath for the production of sound, permitting the development of an even larger body of repertoire for the flute that is technically and musically interesting and engaging for performers and audiences alike.

ENDNOTES

1. The exceptions to this are those wind instruments that use a bladder to sustain the sound, such as bagpipes.
2. For information on the use of circular breathing in jazz, see Kernfeld (2014).
3. The word 'flute' in this article is used, unless otherwise specified, to refer specifically to the Western concert flute, to the exclusion of the myriad other types of ethnic flutes in existence.
4. Monier (2010: 6, 82) writes:

   > 'The inspiration for this work materialized out of a studio rehearsal with Clarke's rock band, when the producer told him that he was playing — "too pretty." The producer said that he wanted to hear sounds that were unique and rock-inspired. After some improvisation, Clarke realized that the flute sounded somewhat like a steam train when multiphonics and note bending were combined in a specific way.'

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ABSTRACT

Circular breathing is the technique of maintaining a continuous, unbroken sound on a wind instrument by periodically expelling air stored in the mouth and simultaneously inhaling through the nose. While it has long been an essential part of many wind instrument traditions, such as that of the Australian Aboriginal *didgeridu*, it is only since the latter decades of the twentieth century that composers and performers have begun exploring the possibilities of circular breathing in Western concert flute playing. Due partly to the difficulty of mastering circular breathing, its adoption among flautists has been slow compared with that of other extended techniques, such as multiphonics or percussive effects. As a result, the literature concerning circular breathing in the concert flute repertoire has so far been limited to technical guides outlining methods for learning the technique. To date, there has been a paucity of scholarly work undertaken on the role of circular breathing in Western concert flute performance and composition. This is despite the fact that, since the 1970s, established flautist-composers such as István Matuz, Robert Dick, Ian Clarke and Gergely Ittzés, among others, have been employing circular breathing in their performances and compositions. This article discusses, by referring to the works of these composers, the development of circular breathing as a flute technique and examines the ways in which it has been used to expand the creative opportunities available to composers writing for the flute. Each of these composers has found unique ways to explore the freedom that circular breathing makes possible, extending the capabilities of the flute, which will no doubt have significant implications for future composers and performers of music for the instrument.

keywords: circular breathing, flute, extended techniques, wind instruments, composition, performance, István Matuz, Robert Dick, Ian Clarke, Gergely Ittzés.

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