INTERNATIONAL TRUMPET RESEARCH CENTER

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Volume 1, Issue 1
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New Challenges in Research: From Autoethnography to AI in Trumpet Pedagogy

INTERNATIONAL TRUMPET RESEARCH CENTER

Editor's Letter

Thank you very much to all the readers who have taken the time to search these pages for knowledge regarding the field of study of the trumpet. Our journal is part of the International Trumpet Research Center's initiative to promote scientific research on our musical instrument.

Research in the field of the trumpet has been a reality for more than 100 years. From the first works to date, trumpeters have shown an enormous interest in discovering our repertoire, as well as new ways of interpreting it, investigating the pedagogy of the trumpet to find new solutions to the difficulties that arise, developing new repertoire, better understanding the biomechanical aspects of our instrumental practice, among many other topics. From educational methodology to musicology and ethnomusicology to transformative research in the arts, research focusing on the trumpet and trumpet players is a field full of opportunities and challenges.

This first number is proof of this. Although we have had a relatively low number of submissions, we have decided to publish it nonetheless. We have to take the first step and motivate the trumpeter community to conduct research and communicate scientifically in written form.

This first issue presents a wide variety of research papers. Put aside, it points towards learning theories in the field of the trumpet. On the one hand, an auto-ethnographic investigation is presented in the case of a severe injury to the lip and its recovery. These are followed by an article about interdisciplinary trumpet playing, involving performance and multimedia. Artificial intelligence in scientific research and its potential educational applications is also treated in the next paper.

To end this first issue, we share an interview with a dear colleague who will surely be the subject of numerous references.

Once again, we want to encourage the community to produce and share scientific research in this medium. Our community, united through the bonds of science, will be able to evolve with the same enthusiasm it has shown before but much faster.

Enjoy your journal.

Warm regards,

Jordi Albert, Ph.D.

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The Orbicularis Oris and the Enlightened Brass Player: An Autoethnographic Study of Injury and Recovery

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Abstract

This paper explores my personal experience with a torn *orbicularis oris* muscle, a significant injury for brass musicians, through an autoethnographic lens. Combining personal narrative with academic analysis, I recount the physical, emotional, and psychological challenges of injury, surgery and rehabilitation, and hope for change in the future. Recounting my own experience, I hope to continue conversations surrounding musicians' health, the discussion and stigmatization of injuries within our field, and the lack of preventative education and awareness in music education today. Drawing from key literature and parallels with athletic injuries, I dive deeper into the *orbicularis oris,* other symptoms and injuries related to that important muscle, and argue for systemic changes in music education, greater access to specialized medical care, and a cultural shift toward prioritizing physical and mental health among musicians.

Keywords: Brass injuries, *orbicularis oris*, autoethnography, musician health, embouchure, injury prevention, mental health, physical health.

Introduction

Throughout my career as a professional musician, I often marvel at the physicality of music-making. While audiences hear a beautiful melody, witness acrobatic flexibility, few recognize the immense physical demands behind musical performances. These demands challenge all of us to become as skilled as we can be to master our own craft - however they became more painfully apparent to me when, due to overuse, at the end of my freshman year at Northwestern University in 2010, I suffered a torn *orbicularis oris* muscle, the primary muscle responsible for forming the embouchure.

This injury marked a turning point in my life. It forced me to grapple with the limits of my body, navigate a challenging rehabilitation process, and confront both the cultural stigmas surrounding injuries in the music world and the mental barriers that this injury created for me. As I searched for answers and underwent surgery and recovery, I discovered a frustrating lack of resources and conversations surrounding the *orbicularis oris* and musicians health in general.

Through this paper, I aim to share my personal journey, within a broader context. Musicians, like athletes, face significant risks of injury, yet the support and preventative systems available to them are inadequate. By combining my narrative with insights from literature and research, I hope to contribute to a growing dialogue on the *orbicularis oris,* injury prevention, treatment, and recovery for musicians.

Theoretical Framework and Literature Review

The Orbicularis Oris: Anatomy and Function

The *orbicularis oris* is a circular muscle surrounding the mouth, responsible for puckering, lip closure, and other fundamental facial movements. It plays a vital role in tasks such as eating, speaking, and articulating emotions. For brass players, this muscle is particularly significant because it supports the embouchure, the configuration of the lips and surrounding musculature required to produce sound on a wind instrument. (Jain & Rathee, 2023)

In brass playing, due to it's constant contact with the instruments mouthpiece, the *orbicularis oris* sustains considerable stress, particularly during long practice sessions or performances, and across long periods of heavy playing spanning days, weeks and months. It is the primary muscle responsible for forming the aperture – the opening through which air is propelled into the instrument to create vibrations and sound. Injury to this muscle can severely impair flexibility, tone production and endurance, leading to pain, frustration, and, in severe cases such as my own, an inability to play.

Despite its critical role, it is often overlooked in discussions of musicians' health. While much attention is given to conditions like tendinitis or repetitive strain injuries affecting the hands and wrists, injuries to the *orbicularis oris* are less frequently studied and discussed, leaving a gap in both medical and educational resources. Early in my own education, I remember very few, if any, conversations about the *orbicularis oris,* and while we of course mustn't dwell on anatomy for too long, the importance of understanding just how vital this muscle is to daily function as a brass player can go a long way in supporting its health and our longevity as a brass playing musician.

Early Documentation of Orbicularis Oris Injuries

The earliest documented case of a torn *orbicularis oris* in a brass musician was published by Dr. Jaime Planas in the *International Trumpet Guild Journal* in 1982 (Planas, 1982). This article described a professional trumpet player who experienced embouchure dysfunction, characterized by pain, decreased flexibility, and tonal deterioration. Upon examination, Planas discovered that the musician had a torn *orbicularis oris*. In what is considered the first recorded instance of this procedure, Planas surgically repaired the muscle, allowing the patient to return to professional performance within a year. Planas later published additional studies on this procedure, emphasizing its efficacy and relatively low risk when performed by experienced surgeons (Planas, 1988).

Subsequent research built upon Planas' findings. A 1996 study by Papsin, McGrail, and Maaske documented 10 cases of *orbicularis oris* injuries treated with surgical repair. Nine of these cases were successful, with musicians returning to their pre-injury performance levels.

The authors noted that untreated injuries often result in permanent damage, underscoring the importance of early diagnosis and intervention (Papsin et al., 1996). Despite these promising results, the procedure remains rare, particularly in the United States, due in part to legal and cultural barriers. Dr. Bernard Kaye, from Jacksonville, Fla responds to the results achieved by Dr. Planas, and in spite of his acknowledgement of the successes achieved by Dr. Planas in his procedures, that "if I were to encounter such cases in this country, I would probably be inclined to treat it nonoperatively. I am not sure that all surgeons would obtain the highly successful results that Dr. Planas had in his case." (Planas, 1982).

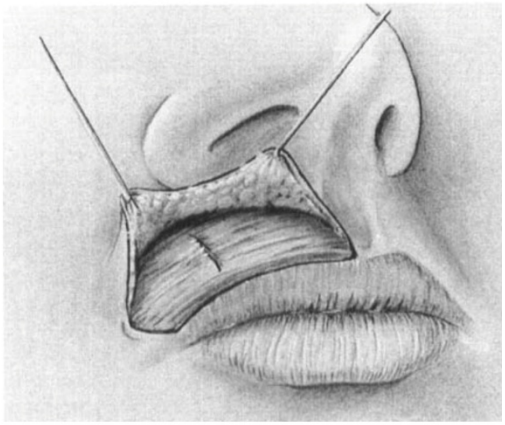

Fig. 1. The pathology is identified after skin lips flaps are raised. It commonly lies at right angles to the fibers of the orbicularis oris muscle. (Papsin et al., 1996)

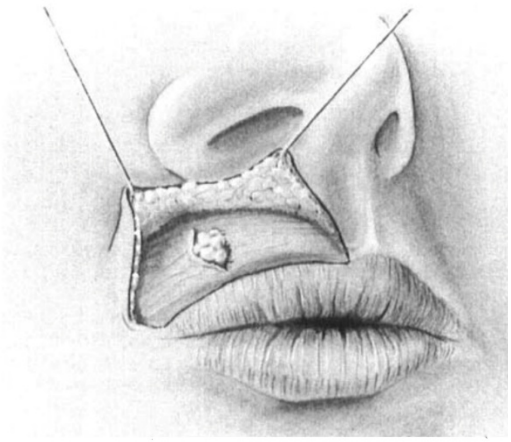

Fig. 2. With the patient "buzzing", the pathology, in this case herniation of fat through the muscle, becomes more easily identifiable. (Papsin et al., 1996).

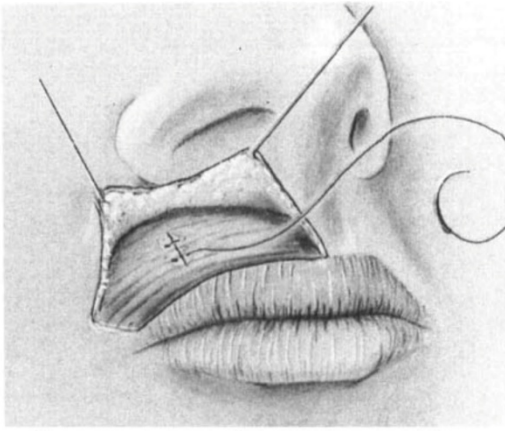

Fig. 3. The edges of healthy muscle are approximately (after excision of scar if required) with interrupted sutures, and the repair is tested with the patient "buzzing". (Papsin et al., 1996).

While he does not give reasoning behind this opinion, my insinuation is that it is a combination of the novelty of the procedure (at the time), as well as the risk included in a procedure of this magnitude - and magnitude purely speaking of how a negative outcome could have a catastrophic effect on a musicians livelihood and performing ability. As this injury is comparatively rare, with regards to other musicians injuries, like tendonitis, or surgeries to repair muscles like the ACL, UCL and achilles in athletes taking place much more frequently, the willingness and confidence to take on this surgery by capable surgeons is just not there.

Embouchure Overuse Syndrome and Broader Injury Profiles

The *orbicularis oris* and a brass players embouchure can suffer varying degrees of injury. Ranging from superficial injuries such as dry and cracked skin, progressing more severely to a muscle stretch, and more seriously to a partially or fully torn muscle. Monitoring the health of an embouchure - superficially and internally - is crucial to maintaining a healthy and sound technique, and tone. How we do that is largely dependent on our own personal technique, and of course our practice, performance and personal daily routine. Striving towards efficiency and monitoring our bodies and never pushing past the "point of no return" are crucial.

Mild	Moderate	Severe
Morning swelling	Dull aching pain	Shooting pain
Chapped lips	Superficial injury (cracked lip)	Dull pain that does not subside
Strident/dull sound	Skin wearing away	Blood
Small, tooth-shaped indentations	Deep, tooth-shaped indentations	"Pop" or "snap" sound from the lip, followed by muscle failure
Sunburn (dehydration)	Lip ulcers (dramatic)	Limp, un-taut lip

Fig. 4. Examination of mild to moderate symptoms and conditions affecting a brass players lip (Dill, 2012)

Examining two significant books written by brass playing musicians, the only two of which I have come across which specifically mention the *orbicularis oris*, we encounter wise guidance coupled with deep personal experience and knowledge of injuries suffered by brass players.

Denver Dill's *Still Playing* (Dill, 2012) offers a personal and highly detailed perspective, focusing specifically on his experience with injury and recovery from a torn *orbicularis oris* muscle and surgical repair, the very same procedure that I underwent. Dill's autobiographical account highlights the physical and mental challenges of rehabilitation, while also providing practical tools and a guide for injured musicians making a recovery. This is a truly thoughtful resource and a must have for any professional brass players and pedagogues. One of the most significant inclusions in this book are charts and descriptions diagramming the different levels of injuries that Denver classifies as mild, moderate and severe, including symptoms and solutions. These charts, as well as the proposed solutions and treatments should be widely distributed and discussed amongst brass players worldwide, and included as a foundation of specific brass-health related conversations and courses in high schools, college and university level trumpet (and brass) study. This book is a bit more succinct and specific in relation to the different types of injuries one

can encounter as a brass player, and I would recommend this over Lewis' book as a more direct and helpful examination of injuries and solutions to injuries. I want to include that while these books are very helpful, the most important step in the injury discovery process is the consultation of a medical professional.

Lucinda Lewis's book *Broken Embouchures* (Lewis, 2010) is a thorough and detailed resource into what she calls Embouchure Overuse Syndrome. This book offers a very in depth analysis of the wide ranging net that this "Syndrome" casts, including many of the possible causes, symptoms and offers solutions, to move past what she empathizes very well with any brass player who has suffered any type of injury as a very frustrating and traumatic experience. I would recommend this book to any brass player who is struggling with an injury, or possible injury, situation, and for any and all pedagogues to further deepen their knowledge and understanding of potential problems that can arise for brass players. My only qualm with this book is that Lewis states in the brief section related to specific muscle injuries, when she says that it is extremely rare to encounter muscle damage to the brass player's lip. I can't help but disagree, and argue that muscle damage for brass players, in particular Trumpet players, is the most common injury that I've encountered in my own time as a brass player. Repeated use of words like "Embouchure Twilight Zone", "Embouchure Crisis" and her umbrella term "Embouchure Overuse Syndrome" create the impression that most embouchure issues are non-medical ones.

Lewis argues that if something is wrong, and your embouchure isn't working correctly, it must be either a largely psychological issue, or something that can be solved by exercises using the mouthpiece, her "blocked buzzing" exercises, which while admittedly have some useful applications to them, can decidedly not fix a torn Orbicularis Oris muscle, which can only be repaired through Surgery, as told to me in my own physical examination by Dr. Simon McGrail, mentioned above.

Musicians are athletes, as we will discuss in this paper, and we must acknowledge the incredibly fine and delicate musculature systems that are in use when we play our instruments, and how those muscles can be damaged, just as any athlete can sustain an injury. Despite aspects that I disagree with, this book is a must have for any brass teacher and player hoping to learn more

about the embouchure, as well as potentially diagnose issues that can arise as a player, because it thoroughly discusses aspects of lip injuries, as well as mental hurdles, that players deal with frequently.

Parallels Between Musicians and Athletes

The physical demands of brass playing often draw comparisons to those faced by athletes. Both groups require intense strength, coordination, endurance, and precision, making them susceptible to similar injuries. For example, athletes at the highest level frequently suffer torn tendons or muscles due to overuse or strain, conditions that parallel the embouchure injuries experienced by brass musicians such as myself and Denver Dill.

Nicholas Quarrier introduced the concept of musicians as "musical athletes", arguing that their work involves complex physical tasks that warrant the same level of care and attention given to professional athletes (Quarrier, 1993). This analogy is supported by statistical data: a survey by the International Conference of Symphony and Opera Musicians (Brandfonbrener, 1997) found that 76% of respondents had experienced medical issues affecting their performance, mirroring the 91% injury prevalence reported among university athletes (Lemoyne et al., 2017).

Despite these similarities, the resources available to musicians lag far behind those offered to athletes. Professional sports teams typically provide access to specialized medical care, physical therapy, and structured rehabilitation programs, whereas musicians often face a lack of institutional support. This disparity highlights the need for greater investment in musicians' health and the establishment of dedicated resources for injury prevention and recovery. This disparity I believe is also present on the field and in the practice room when it comes to training and practice regimens. Musicians and Athletes share a commonality in pushing our bodies in quite unnatural ways to attempt to achieve greatness. Athletes are constantly monitoring their bodies to achieve optimum efficiency, through intense training and rest periods, with calculated and prescribed rest being a major component of that training. While both fields share certain stereotypical phrases such as "no pain, no gain" and the pride taken with how many hours are spent in the practice room or gym, musicians are oftentimes encouraged to push themselves without much guidance as to what that truly means. Finding a routine in which our tireless desire to push ourselves to be better

is balanced with thoughtful and diligent rest and recovery is crucial not only to improving and discovering our true capabilities as musicians, but also to our longevity and mental and physical health.

Managing Workloads and Stigma and Silence in the Music World

When examining this attitude of "no pain, no gain" brings us to deeper conversations about what might truly be the most important preventative measure for brass injuries. De-stigmatizing talk of self-care and thoughtful rest in the midst of efficient practice, in the midst of our routines, is crucial. One of the most pervasive challenges faced by injured musicians is the cultural stigma surrounding injuries. Unlike athletes, who are often celebrated for their resilience in overcoming physical setbacks, musicians are frequently expected to prioritize perfection and endurance over self-care. I remember in high school, when I essentially would live in the band room practicing before and after school, and in between classes, my teacher at the time voiced concern that perhaps I should rest more in between my etude practice. At the time I acknowledged this, but didn't truly make a change in my routine. Looking back, that practice style - of intensity non-stop, without enough rest, surely contributed to the injury I suffered just a few years later.

I was so lucky to have such a thoughtful teacher to guide me. Band directors and private lesson teachers at the high school and collegiate level are perhaps the most influential to a young brass player. Not only for musical, technical and leadership guidance, but for setting up a young student for success in how rehearsals are conducted, how part assignments are made, and repertoire chosen to best suit the young musicians. It is a huge responsibility to balance the desires for a beautiful and well rounded musical program, while also balancing the physical workloads of students - pushing them outside of their comfort zone musically and physically to achieve greatness, while also not pushing them past what is "doable" for them as a young musician still learning their craft. Managing workloads reasonably and effectively is the primary way to prevent injuries in brass players.

Once an injury occurs, this stigma not only deters musicians from seeking help but also perpetuates a lack of awareness about common injuries and their symptoms. Many musicians, myself included, push through discomfort or pain, believing that it is a normal part of the learning

process. This mindset often leads to more severe injuries that could have been prevented with early intervention and rest. Never pushing past the point of pain.

The Role of Preventive Education

The role of teachers at the high school and collegiate level is crucial to prevent injury and to educate these young players on workload management and health moving forward throughout their careers. As a freshman trumpet player at the university level, I wanted to play my instrument as much as possible. To play in as many ensembles as I could, and perform. Looking back, there is no doubt that this was the cause of my own *orbicularis oris* tear. As an 18 year old, my lip was not able to handle the stress that came with this increased workload coming from high school to the collegiate level. As a freshman, I had the opportunity to play in the top ensembles, and in many different ensembles. I had recently won a solo competition, and was preparing for auditions as well. I was having success, and the success just inspired me to want to play more and more. While much of this playing was incredibly beneficial and a tremendous learning experience for me, I did take on more playing than was going to be physically reasonable for my lip. It is at this point in a young musicians journey to start learning the benefits of just saying "no", and learning how to maintain a schedule of thoughtful balanced musical enrichment, which includes plentiful opportunities to perform and learn their craft, while also maintaining bountiful rest and "off the instrument learning", such as listening, score study, piano practice, aural skills, composition skills, non-music subjects, exercise, the list can go on and on.

Many music programs, and brass studios focus primarily on technical and artistic development for young musicians, and leave students unprepared to truly navigate the physical demands of their craft. As Lewis (2002) and Dill (2011) both emphasize, many embouchure injuries are preventable with proper technique, balanced practice schedules, and awareness of early warning signs. We musn't instill fear in students that injuries are just around the corner, because with thoughtful diligent practice, injuries are still quite rare - however, awareness of what can happen can inspire a thoughtful approach that can be the foundation of a healthy routine and mindset for years to come.

In my own experience, the absence of that awareness contributed to my injury. As a young musician, I was never taught about the risks of overuse or the importance of rest. Instead, I internalized the belief that success required relentless effort, a mindset that ultimately pushed me to the brink of physical collapse. I am *still* working past this mindset, which continues to cause me troubles in my daily life, not with injury, but with trying to achieve a balanced life with music, work, and family.

Beyond managing workloads, expanding health education in music curricula could significantly reduce the prevalence of injuries among musicians. Courses on topics such as posture, breathing, exercise for musicians, rehabilitation techniques and of course workload management could provide students with the tools to sustain long-term careers. Additionally, incorporating techniques like Alexander Technique, Body Mapping, and Yoga into required music training could promote physical awareness and resilience.

Narrative and Analysis

The Injury

The injury occurred during the spring of my freshman year at Northwestern University. Balancing a heavy schedule of ensemble rehearsals, private practice, solo competitions and auditions, at the end of one particularly long day of playing I began to notice a burning sensation in my upper lip. I noticed a slight crack and tear in the superficial layer of skin at the right sight of my embouchure, where the mouthpiece rim rests on the lip. At first, I dismissed it as fatigue, and I stopped playing for the day, but the next morning when I tried to play my flexibility and tone production became inconsistent, and my lips felt foreign and unresponsive.

Over the course of the next few days, weeks and months, I tried varying amounts of rest and rehabilitation. Beginning with just a day or two completely off of the trumpet, then several days, to a week and more. After months of trial periods of rest and recovery, and conversations with doctors and musicians asking for advice, in August 2010 I visited Dr. Simon McGrail in Toronto, Canada, who at the time, was the leading doctor who could provide diagnostic and surgical care to brass players, and only one of two that I knew of at the time, the other being Dr.

Craig Vander Kolk, in Baltimore. Within the first few minutes of my examination from Dr. McGrail, I was diagnosed with a torn *orbicularis oris*. Dr. McGrail shared that the muscle was torn, and scar tissue had gathered in the space, preventing it from healing on its own. He recommended a surgical procedure to remove the scar tissue and to sew the *orbicularis oris* muscle tissue back together. The news was both shocking and relieving; I finally had an explanation for my struggles.

Fig. 5. Michael Hawes, post surgery, August, 2010

The Surgery and Recovery

The next day, I underwent a 30-minute surgical procedure to repair the muscle. The operation was a success, but the rehabilitation process was incredibly challenging. Following the surgery my lip felt like a totally foreign entity, and following two months of total rest, I began buzzing again. I felt no pain, but it felt like a completely different embouchure, and was quite disorienting. I had lost my "feel" for my embouchure, I lost my touch and sensitivity, I lost my sound, and all of my skills, and felt like I had lost my identity. As very few people had experience recovering from this particular surgery, my rehabilitation journey was spent mostly on my own and was a struggle, to say the very least. Due to the uncertain and unguided rehabilitation process - simply due to the lack of knowledge surrounding this surgical procedure - I developed several physical and mental barriers which slowed my recovery significantly.

Relearning fundamental aspects of trumpet and pushing myself to rebuild my embouchure and skills, while fighting the urge to be too "careful", required patience, discipline and a certain mental focus. As Denver Dill's *Still Playing* (Dill, 2012) hadn't been published yet, there was no published guidance on a rehabilitation from this particular injury. Unlike athletes, who have access to structured recovery programs, I had to navigate my rehabilitation largely on my own; though I am eternally grateful for the unwavering support and guidance of my trumpet teacher Barbara Butler at the time, who despite not having experience with a procedure like this, guided me expertly with trumpet fundamental work.

Despite guidance from my amazing teaching, the rehabilitation process proceeded a bit like a walk in a totally dark room - I felt like I had no idea if what I was doing was correct, and was just flailing around in the dark for quite a while. I took things day by day, I created plans for myself, where I would play for a few minutes, rest for a few, and very slowly and steadily ramp up the amount I was playing each day. At that time in the several months after the surgery, I was fearful about pushing myself too hard and too fast, and this uncertainty consumed me for quite some time. This caused me to build up many unhealthy mental habits, as well as physical habits which I believe inhibited my technical growth as a trumpeter.

Six months after the surgery, I returned to Toronto for one post operative check up with Dr. McGrail, where it was deemed everything had healed well. Fully in the midst of rehabilitation, my paranoia that my lip wasn't healed, or that I had pushed myself too far again caused me to reach out to Dr. Craig Vander Kolk, in Baltimore - who was the other primary doctor who had experience diagnosing and performing surgery to repair a torn orbicularis oris at the time - for a check up appointment, as Dr. McGrail at the time was in his other office in Halifax, Canada. Dr. Vander Kolk helped assure me that the muscle was healing just fine and I had nothing to worry about. I have heard from other brass players that Dr. Vander Kolk is no longer recommending the surgery to brass players. Dr. McGrail passed away in 2021, after helping countless brass players, myself included.

At some point, I hope to document my recovery process in a more detailed fashion - though due to its incredibly drawn out time period and with considerable ups and downs, that recovery

process has taken years. When I think of how simple the procedure was, and how short many athletes return to form after more complex procedures, I look back at that process with much regret, and alternate between wishing that I had trusted myself more completely that I could jump back in without fear or hesitation, and wishing that I had just given up completely, and perhaps saved myself years of frustration and just given up.

Post Injury, Successes and Failures - Mental Health

Over the last 14 years since this injury, I've gone on to receive my masters in Trumpet, currently (2024) working on my doctorate. I've performed as a professional trumpeter with orchestras across the world, performed three years with Axiom Brass, an award winning brass quintet based in Chicago, and recorded two albums with them. I've recently released an album, *Florence Price, Her Song* which features my trumpet as well as my singing voice and many previously unrecorded pieces by the great American composer. This injury forced me to re-examine how my own personal musical journey was going to proceed, and I learned to sing, and taught myself to play the piano. I've performed as a professional singer on more than 25 recordings, several of which have been nominated or won a Grammy award. I sing with many of the top ensembles around the country, and have toured the world as a singer. I hope to release my first exclusively trumpet album, with pianist Renan Branco, in early 2025. I have worked as a full time music director in the church, where I lead choirs, play at the piano, organ, as a singer, trumpeter, and arranger.

Despite the successes I have had, I still feel like quite the failure. My identity was so wrapped up in the Trumpet, and how successful I was on that instrument, and so when I lost that identity for several years, following this surgery, I felt totally lost. As my planned career path took a major detour, I wish I had sought out a mental health professional to help me navigate this time period in my life. I am still working through those issues and challenging moments that resulted from this injury, and encourage anyone going through a difficult time in their life to seek out help. Whether it be from friends, family or a professional, speaking to someone about your struggles is one of the most important things you can do to overcome them. Incorporating discussions on

mental health, including how students can realistically set school and career related goals, while being realistic in those goals and their methods in achieving them, is vital.

Fig. 6. Following the recording of Florence Price, Her Song (2022)
(left to right) Robert McConnell, John Newton, Eugenia Jeong, Gregory Flint, Renée Vogan, Blanton Alspaugh, Lindsey Frazier, Michael Hawes, Corey Sansolo, Randall Hawes, Kevin Harrison

Cultural Stigma and Lack of Resources

Speaking further on the challenges I faced in the recovery process; the lack of resources and awareness from the music world of an injury such as a torn *orbicularis oris* muscle created a challenging situation to try and navigate. Very few people knew anything about the *orbicularis oris*, let alone recovering from a surgical procedure to the muscle. I often felt like I couldn't talk about it, and I was quite isolated. My hope with this paper is simply to increase the conversation surrounding injuries in the music world and how we can all support each other in better and more productive ways.

Insights from Athletes

When athletes - collegiate and professional - suffer injury, they have expert guidance from medically trained professionals to assist and guide their recovery and rehabilitation process, often with routines prescribed to them, and step-by-step guidance along the way. I believe much of this is due to the financial support that athletic programs have, along with the plethora of research and experience that medical professionals have undertaken with regards to those particular injuries and surgical procedures that are required to repair many injuries related to athletic endeavors.

Examining the experiences of athletes who have recovered from injuries provides valuable lessons. Their structured rehabilitation plans guided by medical professionals with emphasis on mental resilience highlighted gaps in the support available to musicians. Bridging this gap requires a cultural shift and greater investment in musicians' health.

Discussion and Implications

For Musicians

My experience underscores the importance of self-awareness and proactive health management. Musicians must prioritize rest, monitor symptoms, and seek professional help without fear of judgment. We must realize how physical our daily endeavors are. Whether it be as a brass player and the strain that our *orbicularis oris* takes on a daily basis, or as a woodwind or string player dealing with risk of tendonitis and carpal tunnel syndrome, the more awareness of how our bodies health and function are crucial to the success of our music making, the more thoughtful we can all be in how we approach our daily routines.

For Educators

Music educators play a critical role in fostering a positive culture in their studios and ensembles. A culture where all voices can be heard, where students feel that support and care, while also being pushed to be the best musicians, students and humans that they can. This sort of environment goes a long way to creating a successful professional musician, whether it be as an educator, performer, or none of the above.

Specifically related to injury prevention, educators must thoughtfully assess each student's ability level, as well as their physical, musical and mental capabilities before assigning them music to learn, part assignments in ensembles, and their overall workload. The key to all of this injury prevention discussion I truly believe is workload management, and mindful and efficient practice. While trusting a student to make decisions that is best for them is a wonderful thing, there are times when young musicians must be more forcefully guided, and sometimes difficult conversations must be had. Diligent observation, guidance and support is the main role of the teacher, in order to help a student become more self aware, and self sufficient by the time they leave their academic institution.

Ensemble directors, especially wind ensemble, bands and brass ensembles, must be thoughtful when it comes to programming, assigning parts, and rehearsal schedules. We can't be over cautious, but when you are working with young brass players who are only recently out of high school, mindfulness of how much you are asking of them is absolutely critical to avoid unnecessary injuries. Certain seemingly simple things like the repetition of physically demanding sections of music, including loud, high, sustained passages, must be thoughtfully rehearsed. In rehearsals, balancing quiet passage work with loud passage work, incorporating moments of listening, singing and rhythm work, can be ways to minimize injury risk. I've had countless conversations with students who are simply playing too much. In too many ensembles, and perhaps pushed past their comfortable limits in the parts they are assigned. No one wants to disappoint their directors and teachers, so they step up to the plate and swing as hard as they can - for better or for worse. Ensemble directors working together to foster an environment of trust and honesty is crucial, so if there is a situation where a student feels like they are overmatched with their assignments, they feel like they can approach their teachers and ask for help.

For Institutions

Universities and conservatories must provide academic resources and access to specialized medical care. Courses focused on musicians' physical and mental health must be a required part of any musician's degree plan. Establishing partnerships with performing arts health centers, like the Texas Center for Performing Arts Health, can bridge the gap between musicians and healthcare

professionals. Creating resources for musicians where they have access to medical support and care on campus is crucial to bridging this gap and fostering education and awareness growth amongst musicians. The more we all learn, the quicker and more accurately musicians can begin receiving care following initial symptoms of injury, and this awareness will foster stronger preventative measures amongst music faculty and students alike.

Conclusion

My journey with a torn *orbicularis oris* muscle was a transformative experience, revealing the immense physical and mental challenges we all encounter as musicians attempting to master our crafts. By sharing my story, I hope to simply continue the conversation surrounding musicians' health, and to decrease the amount of stigma attached to discussions of self-care, workload management and injuries in general. Musicians, educators, and institutions must work together to create a supportive environment where injury prevention and recovery are normalized and celebrated.

References

Brandfonbrener, A. G. (1997). Orchestral Injury Prevention Intervention Study. *Medical Problems of Performing Artists*, *12*(1), 9–14. http://www.jstor.org/stable/45440599

Dill, D. (2012). *Still playing: My journey through embouchure surgery and rehabilitation*. denverdill.com.

Jain, P., & Rathee, M. (2023, August 7). *Anatomy, head and neck, orbicularis Oris Muscle*. StatPearls [Internet]. https://www.ncbi.nlm.nih.gov/books/NBK545169/

Lemoyne, J., Poulin, C., Richer, N., & Bussières, A. (2017). Analyzing injuries among university-level athletes: prevalence, patterns and risk factors. *The Journal of the Canadian Chiropractic Association*, *61*(2), 88–95.

Lewis, L. (2010). *BROKEN EMBOUCHURES: An embouchure handbook for players suffering from embouchure dysfunction caused by overuse, injury, or medical and dental conditions*. Oscar's House Press.

Papsin, B. C., Maaske, L. A., & McGrail, J. S. (1996). Orbicularis Oris muscle injury in brass players. *The Laryngoscope*, *106*(6), 757–760. https://doi.org/10.1097/00005537-199606000-00017

Planas, J. (1982). Rupture of the orbicularis oris in trumpet players (SATCHMO'S syndrome). *Plastic and Reconstructive Surgery*, *69*(4), 692–693. https://doi.org/10.1097/00006534-198204000-00022

Planas, J. (1988). Further experience with rupture of the orbicularis oris in trumpet players. *Plastic and Reconstructive Surgery*, *81*(6), 978–979. https://doi.org/10.1097/00006534-198806000-00031

Quarrier, N. F. (1993). Performing arts medicine: The musical athlete. *Journal of Orthopaedic & Sports Physical Therapy*, *17*(2), 90–95. https://doi.org/10.2519/jospt.1993.17.2.90

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Analysis of the Use of Looping and Variations in Trumpet Learning

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Abstract

In this article, we explore the benefits of a Variated-loop strategy during the trumpet practice. Even though the use of looping has been a common tool in trumpet practice these days, the combination with the variation of the loop is not as common, despite its proven benefits. Building on the work of Jordi Albert, Jack Adams, and Mitsuo Kawato, We expose the data on the use of looping strategies with variation concerning the acquisition of motor skills, inner hearing, and Flow. We then analyze how the strategy of looping and looping with small variations, such as transposition, can improve the effectiveness and efficiency of trumpet learning. Furthermore, this strategy contributes to the self-regulation processes and introduces subtle changes to foster adaptability and a deep understanding of the material. Quantitative and qualitative methods were employed to evaluate the impact of these strategies on the musical and technical development of the participants. As we argue, the looping strategy and looping with variations work better than most of the strategies used by the participants in their regular practice because the looping strategy works directly to the inner hearing of the student.

Keywords: Trumpet Practice, Looping Technique, Inner Hearing, Motor Skills Acquisition, Auditory Feedback.

Introduction

In recent years, many professionals have been using the looping technique as a tool for work and practicing the trumpet. This technique has proven effective in developing musical and technical skills. However, combining it with variations within the loop remains uncommon, despite its demonstrated advantages.

Analysis

Playing a musical instrument involves performing specific movements to produce sounds. While musicians must execute "highly accurate sequences of movements in space and time," (Nunes-Silva et al., 2021), the outcome of these movements—the sound produced—is of greater importance. Through listening to the result, the musician can check if the movements he/she performed, were accurate or not. This is why "the perceived auditory consequences of one's actions are referred to as auditory feedback" (Nunes-Silva et al., 2021).

There is extensive evidence that feedback affects musical performance, for example, the work of Peter Q. Pfordresher (Finney, 1997), Brian Mathias, William J. Gehring and Caroline Palmer (Mathias, Gehring, & Palmer, 2017), and Jordi Albert Gargallo (Albert Gargallo, 2017). Moreover, Dr. Albert states that this feedback is not useful only during the performance, "it is the relationship between proprioceptive and auditory feedback that governs the process acquisition and control of expert motor practice on musical instruments" (Albert Gargallo, 2017).

Jack Adams (Adams, 1971) formulated the closed-loop theory, explaining a method for acquiring motor skills without making mistakes. Adams laid down the importance of error detection and the goal through the feedback, and its relationship with motor skills acquisition. Regarding the significance of the goal, Dr. Albert makes a relationship between the self-regulated process and the closed loop:

"Self-regulated learning through continued repetition of the same process, the individual will improve his execution of the task. On each trial or repetition, the subject makes a series of corrections to adjust his actions in such a way as to reduce the difference between the last feedback and the perceptual trace", (Albert Gargallo, 2017).

The looping strategy is based on the self-regulation controlled by the resulting sound of the trumpet. If the output (the sound of the trumpet) is close or like the input (inner hearing and the loop) this would be a match. If there are significant differences (mismatches) between the two sounds, the body will self-regulate until it finds the correct motor response (Albert, 2017).

Variability and Imaginary Practice

Looking for the efficiency and efficacy of the learning process, the looping strategy used included imaginary practice and variability during the process. These two strategies have been proven in different disciplines including high-performance motor skills, mostly in sports like basketball, athletics, and table tennis players (Liu et al., 2012).

During these strategies, the researcher asked the participants not to play, they asked to listen to the loop and hear the pattern in their inner hearing. This process of imaginary practice produced changes in the flow of the participants and the accuracy of the performance, "Through imagined practice, changes in behavior occur, in the measure that allows increasing the stability of acquired motor patterns or in the process of acquisition", (Moreno & Ordoño, 2009). This imaginary sports training works, because the human being is capable of "reproducing and activating the nervous pathways that allow it to both, produce movement and reproduce the sensations caused by stimuli to which it has been previously exposed", (Moreno & Ordoño, 2009). In this experiment, the trumpet players listened in their heads to the goal, through inner hearing.

The strategy was enhanced by adding transposition of the loop into different keys to introduce variability. The use of variability in training has been proven in different disciplines and sports. However, the difficulty and the variation have not exceeded the difficulty of the task, otherwise, the performance is less accurate, (Moreno & Ordoño, 2009). That's why during the experiment, the researcher offered the music parts transposed.

Experiment 1

The study aims to understand how the variated looping strategy using key variations can enhance trumpet learning effectiveness by focusing on the controlled repetition of musical

fragments. It also seeks to analyze how variations in looping, through transposition, impact the efficiency and adaptability of learning.

The study will explore participants' perceptions and experiences on applying these strategies to their musical practice. The hypotheses are that implementing the looping strategy will significantly improve effectiveness by allowing more focused practicing and promoting self-regulation and that variations in looping will increase the speed and adaptability of learning by challenging students to apply musical concepts in different contexts.

To test these hypotheses, a controlled experimental study will be conducted with two meetings separated in time a minimum of one day: The first meeting will be the Control, and the students will learn and perform 3 different pieces in the established time. During the second meeting, the participants will learn and perform the 3 pieces through a looping strategy.

Both groups will be evaluated before, during, and after the intervention to compare results. Each participant will participate in two training sessions lasting 30 minutes each.

Methods and Procedures

Seven students participating in the Trumpet Studio at the University of Texas at Austin and Georgia State University were recruited, with varying levels of instrument mastery.

Two sets of three musical segments, each containing an easy, medium, and difficult segment with similar elements such as interval, harmony, rhythm, and speed, will be performed over a 30-minute practice period.

The sessions will be conducted, with students preparing three segments of varying difficulty levels and performing complete interpretations within set times: 5 minutes for the easy segment, 7 minutes and 30 seconds for the medium segment, and 7 minutes and 30 seconds for the difficult segment.

During these sessions, a complete interpretation will be performed at the beginning, middle, and end of each time cycle.

In the first "Control" session, all students will prepare three musical segments freely. In the second session, the participants will work on specific musical segments assisted by the researcher with previously prepared loops. Post-intervention evaluations will include recordings made during the sessions, self-assessments by participants, and an inner hearing test where students indicate "errors" or modifications on the score based on a recording of the practiced excerpts.

Inner Hearing Test

The inner hearing test involved an auditory assessment where participants listened to a recording of a musical piece with intentional errors. Their task was to mark these errors on the corresponding sheet music. The evaluation of their performance utilized three key metrics: Precision, which measures the accuracy of error identification among all markings made by the participants; Sensitivity (Recall) quantifies the proportion of actual errors correctly identified by the participants; and F1-Score balances Precision and Sensitivity into a single metric, offering a comprehensive evaluation of performance.

In the context of error identification, participants classify errors as True Positives (TP) when they correctly identify them. False Positives (FP) occur when participants mark errors that do not exist in the recording. Conversely, False Negatives (FN) represent errors present in the recording but overlooked or not marked by the participants.

To evaluate the experiment results, this article used the terms: Precision, Sensitivity (Recall), and F1-Score. Precision is calculated as the number of true positives (correctly identified errors) divided by the total number of errors marked, both correct and incorrect. Sensitivity is the number of true positives divided by the total number of actual errors, including those not marked. F1-Score is the harmonic mean of Precision and Sensitivity, balancing both metrics. These formulas assess the accuracy and effectiveness of participants in identifying errors in the recorded melody.

Results

The use of the variated looping strategy showed a more effective and efficient learning process based on the comments of the students and their performance compared to the control group.

First, the students explained that using the music segmented and looped provides them with "context." This context can be understood as the inner hearing of the music, as one of the students stated, "Having the music sounding makes it easier to remember it in your head." During the variated looping strategy, there were three changes in the reevaluation. The students changed their minds about the difficulty of the piece. Other sentences used were, "Through the looping, I was able to learn the intervals and listen to them in my head."

The most evident improvement happened with rhythm difficulties. Pieces A1 and B1 included a syncope, which most students noticed as a "difficulty" in the first evaluation. However, after using the variated looping strategy, two of the students claimed that "the syncope is not a difficulty anymore." Another result is the improvement through a planned and organized learning strategy.

The results were more evident in the participants who did not follow any plan or organization during the control. Most of these participants without a strategy in the control just tried to play the music; the more difficult the piece, the less time was spent listening, clarifying rhythms, and fingering. Even though, the students claimed that the difference between difficult and easy music was based on the possibility of listening to the music in their minds.

The inner hearing test showed that participants, after using the variated looping strategy, detected the errors in the music better. This could be understood as better knowledge of the music, which means a stronger inner hearing of the music. For instance, the percentage difference between A3 and B3 reached 32.04%.

M1	Precision	Sensibility	F1-Score	Difference Percentual
Control	0,80	0,71	0,75	
				12,50%
Variated Looping	0,86	0,86	0,85	
M2	**Precision**	**Sensibility**	**F2-Score**	**Difference Percentual**
Control	0,63	0,45	0,52	
				22,00%
Variated Looping	0,72	0,61	0,65	
M3	**Precision**	**Sensibility**	**F3-Score**	**Difference Percentual**
Control	0,61	0,51	0,55	
				32,06%
Variated Looping	0,77	0,76	0,76	

Table 1. The inner hearing test results.

The creation of stronger inner hearing will result in a faster learning process of the music, as Dr. Jordi Albert claims “The repetitive learning method, in addition to developing habits motor skills, serves mainly to read and learn the score or *particella*: by repeating more times I learn to read and sing, using the trumpet to do so. This means that in a large part of the study, the attention is focused on reading to create the inner hearing projection”, (Albert Gargallo, 2017, p.265).

Conclusion

Due to the relatively small group of students who participated in the experiment, we did not want to directly compare the looping strategy with the variated looping strategy. This allowed us to establish as a starting point that the variated looping strategy works better than the strategies seen in the control.

This is probably because this strategy is based on the self-regulation of the practice. The strong presence of the goal during the practice and the importance of auditory feedback produce a more efficient and effective learning of the music.

It will be necessary to conduct studies with more participants that allow us to compare the differences between pure looping, variated looping, and free practice.

References

Adams, J. A. (1971). A closed-loop theory of motor learning. *Journal of Motor Behavior, 3*(2), 111–149. https://doi.org/10.1080/00222895.1971.10734898

Albert Gargallo, J. (2017). *Dificultades de aprendizaje de la práctica motriz experta en la trompeta* (Tesis doctoral, Universitat Politècnica de València). https://doi.org/10.4995/Thesis/10251/90538

Mathias, B., Gehring, W. J., & Palmer, C. (2017). Auditory N1 reveals planning and monitoring processes during music performance. *Psychophysiology, 54*(2), 235–247. https://doi.org/10.1111/psyp.12781

Finney, S. A. (1997). Auditory feedback and musical keyboard performance. *Music Perception, 15*(2), 153–174. https://doi.org/10.2307/40285747

Liu, W., Zhou, C., Ji, L., & Watson, J. C. (2012). The effect of goal setting difficulty on serving success in table tennis and the mediating mechanism of self-regulation. *Journal of Human Kinetics*, 33, 173.

Moreno, F. J., & Ordoño, E. M. (2009). Aprendizaje motor y síndrome general de adaptación. *European Journal of Human Movement, 22*, 1–19.

Nunes-Silva, M., Janzen, T. B., Rodrigues, R. G., & da Luz, A. R. (2021). Sensory feedback in music performer–instrument interactions. *Psychology of Music, 49*(5), 1285–1302. https://doi.org/10.1177/0305735620928397

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Ethics of AI in Trumpet Research and Teaching Process

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Abstract

This paper addresses the ethics of the use of artificial intelligence in both trumpet pedagogy and research in this field. It investigates how AI can improve educational processes, observing the potentialities and risks, noting, in particular, the importance of ensuring that the introduction of this technology maintains the human and collective experience of music. Regarding research, the different opportunities offered by AI are observed, as well as the importance of preserving the integrity of authorship.

Keywords: AI in Music Education, Trumpet Teaching, Ethical AI Use, Personalized Learning, Human Interaction, Trumpet Learning.

Introduction

In recent years, artificial intelligence (AI) has been transforming various areas of society, including music education (Amin, 2024) and academic research (Nature, 2023). These technologies offer advanced tools that allow us to analyze learning patterns, thus offering more personalized educational experiences. Education research could also involve a paradigm shift, such as optimizing the wording of the text to improve clarity. This would be of particular interest to authors who publish in a language other than their mother tongue, as in the case of this article.

The pedagogy of the trumpet, including its academic research side, still seems to be a wasteland in the world of AI. For this reason, it has been considered appropriate to carry out this preliminary bibliographic review. The implementation of this new technology raises, however, several ethical questions. In this article, we will try to expose these conflicting points and the

solutions that seem to be taking shape to ensure responsible use, respecting the essential elements of the educational process, such as human interaction and artistic creativity.

One of the problems encountered by a first reflection on the use of AI in trumpet pedagogy is the problem of the de-individualization of educational processes. The debate is not new; several decades before the appearance of AI, John Dewey (1938), for example, stressed the social experience of education and the importance of interactions between participants in a learning situation. At that time, Dewey warned that any technology that reduced human interactions could limit the human learning process. On the other hand, Paulo Freire (1999) criticized approaches that understood the student as a passive recipient. He advocated a liberating education through which individuals develop critical thinking. Also, with the appearance of the first technologies applied to education, Ivan Illich (1971), a critic of institutionalized education, devised systems based on learning networks through communication technologies (of the time). The concerns and the opportunities projected for technologies by these pedagogues are especially relevant in the current context. Although the circumstances are highly distant 80 years after Dewey, it seems essential to consider the challenges faced in the history of education with the introduction of technologies.

AI can improve music education and significantly increase the number of people who learn music. At the same time that music teaching could be extended, AI seems able to individualize learning processes.

For example, in the field of music pedagogy, AI has proven to be a powerful tool for personalization, providing exercises adapted to each student's level and learning style, especially when integrated into learning environments such as Web 3.0. (Bamigbola, 2021). However, AI may also have the tendency to automate crucial aspects that currently require human interaction and guidance.

For example, in the case of the trumpet, AI's automation of assessment processes could limit the learner's ability to analyze technical progress and dynamically adjust (Camarasa Botella, 2023).

Some tools have facilitated the creation of individualized exercises that allow students and professionals to work with specific elements, such as tonality, tempo, and dynamics, without

needing prior advanced experience (Ye, 2020). However, this level of personalization must be carefully balanced with the preservation of expressiveness and creativity, essential elements in musical performance (Gouzouasis & Bakan, 2011).

This work also addresses the use of AI in musical research. Machine learning tools make it possible to quickly process large volumes of data, for example, by analyzing performance patterns from recordings (Lupker & Turkel, 2021). In some research, AI has been used to model musical perception, offering new insights into human perception. However, the use of these tools requires transparency in their application. This makes it essential that the ethical debate reaches both committees and participants. Only in this way can a clear understanding of the limitations and risks of such applications be proposed and unrealistic expectations avoided (Kirke & Miranda, 2021).

In terms of ethics, it is essential that clear limits and frameworks for the use of AI can be established to ensure that these technologies do not compromise the fundamental values of music teaching or music research. Some studies have pointed out that the integration of AI should focus on enhancing, and not replacing, human capabilities and promoting creativity and social interaction (Avanzini et al., 2020; Ye, 2020). AI can act as a complementary tool that enriches technical and artistic learning. However, it is the responsibility of educators to ensure that these tools maintain essential elements of the educational experience. Therefore, this article preliminarily explores a part of the scientific literature that allows us to observe the ethical implications of using AI in trumpet research and teaching.

Methodology

The methodology from which the analysis is based is documentary research. With it, a first approach is made to the scientific corpus related to the ethical and pedagogical implications of the use of artificial intelligence (AI) in trumpet teaching and research. The work seeks to establish a theoretical and conceptual basis for framing key debates and guiding future research developments.

This work has an informative nature. The initial approach identifies key concepts, trends, and tensions at the intersection between AI, musical pedagogy, and educational ethics. This review

will serve to implement a systematized bibliographic research methodology in later phases of the doctoral project and, in turn, to design trumpet teaching applications based on AI.

To carry out the analysis, the following axes were delimited:

- Ethics in the implementation of AI in educational processes.
- AI in the personalization of learning and its impact on instrumental pedagogy.
- Musical expressiveness and creativity in technology-mediated contexts.

A preliminary search was conducted in academic databases, selecting key publications in music pedagogy, applied artificial intelligence, and educational ethics. Peer-reviewed texts in these fields were prioritized.

The sources collected were critically analyzed to identify patterns, gaps in knowledge, and points of tension between technological automation and the core values of music education.

Grammarly is an online service that has been used for text correction as well as optimization to improve clarity in written communication.

Ethics of AI in trumpet teaching

We can understand by ethics, both in education and research, the principles and norms guiding actions and decisions within each context. In the educational field, ethics is related to respect for students as individuals, the teacher's professional responsibility, and the search for a fair and equitable learning environment. In research, ethics implies the integrity of the process of seeking knowledge, the quality of scientific communication, and the guarantee that the methodologies used are fair, transparent, and respectful of the rights of all parties involved.

From the perspective of contemporary educational philosophy, the concept of ethics remains a central pillar in the definition of pedagogical practices. According to recent research by (Bozkurt et al., 2023), new technologies in education, such as AI, should be employed to respect student autonomy and encourage active and critical learning. Regarding the teaching and learning

of the trumpet, this could mean that the use of AI should be aimed at enhancing the student's creative abilities, making sure not to impose limitations on their artistic development.

Avanzini et al. (2020), meanwhile, comment that any educational technology, including AI, must focus on preserving the relational nature of learning. This would imply that trumpet teaching should not depend solely on technological tools but continue to promote an environment where artistic expression and personal interaction remain fundamental. Thus, technology is prevented from automating learning processes that, at this time, require human emotional and artistic guidance.

Dehumanization of the educational process

In the field of trumpet, one of the most significant challenges of using AI is the risk of dehumanizing educational and artistic processes. Unlike human-to-human interactions, machines lack the empathy, intuition, and emotional adaptability that characterize music teaching. In trumpet teaching, expression and interpretation are crucial elements; therefore, relying excessively on AI could undermine the relationship between the teacher and the student (Camarasa Botella, 2023).

On the other hand, the risk of dehumanization is also reflected in the way AI could assess students' progress. Current AI algorithms focus on objective metrics, such as rhythmic accuracy or tuning. Therefore, they could overlook more subjective aspects of musical performance, such as expressiveness and creativity. These aspects seem too complex to be evaluated by an AI, and when it has to be done, it must necessarily establish clear parameters.

Another essential advantage of AI in assessment is its ability to offer continuous and dynamic feedback (Ye, 2020). This contrasts with traditional assessment methods, often limited to specific times such as exams or periodic reviews. With AI, students can receive assessments after each practice session, allowing them to adjust their performance more nimbly. By integrating AI into the assessment process, teachers can optimize the time spent on feedback, focusing on the areas where students need the most personal support. However, AI could offer assessments that do not conform to elements other than those stipulated, including the limitations discussed in the previous paragraph.

Therefore, AI must be potentially used in teaching the trumpet and, in general, music in a balanced way, complementing, but not replacing, human interaction.

Adaptation to teacher needs

AI's current ability to adapt to each teacher's individual needs is one of its most valuable characteristics in the educational field. AI could be used to develop personalized resources within each teacher's approach that fit these teaching styles. For example, AI can create sequences of exercises based on teacher preferences or suggest variations of the same exercise to adapt to the different skills of students (Rivera Salmerón, 2020).

However, this also poses significant challenges. The teacher must maintain control over the content and pedagogical approach. Teachers could lose some of their autonomy in creating educational materials by relying too much on AI. Teachers should use AI as a complementary resource rather than as a replacement for their teaching creativity.

For example, trumpet teaching usually uses diagrams to explain the correct embouchure and the tongue movements or the diaphragm. If these graphs are generated by AI without the supervision of a teacher, for example, in a delegated self-learning situation outside of class hours, errors could be introduced that would confuse students.

An example of positive use could be its use in the design of customized rubrics and evaluation criteria. AI could help teachers develop rubrics that align with the specific objectives of each course and each student's circumstances (Bozkurt et al., 2023). However, for all the above, the teacher should review this work to ensure that it includes other elements such as creativity, interpretation, etc.

Potential use of AI in the trumpet teaching process

Currently, the potential AI application within the trumpet class is minimal. Although we can imagine that it could be helpful in educational planning and even in the execution of classes and individual study, several limitations prevent its adoption in the musical learning environment.

Among these problems, we can highlight the lack of models that adequately integrate musical expressiveness and creativity (Bozkurt, 2023). Likewise, models capable of adapting AI to the individual variations and nuances that characterize musical performance have yet to be found.

We can describe some of the potentialities that an AI model specifically designed for trumpet teaching could have if some current gaps were addressed.

Artificial intelligence could enable comprehensive personalization of learning. It could adapt exercises to the needs and skills of each student in a reactive and almost immediate way. AI should be able to analyze student progress and adjust the content of lessons in the near future, providing activities and challenges that align with their level and learning style.

For example, the detailed audio analysis could allow both students and teachers to improve the quality of educational processes since the analysis of a class recording could allow evaluation of aspects that are not perceptible to the first ear during the class in real time.

These objective and quantifiable data could be helpful to complement teacher assessments if used correctly. In this way, the history of this data could help create individualized strategies for the student or even allow the learning of AI for other situations with other students.

This could contribute to students progressing at an appropriate, extremely personal pace. Thus, each student's progress could be much more fluid without stagnating in skills they already mastered or facing exercises that are too complex for their current level. All this could contribute to more efficient and motivating learning for the student.

As a complementary tool, AI could offer teachers a more personalized methodology, better ideas, and solutions to specific difficulties.

Using AI in the research process

Researchers from different fields highlight the importance of researchers being transparent about the use of AI in their studies (Bozkurt, 2023; Casal & Kessler, 2023; Friederich & Symons, 2023; Nature, 2023). It also urges researchers to ensure that the technology does not distort or oversimplify data or results.

That is why it may be interesting for a researcher attracted to the use of AI to reflect on the practical and ethical aspects of its use, its potential, and its limitations.

AI in research planning: objectives, questions, and methods

Artificial intelligence can be used in research planning. AI can help researchers define objectives, raise research questions, and suggest methods for addressing study problems.

On the other hand, using advanced AI models allows for the rapid analysis of large volumes of data and academic literature. All this facilitates the identification of existing gaps and the generation of new research questions. In terms of research objectives, AI tools can analyze patterns in historical data or trends in the literature (Friederich & Symons, 2023). This could help researchers refine and fine-tune their goals more precisely.

Despite this, using AI in research planning raises some ethical issues that must be considered. One of the main challenges, which also arises in other areas, is the lack of originality in the research objectives and questions generated by AI.

Learning AI and using existing data could lead researchers to ask research questions that simply repeat previous studies rather than bring genuine innovations.

Another problem could be the analysis of data that contributes to planning. Although AI models can analyze large volumes of data, they cannot understand cultural, historical, or social subtleties. These subtleties are often transcended to formulate relevant research questions and devise appropriate methods.

Once again, the concern about the possible dehumanization of the investigative process lies in AI's development of research questions. According to Kirke and Miranda (2021), this type of

automation could limit researchers' ability to think innovatively or question the underlying premises in a field of study.

Use during research

AI appears to be a valuable tool in the research's data collection and processing phase (Bozkurt, 2023). Advanced AI models, such as OpenAI's Whisper model, make it easy to accurately and quickly transcribe interviews.

By employing AI to transcribe interviews, researchers save valuable time and can focus on analyzing the data. However, it is essential that an exhaustive review of said transcripts be carried out to ensure that accuracy is maintained and that no errors are introduced (Casal & Kessler, 2023).

On the other hand, it is essential to consider using AI language models, known as LLMs (Large Language Models), to format transcripts. These models can help organize and format transcripts efficiently. They should also only be used under strict human supervision to prevent them from altering the original content.

Researchers should be aware of the current limitations of AI-based technologies in maintaining the quality of the data and its future analysis. Machine transcription can help, but the interpretation and final analysis of the data should be in the hands of the human researcher as they can understand the cultural and linguistic context of the responses. AI should not replace the critical judgment and attention to detail that qualitative research demands.

Use during drafting

This is one of the most controversial sections of the use of AI. Many researchers use AI-assisted writing today. It seems to allow for the optimization of time and the improvement of the coherence of texts. Tools based on language models can generate drafts that can speed up the writing process. However, there is an obvious ethical problem when these tools generate content that is not entirely original.

The basic problem, as in data analysis or questioning, is that AI cannot understand contextual subtleties during analysis, which could lead to misconceptions. In the same sense, the

great problem of using AI is addressed: the authorship of the generated content. Even if AI only assists in the writing to "guarantee" the quality of the text, it intervenes in the oral expression of the communicator and, therefore, interferes in a certain sense in the process. This interference affects both the intellectual merit and the responsibility of the arguments presented since the human researcher can assume forms of expression that are not his own and, therefore, do not emanate from the analysis itself.

Therefore, researchers must take full responsibility for the published content. According to Avanzini et al. (2020), AI cannot be considered a reliable source of information since it cannot understand a topic's full context or discern between different theoretical interpretations. Therefore, at least for now, its use should be limited to supporting tasks, such as spell-checking and assessing clarity. However, it should always remain the investigator's critical judgment.

Grammarly is one of the best-known tools that AI uses and is relatively accepted in the scientific community. These types of AI applications allow, as is the case in this paper, to improve the writing or translations of people who are not native speakers of the language of communication (Casal & Kessler, 2023).

Generation of images and graphics

Creating graphics and images through AI is an increasingly accessible option in research. However, the precision in the graphical representation could generate some problems in the complex diagrams required by the music.

Additionally, AI could generate images that do not reflect a particular research piece's cultural context or communication style. Instead of relying on AI to create graphics, it is preferable to use conventional methods that allow greater control over the accuracy of the content (Huzaifah & Wyse, 2021).

Search for solutions to limitations.

Chain-of-thought (CoT) thinking models are one of the significant innovations in the use of AI. These allow complex problems to be solved. Through it, it becomes feasible for AI to break down a problem into smaller, easier-to-manage steps. This facilitates the identification of problems

and their solutions. In trumpet research, especially in the study of trumpet teaching and learning strategies, breaking down a problem into multiple layers can help analyze, for example, technical difficulties or identify areas in which students need to improve (Kirke & Miranda, 2021).

In the relatively near future, CoT models could accompany researchers and teachers to better structure pedagogical problems. They could identify patterns in learning difficulties (among other aspects) and their solutions. This is due to AI's data analysis capability and data storage. For example, AI could store and analyze large amounts of data on students' motor skills or instrument proficiency (Albert Gargallo, 2017). With this, personalized exercises and strategies could be suggested in a specific area,

Even so, it should be noted that these models may have some limitations. AI could probably identify problems and suggest solutions, but human intervention will still be crucial to interpret the results correctly, apply the solutions, and evaluate the outcome. It is important to remember that music is a social activity and that this necessarily implies the development of social, inter, and intrapersonal skills (Albert Gargallo, 2017).

For all these reasons, AI should be seen as a complementary tool that will support research, in this case, pedagogical, but which cannot and should not replace either the researcher or the teacher.

Conclusions

The advent of AI has changed virtually all fields of human knowledge and experience, presenting many opportunities and significant challenges. Trumpet teaching and research in this field are not exempt from them.

Currently, AI can act as a support resource to facilitate the drafting processes, offer some ideas, provide structuring and coherence, etc. However, authorship can be compromised in the very essence of the relationship between knowledge and researcher. Therefore, this affects the structures of this knowledge and how it is communicated. It consequently presents an epistemological problem that, insofar as it can change the practical reality of education, for example, generates an ontological conflict of its own.

For example, excessive written communication mediated by AI could generate excessively unitary, not to raise criticism. It could tend to dilute the personality of the researchers and, with it, dehumanize their own knowledge. When these processes are carried out in educational research, for example, with the social and human characteristics of the object of research (trumpet learning), an unethical application of AI will lead us to modify the results of said research substantially.

On the other hand, in the future, models such as Chain-of-thought can improve the optimization and personalization of learning. This will help teachers identify complex problems, which may contribute to offering new solutions and improve attention to learning difficulties in some aspects. However, it will be essential to consider the ethical implications at all times and, once again, maintain the social and human experience of music learning.

That is probably the most considerable risk: the dehumanization of the educational process. In an educational field where human expression is so essential, AI should not replace a human teacher's emotional and artistic guidance. Therefore, finding the balance between the potential use of technology and human interaction will be essential to preserve the quality and richness of musical learning.

Therefore, it is recommended that both researchers in the trumpet field and teachers develop their own ethical criteria around the use of AI and that the trumpeter collective carry out, as discussed in this text, a collective discussion on the subject.

The authors of this paper are currently working on designing AI educational applications using the criteria expressed in this document.

References

Albert Gargallo, J. (2017). *Dificultades de aprendizaje de la práctica motriz experta en la trompeta* [Tesis doctoral, Universitat Politècnica de València]. https://doi.org/10.4995/Thesis/10251/90538

Amin, M. (2024). *Development of a Music Education Framework Using Large Language Models (LLMs)* [Master thesis, UiT Norges Arktiske Universitet]. https://munin.uit.no/handle/10037/34165

Avanzini, F., Ludovico, L. A., Mandanici, M., & Baratè, A. (2020). A multidimensional taxonomy of digital learning materials for music education. In *Pedagogies of Digital Learning in Higher Education* (pp. 88–103). https://doi.org/10.4324/9781003019466-5

Bamigbola, A. A. (2021). Web 3.0 tools and knowledge conversion by distance learners. *Regional Journal of Information and Knowledge Management*, *6*(2), 21–35.

Bozkurt, A. (2023). Generative AI, Synthetic Contents, Open Educational Resources (OER), and Open Educational Practices (OEP): A New Front in the Openness Landscape. *Open Praxis*, *15*(3), 178–184. https://doi.org/10.55982/openpraxis.15.3.579

Bozkurt, A., Xiao, J., Lambert, S., Pazurek, A., Crompton, H., Koseoglu, S., Farrow, R., Bond, M., Nerantzi, C., Honeychurch, S., Bali, M., Dron, J., Mir, K., Stewart, B., Costello, E., Mason, J., Stracke, C. M., Romero-Hall, E., Koutropoulos, A., … Jandrić, P. (2023). *Speculative futures on ChatGPT and generative artificial intelligence (AI): A collective reflection from the educational* landscape. https://doi.org/10.5281/ZENODO.7636568

Camarasa Botella, C. (2023). Prospects for Creating an AI System to Enhance Trumpet Learning. *International Journal of Music Pedagogy*, *1*(1), 40–48. https://doi.org/10.61629/ijmp.v1i1.33

Casal, J. E., & Kessler, M. (2023). Can linguists distinguish between ChatGPT/AI and human writing?: A study of research ethics and academic publishing. *Research Methods in Applied Linguistics*, *2*(3), 100068–100068. https://doi.org/10.1016/j.rmal.2023.100068

Dewey, J. (1938). The Determination of Ultimate Values or Aims through Antecedent or a Priori Speculation or through Pragmatic or Empirical Inquiry. *Teachers College Record: The Voice of Scholarship in Education*, *39*(10), 471–485. https://doi.org/10.1177/016146813803901038

Freire, P. (1999). *Política y educación. Ensayos para reinventar el mundo.* (S. Mastrángelo, Trans.). Siglo XXI.

Friederich, S., & Symons, J. (2023). Norms for Academic Writing in the Era of Advanced Artificial Intelligence. *Digital Society*, *2*(3), 48. https://doi.org/10.1007/s44206-023-00079-7

Gouzouasis, P., & Bakan, D. (2011). The Future of Music Making Education in a Transformative Digital World. *The University of Melbourne Refereed E-Journal*, *2*(2), 127–154.

Huzaifah, M., & Wyse, L. (2021). Deep Generative Models for Musical Audio Synthesis. In E. R. Miranda (Ed.), *Handbook of Artificial Intelligence for Music: Foundations, Advanced Approaches, and Developments for Creativity* (pp. 639–678). Springer International Publishing. https://doi.org/10.1007/978-3-030-72116-9_22

Illich, I. (1971). *Deschooling society* (1st ed.). Harper & Row.

Kirke, A., & Miranda, E. R. (2021). Performance Creativity in Computer Systems for Expressive Performance of Music. In E. R. Miranda (Ed.), *Handbook of Artificial Intelligence for Music* (pp. 521–584). Springer International Publishing. https://doi.org/10.1007/978-3-030-72116-9_19

Lupker, J., & Turkel, W. J. (2021). Observing mood-based patterns and commonalities in music using machine learning algorithms. In *Innovation in Music*. Focal Press.

Nature. (2023). Editorial: Tools such as ChatGPT threaten transparent science; here are our ground rules for their use. *Nature*, *613*, 612. https://doi.org/10.1038/d41586-023-00191-1

Rivera Salmerón, G. (2020). *La pedagogía "Song and Wind" aplicada a la enseñanza de la trompeta: Propuesta metodológica en programación didáctica de 6º EE.PP.* https://uvadoc.uva.es/handle/10324/45929

Ye, F. (2020). A Study on Music Education Based on Artificial Intelligence. *IOP Conference Series: Materials Science and Engineering*, *750*(1), 012115. https://doi.org/10.1088/1757-899X/750/1/012115

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Abstract

This essay proposes an interdisciplinary approach in performing/creating multimedia to present a thesis, commentary, or subversion—using trumpet sound in combination with critical theory. Aesthetics and philosophies from postmodernism and metamodernism serve as the main theoretical bases for the approach, as unpacked in the essay. Historical contexts of the trumpet's development and symbolic associations are also analyzed for expressive context. Furthermore, an example of the proposed interdisciplinary approach is provided/analyzed to demonstrate one possible way in which it may be applied.

Keywords: Postmodernism, Metamodernism, Trumpet, Interdisciplinary, Performance, Critical Theory, Multimedia.

Indtroduction

The term *metamodern*—or *metamodernism*—may understandably be met with skepticism, as there is still some fluctuation in what exactly the term refers to. Critical theories that attempt to define and interpret expansive arrays of art, literature, philosophy, and culture shift frequently as the cultural landscape continuously develops. Within the body of literature, one can observe different interpretations among theorists as to when/where certain movements begin, end, originate, or overlap. Regardless of these fluctuations, the field of critical theory represents a rich body of scholarship to draw from, especially when seeking expressive techniques to accomplish aesthetic/philosophical goals in a performance setting. Critical theorists Fredric Jameson, Linda Hutcheon, Jean-François Lyotard, Robin Van Den Akker, Allison Gibbons, Timotheus Vermeulen, and Brendan Graham Dempsey have published scholarship examining postmodernism and/or metamodernism. In their work, they draw from many different artforms, texts, and philosophies to demonstrate the characteristics present in each of these theories. Through their interpretations, they are able to draw larger connections across artistic and social trends. It is within these analyses—as well as the art analyzed within them—that a trumpeter can find an aesthetic and philosophical toolkit from which unique juxtapositions, subversions, and representations can be derived.

Arguably, music as an expressive medium is situated awkwardly within these styles of critical analyses—as much of what is interpreted in these analyses is visual, textual, or narrative based. This is not to say that scholarship has not interpreted music through these lenses, however. Theodor Adorno, according to critical theorist Linda Hutcheon (2006), "...opened the floodgates for the interdisciplinarity [of music] early on. The only Frankfurt school theorist to take music as his primary ground for theorizing..." (Hutcheon, 2006, p. 802).

Some examples of critical theory applied to music—centered on the topic of postmodernism specifically—are Kenneth Gloag's *Postmodernism in Music*, Judy Lochhead and Joseph Aurner's *Postmodern Music/Postmodern Thought*, and Neil Nehring's *Popular Music, Gender, and Postmodernism: Anger is Easy*. Many of the essays within these publications center or contextualize various styles of music within larger trends of representation, social themes, or philosophies.

In other words—the music came first. Theorists were then able to interpret the music (and its social context) through diverse lenses that incorporated methodologies from feminist theory, gender theory, intersectional analyses, and many others. An example of this is the incredible work of Susan McClary found in *Feminine Endings: Music, Gender, and Sexuality*. There is great cultural value in this practice, as it can assist in situating how music interacts within both culture and theory.

Yet, even within the scholarly practice of applying critical theory to the analysis of art/music, there is opportunity to utilize these processes for *creation* as well—not just interpretation after music has been created. A trumpeter can gain creative access to such expressive techniques through employing an interdisciplinary approach in performance. Through the incorporation of these critical theories as an expressive foundation, a trumpeter can design a program that has larger theoretical implications—like informed social commentary, a thesis, or a hypothesis. In particular, the use of film, theatrics, and written text create avenues for greater intricacy in the contextualization of trumpet sound within a program of music/multimedia. This approach can assist in the creation of live/recorded performances that go far beyond aesthetic experimentation.

This essay seeks to demonstrate how the utilization of aesthetics and philosophical techniques from both postmodernism and metamodernism can be used to subvert/recontextualize traditional meanings of trumpet sound. In order to do this, the essay will first propose some traditional meanings/contexts of trumpet sound as derived from texts by Edward Tarr, John Wallace, and Alexander McGrattan—as well as an example from film scholarship. Following this, a discussion of some aesthetic and philosophical qualities of postmodernism and metamodernism will be provided, drawing from scholarship and the art analyzed within it. Finally, I will present a direct application of this theoretically informed interdisciplinary approach to subvert/recontextualize the earlier proposed meanings of trumpet sound. To demonstrate this in practice, I will provide examples from my multimedia recital film titled *An Interview from Twilight Indigo*.

Section 1: A Proposed Meaning of Trumpet Sound

In doing something as ambitious as establishing a possible "meaning" of trumpet sound, one must first acknowledge that the trumpet (or any instrument, voice, sound, etc.) can be performed in such a way as to evoke nearly any social meaning. Christopher Small (1998) states: "If we widen the circle of our attention to take in the entire set of relationships that constitute a performance, we shall see that music's primary meanings are not individual at all but social" (Small, 1998, p.8). Sound as an abstract concept can be contextualized any number of ways, especially when combined with elements of visual/textual media. This can have a profound effect on a sound's social connotation. The proposed meaning of trumpet sound in this section does not claim to be the only universal meaning—instead, this proposal will draw from historical and media contexts to establish some common symbolic/narrative themes that trumpet sound has

been paired with. To further describe the methodological scope, this section will draw primarily from western music traditions and history, as well as an example of scholarship interpreting the use of brass in the music of John Williams.

In order to construct a program, recital, or piece of media that draws from the critical theory bases of postmodernism and metamodernism, it is advisable (if not entirely necessary) to establish a context within which the performed music will function. An established context will allow for a clear application of postmodern/metamodern theory in the designing of the program—both aesthetically and philosophically.

As chronicled in Edward Tarr's *The Trumpet*, some of the earliest representations of trumpet sound were associated with war and/or religious ceremony. The first chapter of the text contains subheadings labeled "The Egyptians," "The Assyrians," "The Israelites," "The Greeks," "The Etruscans," "The Romans," "The Teutonic Tribes," and "The Celts." Each of these sections describe the trumpet functioning in these ways within each of these cultures (Tarr, 1988, pgs. 19-29). In a similar fashion, John Wallace and Alexander McGrattan's 2011 publication—also titled *The Trumpet*—states the following:

> *The trumpet's identity often transcended its utilitarian function by serving as a marker of status and power in belief systems and their consequent ceremony. As Don Smithers remarked in his*

> *seminal study on the baroque trumpet, 'the trumpet is more than a musical instrument: it is an idea, a concept, with deeper allegorical associations.' The symbolism of the trumpet was central to its introduction into art music and has remained a significant determinant of its idiom. (p. 1)*

This quote introduces another context that is pervasive in the history of trumpet: an association with status and royalty. In addition to this association, it is notable to see Don Smithers'

contention that the trumpet functions not only in sound, but as an allegorical symbol. In a sense, Smithers' contention provides a legitimacy to defining the sonic symbolism within the history of the trumpet and establishing what these prominent symbols were/are—as well as how they are expressed/perceived in modern settings. Somewhat humorously, Tarr notes at the end of his introduction the following:

> *The trumpet of prehistoric times and of antiquity served only as a signaling instrument, and certainly not to produce music in the modern sense. The sound of these instruments was described as terrible, that is, producing terror, and was compared to the braying of an ass. (p. 29)*

This quote contains another theme to be subverted: terror. Given the trumpet's association with militaristic themes, it is unsurprising that the instrument's sound evoked fear from many who heard it in these contexts. This is not to say that this connotation remains as strong as it was in what Tarr refers to as prehistoric times—certainly not. However, these historical associations of military, religion, and at times terror, were prominent for a long period of history.

Wallace and McGrattan's *The Trumpet* continues to explore further sonic associations of the instrument. In the third chapter, they state: "After 1100, longer trumpets come into the frame and the instrument begins to assume its role in the service of noble and civic establishments as a symbol of high status" (Wallace & McGrattan, 2011, p. 65). In this, the word "civic" is grouped into the description, which connects the sound of a trumpet to larger systems of government. Critical theory often critiques systems such as these, so this connotation lends itself well to expressive tactics within postmodern and metamodern approaches.

One may correctly point out that these descriptions, while much in alignment, are exclusively early on in the instrument's development. It would be inaccurate and incomplete to establish a historical sonic connotation based entirely upon descriptions such as these, especially

before the invention of the valve. Both Tarr and Wallace/McGrattan's texts unpack the influence composers like Richard Wagner, Richard Strauss, and Gustav Mahler had on what the trumpet was used to express orchestral contexts. These new demands placed upon trumpeters created difficulty, and many were initially apprehensive to embrace them (Wallace & McGrattan, 2011, p. 201). Some of this higher technical demand was due to the fact these composers were writing music that "...used [the trumpet] lyrically and outside its normal context...it was capable of extraordinary melancholy, as Haydn had demonstrated in the second movement of his concerto..." (Wallace & McGrattan, 2011, p. 200). At this point of history, it was surprising to see the trumpet involved in an expressive context outside of the established symbolic associations from earlier in the instrument's development. However, even with these new demands presented, these composers still often referenced the historical context of what the trumpet had been used for in non-musical contexts. Strauss' *Ein Heldenleben* drew from the militaristic connotation of trumpet—particularly in the fourth movement—signaling calls to battle and representing the hero (Owen, 1960, p. 44). Mahler's fifth symphony evokes a solemn, foreboding atmosphere by opening with its famous solo fanfare—not to mention the numerous other solos from the work, both lyrical and martial in quality. In these examples, one can observe an early trend of how the sound of the trumpet was used in association with its symbolism, as well as the difficulty that was brought from presenting trumpet sound in different/new expressive contexts.

Wagner's technique of leitmotifs created thematic representations that influenced countless composers that came after him. Wallace, McGrattan, and Tarr all acknowledge the contributions that Wagner made in the representation of trumpet sound, drawing from *Der Ring des Nibelungen* and *Parsifal* (among others) to demonstrate how his uses of the trumpet's range, dynamics, and thematic association casted the trumpet in a new light (Wallace & McGrattan, 201, pgs. 195-201; Tarr, 1988, pgs. 163-167). In linking these traditions to something more recent, the techniques observed in Wagner's music greatly influenced film scoring. One example stands out in this regard: John Williams. Williams has written some of the most recognizable musical themes of all time, and there exist comparative analyses linking his musical approaches to Wagnerian techniques. In "Williams versus Wagner or an Attempt at Linking Musical Epics," written by musicologist Irena Paulus (2000), the author writes:

> *It is not just points of view - there are great similarities in practice. Both Wagner and Williams simply adore the wind section, especially the brass. Whatever they need to express drama, here comes the brass; when tension has to be expressed, there is the brass again; when the music needs to sound softer and warmer (because the context requires it), the woodwind is called up, not, as in many another composer, the strings. The strings have almost exclusively the role of filling in the emptiness and of jumping in when the wind lyrical instruments have already been used. And there are many instruments in the orchestra, because both composers like experimenting with sound. (p. 178)*

It is here one can observe a recent manifestation of a historical trumpet thematic association—drama and tension, possibly recalling Tarr's prior mentioned association of the trumpet and terror. Even after so much development in the context of trumpet sound occurred during the romantic era and early twentieth century, there is continued perpetuation of these themes in some of the most widely consumed media of our time. Film scholarship speaks to film's ability to "affect attitudes" toward social or political topics (Atkins & Castle, 2014, p. 1231). Given film's ability to do this, the amount of consumption of Williams' music by way of film has almost certainly influenced the perception of trumpet sound among general audiences. Paulus goes on to state:

> *When Star Wars appeared in the movie houses, the orchestra came back again to the screen. It might be said to be John Williams's achievement to ha brought about a Renaissance of symphonic music in the film, and this might be compared with the revolutionariness of the operatic reform of Richard Wagner. (p. 178)*

It was the aim of this section to present some historical connotations based upon the history of the instrument's use in militaristic and ceremonial fashions, as well as how those connotations have been previously experimented with among prominent canonical composers. In an effort to stay within the scope of this essay, many potential examples needed to be omitted—but these established contexts present further opportunities for creative subversion.

Section 2: Examples of Postmodern and Metamodern Aesthetics/Philosophies

In a 1997 interview with American author David Foster Wallace, television host Charlie Rose asked him what the term "postmodernism" meant. Wallace reluctantly responded the following:

> *...oh...no, no, no. "After modernism" is what it means. It's a very useful catch-all term because you say it and we all nod soberly as if we know what we are talking about when, in fact, we don't. When I mean "postmodern," I am talking about, maybe, the black humorists who came along in the 1960s, the post-Nabakovians...the biggest thing that was interesting to me about postmodernism is that it was the first text that was highly self-conscious...self-conscious of the writer as persona, self-conscious about the effects that narrative had on readers...it was the first generation of readers that had read a lot of criticism. (Manufacturing Intellect, 21:20-21:24).*

This hesitant statement from Wallace is an example of how difficult it can be to fully encapsulate terms such as these. For application purposes, however, this section seeks to offer some context, examples, and working definitions for the terms postmodernism and metamodernism.

In searching to provide a working context/definition for postmodernism, Rachel K. Fischer provides some valuable context: "The term was first coined in the 1950s but did not become a well-known philosophical term in France until the 1970s..." (Fischer, 2014, p. 29). Fischer goes on to say:

> *In relation to art and literary theory, Jean-François Lyotard stated in The Postmodern Condition, "The postmodern would be that which, in the modern, puts forward the unpresentable in presentation itself; that which denies itself the solace of good forms, the consensus of a taste which would make it possible to share collectively the nostalgia for the unattainable; that which searches for new presentations, not in order to enjoy them but in order to impart a stronger sense of the unpresentable." With this quotation, one can see that postmodernism is tied strongly to cultural theory. (p. 29)*

The last sentence of the quote linking postmodernism with cultural theory presents one of its values in using it to design a program or piece of media with philosophical intent. Drawing from the aesthetics/theory from under its wide umbrella grants a trumpeter access to very effective expressive tactics.

One characteristic of postmodern thought and artistic expression is the destruction of universal narratives—or metanarratives—which is particularly useful in expressive goals like the recontextualization or decentralization of sound. Theorist Fredric Jameson speaks to this destruction of narrative/history in his publication *Postmodernism, or, the Cultural Logic of Late Capitalism* (1991) by observing the following:

> *But this unforeseeable return of narrative as the narrative of the end of narratives, this return of history in the midst of the prognosis of the demise of historical telos, suggests a second feature of postmodernism theory which requires attention, namely, the way in which virtually any observation about the present can be mobilized in the very search for the present itself and pressed into service as a symptom and an index of the deeper logic of the postmodern, which imperceptibly turns into its own theory and the theory of itself. (p. xii)*

In seeking to subvert historical connotations of trumpet sound, this concept (although Jameson ultimately criticized it) is directly applicable to a trumpeter searching to accomplish this goal.

There are several aesthetic approaches associated with postmodern art, but for the scope of this essay, the work of John Cage functioned as inspiration for some of the approaches exemplified in the following section. In a 2019 article by Marcin Rychter titled "Postmodern Music and its Future," the author discusses several composers in how they expressed a "postavant-garde" (or postmodern by his interpretation) approach to musical composition. Whereas Rychter centers techniques like Arnold Schoenberg's serialism as modernist, Rychter highlights how John Cage further broke away from some of these approaches to deconstruct the barriers "between life and art" (Rychter, 2019, p. 48). Using *4'33* as an example of this, Rychter states the following:

> *The idea of an aesthetically autonomous music detached from the concerns of the world gives way to the idea of the world, as such, being an object that we should apprehend with an aesthetic appreciation: everything we hear may be considered music. The avant-garde ambition of extending the scope of perception has been pushed to the limits here, or rather reduced to absurdity (p. 48).*

While critical of the *4'33*'s presentation, the noting of how Cage's "silent piece," as Cage himself referred to it, pushed boundaries using sound (or silence) highlights a very useful thing for a trumpeter employing postmodern techniques to their musical design: music can resist

meanings/traditions, pose questions, and exist in a philosophical space. One could argue that *4'33* was less a piece of music and more a type of performance art, but nonetheless the piece uses silence, a sonic concept, as its primary expressive tool—therefore resembling music theoretically in its design. This grey area between the mediums of music and performance art (or perhaps theatre) could be a source of critique—however, it also presents a particular strength in expressive effect. John Cage (1961) expressed the following in *Silences*, a compilation of his essays and lectures:

> *But this fearlessness only follows if at the parting of the ways, where it is realized that sounds occur whether intended or not, one turns in the direction of those he does not intend. This turning is psychological and seems at first to be a giving up of everything that belongs to humanity—for a musician, the giving up of music. This psychological turning leads to the world of nature, where, gradually or suddenly, one sees that humanity and nature, not separate are in this world together; that nothing was lost when everything was given away. In fact, everything is gained. In musical terms, any sounds may occur in any combination and in any continuity (p. 8).*

Also important for consideration, Cage claims the following:

> *A sound does not view itself as thought, as ought, as needing another sound for its elucidation, as etc.; it has no time for any considerations—it is occupied with the performance of its characteristics: before it has died away, it must have made perfectly exact its frequency, its loudness, its length, its overtone structure, the precise morphology of these and of itself (p. 14).*

In particular, the phrase "a sound does not view itself as thought, as ought..." speaks to an opening for further contextualization of sound as provided by text, image, theatrics, etc. While a trumpet sound may have connotations associated with it as discussed in the first section of this essay, it may also in performance be heard as purely objective aesthetic—a sound in relation to an organization of time. Therefore, in a sense, one can assist a sound to "speak for itself" by aiding it with any number of approaches to grant it meaning, whether traditional in representation or not.

It is precisely here that we encounter a paradox: sound can both signal something inherently through association and also, objectively, not have the ability to do that. Whichever the interpretation of the trumpeter, it presents an equally strong argument that using interdisciplinary tactics within postmodernism can grant a sound context, whether it inherently carries one or not. In considering John Cage's music, one can observe various compositional approaches—from

techniques of chance/randomization to unique notations, flexible instrumentations, and textual directions. These approaches—especially those that involve the use of aleatoric sounds—are incredibly useful in drawing from when preparing a program in an interdisciplinary fashion. As Cage stated, "everything is gained" when considering the expressive use of sound in this way.

In the above brief overview of postmodernism as explored through some of Cage's words and musical techniques, a common theme emerges: deconstruction. Cage does propose answers to the element of deconstruction, such as the idea that everything we experience is music in some way, but not all postmodern art/philosophies do this. In contrast, metamodern concepts are, according to *Historicity, Affect, and Depth After Postmodernism*, "...characterized by an oscillating in-betweenness or, rather, a dialectal movement that identifies with and negates—and hence, overcomes and undermines conflicting positions..." (Van Den Akker et al, 2017, p. 10). This allows a trumpeter considering these tactics to draw from postmodernism while also departing from some of its larger tendencies. For example, Jameson contended an anxiety that "...the main casualties of all these postmodern 'senses of the end' might have very well been History and the historical imagination (Van Den Akker et al, 2017, p. 2). As this interdisciplinary method draws from history as one of its primary resources, the media's design situates itself in a metamodern sensibility. However, in drawing from postmodern aesthetic approaches like recontextualization, subversion, fragmentation (recall the fiction of William S. Burroughs or Kathy Acker), a trumpeter may still perform a theoretically informed thesis of sound while not destroying meaning outright. As a matter of fact, the earlier proposed meanings of trumpet can be used/satirized with great effectiveness when this history is referenced, as the next section of this essay aims to demonstrate. To provide further context on current discourse surrounding metamodernism, Brendan Graham Dempsey's publication *Metamodernism, or, the Cultural Logic of Cultural Logics* (2023) explains, "In this way, deconstructive moves which in postmodernism signaled exhaustions and cynicism are appropriated and redeployed towards *reconstructive* aims... (Dempsey, 2023, p. 47). This last summation, while still acknowledging what came before it from postmodernism, is the basis for the examples provided in the following section of this essay.

Section 3: An Example of Interdisciplinary Application

Given the complexity of the theory one navigates to eventually apply it to a performance/piece of media, it is the aim of this final section to provide an example of how a trumpeter could do so. The following example, a multimedia recital film titled *An Interview from Twilight Indigo*, is a project in which I applied theory from both postmodernism and metamodernism to subvert historical connotations of trumpet sound (as proposed in section one). The multimedia recital film premiered at the University of North Carolina Greensboro on April 17, 2023. A lecture outlining the intent of the work was given prior to the film's screening. The program featured music from composers Frédéric Chopin, Dr. Marissa Youngs, Akira Yamaoka, Erik Satie, and some of my own compositions/arrangements. In addition to compositions, the program relied heavily on sequences of free improvisation, prose/poetry, theatrics, and film techniques.

To provide a structural/narrative outline of the film, it functions as follows: a title screen appears accompanied by Chopin's Prelude Op. 28 No. 4 in E-minor with a trumpet descant. This sequence is followed by two interview segments from Kathy Acker and Angela Davis on postmodernism and revolution (real archival footage). An unnamed character then performs a piano arrangement of *White Noiz*, composed by Akira Yamaoka, and a free improvisation on trumpet responds to it. This is followed by a performance of *Eclipse*. In *Eclipse*, two characters (I play them both) perform the work in a conversational manner, as accomplished through video/audio editing. The unnamed character is then revealed to be named [REDACTED], and they give a monologue as if they are being interviewed. This is followed by several performances, including arrangements of Erik Satie's *Gymnopédie* No. 1 (arr. Hickman), Frédéric Chopin's Prelude Op. 28 No. 4 in E-minor (arr. McKay), and a conversational improvisation from myself and another different trumpeter. The Satie, Chopin, and improvisation sequences are not in character, but as myself. A second interview with [REDACTED] is then shown, where they outline their creative intent behind a piece tiled *Wake Up!* A performance of the piece—presented as fictitious archival footage—is then shown, revealing the overarching social/musical thesis of the film. It is portrayed as [REDACTED] performing the piece alongside a percussionist. This performance is followed by real interview footage from musician Frank Zappa discussing American consumerism. A performance of Yamaoka's *Laura's Theme* and a reprise of *White Noiz* (arr. McKay) close out the film.

In applying the postmodern/metamodern theory, I first chose to establish a context in which the trumpet would work to function as a subversive entity. The first elements of context to outline are narrative and setting, which is established through the title screen of the film and the character named [REDACTED]. Examples of both can be seen in Figures 1 and 2.

Figure 1: Still captured from An Interview from Twilight Indigo (McKay, 2023)

Figure 2: Still captured from An Interview from Twilight Indigo (McKay, 2023)

[REDACTED], pictured in Figure 2, functions as a narrator and main character in the film, and through their interview monologues one establishes a setting: a fictitious city named Downtown. As shown through two disjointed interviews, [REDACTED] reveals the topic of discussion is their journey of moving to Downtown, as well as how they performed political art in protest against a politician referred to as Governor Klick. Governor Klick, while not elaborated on much in the film, is intended to be a satirical representation of a fascistic governor ruling over Downtown. This centers [REDACTED] as a resister, thusly associating their various artistic expressions with this theme—most importantly, their use of the trumpet. As a direct subversion, this character uses trumpet sound to react against status quo rather than uphold/honor "civics," or herald a politician/aristocrat. This kind of subversive expression is very prominent in postmodern literature, especially in novels that incorporate feminist/intersectional theories as their base.

In the narrative of *An Interview from Twilight Indigo*, the piece that gained [REDACTED] infamy is titled *Wake Up!* It is portrayed/performed in the film as "archival footage." Prior to the piece's presentation, [REDACTED] presents the intended interpretation of the work as a monologue. This kind of oscillation between reality, fiction, and various layers of temporal space is purposefully fractured to communicate a feeling of disorientation—yet another tactic from postmodern approaches. *Wake Up!* is comprised of five sections of dramatic readings, four of

which were written by me, and one written by Kathy Acker. Through the direct reading and referencing of Acker, one loops in an expressive connection to postmodern feminism. In Martina Sciolino's article titled "Kathy Acker and the Postmodern Subject of Feminism," Sciolino states Acker "...by using performative prose to launch political and aesthetic diatribes, Kathy Acker's narrative methods are exemplary for postmodern feminism" (Sciolino, 2001, p. 1). Acker and her incredible novels had a major theoretical and aesthetic influence on the film—*Wake Up!* is the most direct emulation in this way. In paying of homage, [REDACTED] performs a reading of the following excerpt from one of her essays:

> *We are now, in the United States and in England, living in a world in which ownership is becoming more and more set. The rich stay rich, the poor stay dead. Death in life. The only social mobility left occurs in terms of appearance. Things no longer change hands. But fashion is not purely ornamental, it is political. All signs nowadays point to the haves, or to the homeless Chicanos on the LA downtown streets. There is no more right wing versus working class, there is only appearance and disappearance. Those people who appear in the media, and those people who have disappeared from the possibility of any sort of home. In such a society as ours, the only possible chance for change, for mobility, for political, economic, and moral flow, lies in the tactics of guerilla warfare, the use of fictions, of language. Postmodernism then, for the moment, is a useful perspective and tactic... (Acker, 1996).*

In addition to her association with feminism, she incorporated elements of class and race into her commentary (as seen above). After this is read, the trumpet and percussion respond to it with free improvisation—thusly connecting the sounds of their instruments to prose of this style and social critique. Given the trumpet's association with class and high status, this is a deeply subversive tactic that satirizes the sound of the trumpet in a way that retranslates it as an instrument to play out against oppression, rather than confirm or announce higher status. To deepen the irony of this expressive tactic, [REDACTED] performs fragmented chunks of melody from "My Country tis of Thee," which is musically resisted by the sound of improvised percussion. Figure 3 shows a still captured during the performance.

Figure 3: Still captured from An Interview from Twilight Indigo (McKay, 2023)

Of course, this is not the first time a trumpet sound has aided an idea of resistance or advocacy. One famous example that comes to mind is Joan Tower's *Fanfare for the Uncommon Woman*, from 1987. This work operates as a retranslation of Aaron Copland's *Fanfare for the Common Man*, using an identical orchestration to Copland's piece—yet the sounds are recontextualized through the title (Grolman, 2014, p. 1). This is an example of an earlier sonic retranslation, notably during the postmodern era, where trumpets lead a fanfare to amplify marginalized voices as a "feminist counterpoint" to the original (Grolman, 2014, p. 1). Drawing inspiration from authors like Kathy Acker and composers like Joan Tower (among many other possibilities), a trumpeter can continue this sonic recontextualization. Great value will come from this practice, both for the artistic and social identity of the trumpet.

In addition to the examples above that highlight satirical representations or sonic retranslations of trumpet sound, the film also draws on music to pair trumpet sound with expressions of melancholy and sentimentality. [REDACTED]'s first interview sequence describes a lonely tale of their journey to Downtown, highlighting elements of the fictional city's infrastructure and art scene. The monologue is intended to characterize [REDACTED] as both

melancholic and hopeful. This is contrasted greatly with the second interview, where [REDACTED] has become politicized by their experiences. However, before this transformation, music from Chopin, Satie, and responsive free improvisation are performed directly after the monologue is finished. Chopin's Prelude Op. 28, No. 4 in E-minor has a long association with expression of melancholy or grief—both in media and in history. Historically, the piece was among the performed works at Chopin's own funeral. Writer Benita Eisler—author of *Chopin's Funeral* (2003)—describes the event as follows:

> *Shouldering the massive coffin, the six men moved up the nave to the sounds of the organ playing Chopin's Preludes in E Minor and B Minor. Many of those now leaving had heard the composer play these pieces-his favorites-in their own houses, in the salons of friends, or in Pleyel's concert rooms. The familiar notes on the somber instrument spoke of the voice they would never hear again, and they wept. (paragraph 16)*

A sentimental irony can be found in the pairing of a prelude and death—a simultaneous beginning and end. In characterizing [REDACTED], the prelude serves as a sonic reinforcement of this theme. It aims to characterize [REDACTED]'s journey to Downtown as a death of an old self, while also embracing a new beginning, This treatment of trumpet sound draws from both postmodern and metamodern constructions, as there is a sentimental retranslation of trumpet sound added to an existing repertoire that carries its own thematic associations. Both the historical context of trumpet sound (descant) and Chopin's Prelude Op. 28 No. 4 come together to represent a character's thematic context in a way that draws from their respective histories, while also recontextualizing them at the same time. It is this oscillation that grants the trumpet's sound a chance to break out of a traditional connotation.

One may point out that the trumpet often plays a descant in sacred music settings—this is absolutely true—but the employing of this concept in a secular piece of repertoire further cements a paradoxical connotation of both tradition and subversion. In this lies an interesting expressive parallel: the historical pairing of prelude and death juxtaposed with tradition and subversion. In this approach, the metamodern concept of oscillating "in-betweenness," as Van Den Akker et al describe, is on full display in this application of trumpet sound.

Conclusion

This brief essay proposed and demonstrated an interdisciplinary method that allows a trumpeter to contextualize their trumpet sound however they seek to. Although the example program had its own goals, the theories from postmodernism and metamodernism provide a framework of commentary through which incredibly diverse, subversive, and experimental programs can be created. The history of the trumpet is far too rich and expansive to have been captured in the scope of this essay, but it is worth interrogating the contexts—social, sonic, or otherwise—that our instrument occupies. Trumpeters have long known the capabilities of our instrument to convey everything from gentleness to power—from terror to hope. The more we all create, discuss, research, and perform repertoire with contextual aims, the more our instrument will continue to expand in its sonic associations among wider audiences of listeners and performers. Critical theory is one such pathway to accomplish this, and interdisciplinary methods only aid in a trumpeter creating work that is new—even when drawing from tradition.

References

Acker, K. (1996). *Bodies of work*. Serpent's Tail.

Adkins, T., & Castle, J. J. (2014). "Moving" pictures? Experimental evidence of cinematic influence on political attitudes. *Social Science Quarterly*, *95*(5), 1230–1244. https://www.jstor.org/stable/44072746

Brendan Graham Dempsey. (2023). *Metamodernism, or, the cultural logic of cultural logics* (second edition). ARC Press.

Cage, J. (2011). *Silence : Lectures and writings by John Cage* (50th Anniversary Edition). Wesleyan University Press. (Original work published 1973)

Eisler, B. (2003, April 20). "Chopin's funeral." *The New York Times*. https://www.nytimes.com/2003/04/20/books/chapters/chopins-funeral.html

Fischer, R. K., & Graham, A. (2014). Postmodernism. *Reference & User Services Quarterly*, *54*(1), 29–33. https://www.jstor.org/stable/refuseserq.54.1.29

Geoff McKay Trumpet. (2023). *An Interview from twilight indigo [REDACTED] official*. YouTube. https://www.youtube.com/watch?v=NS0yQPrMrCc&t=674s

Gloag, K. (2012). *Postmodernism in music*. Cambridge University Press.

Grolman, E. K. (2014). *"Fanfares for the uncommon woman"—Colorado Symphony Orchestra, Marin Alsop, conductor; Joan Tower, composer (1999)*. Library of Congress. https://www.loc.gov/static/programs/national-recording-preservation-board/documents/FanfaresForTheUncommonWoman.pdf

Hutcheon, L. (2006). Interdisciplinary opera studies. *PMLA*, *121*(3), 802–810. https://www.jstor.org/stable/25486355

Jameson, F. (1991). *Postmodernism, or, the cultural logic of late capitalism*. Duke University Press.

Lochhead, J., & Auner, J. (2001). *Postmodern music/postmodern thought*. Routledge.

Manufacturing Intellect. (2018, November 28). *David Foster Wallace interview on Charlie Rose (1997)*. YouTube. https://www.youtube.com/watch?v=GopJ1x7vK2Q&t=1286s

McClary, S. (2002). *Feminine endings: Music, gender, and sexuality*. University of Minnesota Press. (Original work published 1991)

Nehring, N. (1998). *Popular music, gender, and postmodernism: Anger is an energy*. Sage Publications.

Owen, W. (1960). *The use of the trumpet in three symphonic poems by Richard Strauss: Don Juan, Till Eulenspiegel's Lustige Streiche, and Ein Heldenleben* [Thesis]. https://digital.library.unt.edu/ark:/67531/metadc699624/?q=%22History%22

Paulus, I. (2000). Williams versus Wagner or an attempt at linking musical epics. *International Review of the Aesthetics and Sociology of Music*, *31*(2), 153. https://doi.org/10.2307/3108403

Rychter, M. (2019). Postmodern music and its future. *Eidos. A Journal for Philosophy of Culture*, *3*(3), 43–56. https://doi.org/10.14394/eidos.jpc.2019.0030

Sciolino, M. (1990). Kathy Acker and the postmodern subject of feminism. *College English*, *52*(4), 437. https://doi.org/10.2307/377661

Small, C. (1998). *Musicking: the Meanings of performing and listening*. Wesleyan University Press.

Tarr, E. H. (1988). *The trumpet*. Amadeus Press.

Van den Akker, R., Gibbons, A., & Vermeulen, T. (2017). *Metamodernism: Historicity, affect, and depth after postmodernism*. Rowman & Littlefield International.

Wallace, J., & McGrattan, A. (2012). *The trumpet*. Yale University Press.

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Abstract

This interview with Vincent DiMartino explores the evolution of trumpet pedagogy and performance over recent decades. DiMartino discusses advancements in teaching methods, the integration of technology, and the role of historical and cultural perspectives in trumpet education. He also shares personal insights into practice strategies, interdisciplinary influences, and advice for aspiring musicians and researchers. The interview provides valuable perspectives on the lifelong process of musical and personal growth.

Keywords: Vicent DiMartino, Trumpet Pedagogy, Performance.

How has the pedagogy of trumpet playing evolved over the past decades, and what do you see as the most pressing areas for future research?

Teaching has evolved much faster to those willing to grow and change. Access to information has increased exponentially. Both electronic media, publications and on-line access to libraries and archival materials. That said, the process of trial and error learning assisted by a fine teacher will never change. It will still be a catalyst in the process.

The mechanics of playing are becoming increasingly more visual through computer imagery. It will keep enhancing what the traditional studio teacher and master class provide. Also, read, observe and act!

Can you describe a pivotal moment in your career that significantly shaped your approach to performance or teaching?

That moment came two fold. First, I realized that practice was changing, then adapting, and repeating this process adding new objectives and improvements every opportunity.

What insights might this provide to young trumpeters? It gives them a lifetime plan of development when formal lessons generally cease. The teacher is really helping the individual codify their developmental procedure for a lifetime.

How do you approach the challenge of maintaining consistency and endurance in your playing, and what advice would you offer to those researching optimal practice techniques?

Fundamental attention to the techniques and musical concepts needed for your style of performance and being ready to apply those on call. Consulting colleagues with similar job characteristics has always helped me as well as observing those colleagues and videos of myself practicing and performing. Every day is an opportunity!

In your opinion, how can interdisciplinary approaches (e.g., physics, psychology, or acoustics) contribute to advancing trumpet performance and pedagogy?

AS stated above, this is an interdependent lifelong process. Timofey Dokshizer said:

"You cannot practice trumpet (technique) without practicing music. You cannot practice music without technique."

To that, I add that as the years proceed, the technique moves mostly to the background and we are left with tidbits of it of the mechanics to further define our musical intentions.

What role do you believe historical research and the study of early brass instruments should play in modern trumpet education and performance?

Ignorance of history shows in your interpretation of all music. your attention to it frees the educated listener to appreciate the composer and/or arranger of the composition. It also attracts your colleagues to enhance the effectiveness of their performance and visa versa! Knowing the sounds of original instruments means so much as well. You must never forget there was no sound newer than the year that piece was written.

How does cultural diversity influence trumpet playing styles and repertoire?

Take advantage of every concert, recording master class, interview and more. The world is our classroom for life.

How can this be incorporated into both performance and academic research?

Never stop moving forward, changing, enhancing and believing what your ears tell you. There is no such thing as written or printed music. Music is, and always will be, aural. Research is in your ear and curiosity first as well as the library

What advice would you give to emerging researchers and performers who aspire to contribute to the field of trumpet studies?

Work to the Nth degree. Use similar guidelines to some I have mentioned. Make time for your individual development outside of music. In order for your music to become noticed, it has to be based on your experiences outside practice, etc. My daughters have to be moved. The greatest successes are connections with humanity. Stay there until you are no longer able.