# INTO THE THIRD GENERATION:
# ARNOLD JACOBS' TEACHING LEGACY FOR BRASS PLAYERS

by

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# THE LAST INTERVIEW

Dale Clevenger (Principal Horn, Chicago Symphony Orchestra, 1966–2013) has been quoted as saying: "Nearly every brass player in America has studied with Arnold Jacobs, whether they know it or not." (Frederickson, 1996) I am living proof that his statement was correct. In 1991, I was a fourteen-year-old freshman in a Kentucky high school and was enamored with music. I knew I wanted a life in music, but at the time I thought that meant I was going to be a high-school band director. Over the next year, my musical goals changed.

My high-school band director, Dennis A. Noon (Director of Bands, Webster County High School, KY 1977-97), ignited the spark of my passion for music. He set up my first trombone lesson with Gary Kirtley (Director of Bands, Daviess County Public Schools, Owensboro, KY, 1975–2009). Mr. Kirtley was funny and kind, and he had a beautiful sound on the trombone. Many of his students have had careers in music. He showed me aspects of trombone playing that were new to me, including proper posture, intonation tendencies, and efficient slide techniques—all with a smile. Mr. Kirtley had a major impact on my development as a trombonist in my early life.

In 1992, I auditioned for and won a scholarship to attend Music at Maple Mount, a summer institute for young musicians in Owensboro, KY. James Douglas White (Atlanta Symphony Orchestra, 1972–75) and his wife Julie (director, Kentucky Youth Chorale and Arts Coordinator for the Owensboro Public School System, 1974-2015) were the camp directors. While attending the camp, I met L. Eugene Montgomery (Bass Trombone, United States Air Force Academy Band, 1997–present), who was a dorm counselor, played bass trombone in the concert band and the jazz band, and sang in the

festival choir. Eugene was only about six years older than I, but his influence on my life was permanent. With his full beard and robust bass voice he seemed professional to me and became an instant role model in my life. He took an interest in me, teaching me how to warm-up and demonstrating how to phrase musical lines. He helped me choose a mouthpiece and introduced me to the benefits of "mouthpiece buzzing," a technique that Arnold Jacobs (Tuba, Chicago Symphony Orchestra, 1944–88) was known for promoting. Eugene was the first person I met who referred to himself as a performance major; he introduced me to the world of the performing arts. From that time forward there was only one thing that I wanted to have as a career, and that was to play the trombone in a professional symphony orchestra. A year later, I learned that Eugene had been a student of Charles G. Vernon (Bass Trombone, Chicago Symphony Orchestra, 1986–present), making him a second-generation "descendant" of Mr. Jacobs. I did not realize it at the time, but my encounters with Eugene initially made me a third-generation student of Mr. Jacobs.

Early in my life I had an appetite for great musical recordings. I think John Williams' score for *Star Wars: The Empire Strikes Back* had something to do with that. I loved recordings with strong brass such as the CSO section. In 1993, as a junior in high school, I visited Indiana University with some friends who also played trombone (including Eugene Montgomery). We went to hear the low brass section of the CSO present recitals, master classes, clinics, orchestral excerpt sessions, and coaching sessions. Jay Friedman (Principal Trombone, Chicago Symphony Orchestra, 1962-present), Michael Mulcahy (Second Trombone, Chicago Symphony Orchestra, 1989-present), Charles G. Vernon (Bass Trombone, Chicago Symphony Orchestra, 1986-

present), and Floyd Cooley (Tuba, Chicago Symphony Orchestra, 1992-1993) were all in the section at that time and had worked closely with Arnold Jacobs. Charlie and Floyd had studied extensively with him. After hearing them speak, watching them teach, listening to their solo playing, and then hearing them play as a section, I knew I would do whatever it would take to become like them.

In the fall of 1994, I began my college education as a trombone performance major at Murray State University with Raymond L. Conklin (Chair of the Department of Music, Professor of Trombone and Low Brass, and Chair of the Faculty Senate, 1973–present). Lessons with Professor Conklin were the building blocks of my future as a performer. He provided me the needed structure and guidance that shaped my desire to learn and grow as a person as well a performer. His expertise and experience gave me a solid fundamental base that has held true throughout my career. He taught me what it meant to work hard and to focus on becoming the best player I could be. He has been a mentor and an example to me throughout my career. He knew that I was dedicated to becoming a professional trombone player and helped facilitate lessons for me with some of the best low brass players in the world. During my freshman year of college, I had my first lesson with Edward Kleinhammer (Bass Trombone, Chicago Symphony Orchestra, 1940–85). Mr. Kleinhammer was the bass trombonist on many of my favorite CSO recordings. During my lesson with him he talked a great deal about the fundamentals of trombone and music in general, but he also spoke about the concepts of Arnold Jacobs. I realized quickly that Jacobs had taught a great many of my musical heroes. I knew that I wanted to learn whatever it was that he was teaching.

In 1995, after my freshman year of college, I had my first lesson with Arnold Jacobs himself. I rode a bus all night from Evansville, IN to Chicago. I was excited and nervous, but as prepared as I could be. I knew I was meeting with the master, but I had no idea how it would change my playing and ultimately my life. I did not know much about him or his teaching, but Professor Conklin trusted him. I had heard his students speak and play, and I just knew he was going to teach me how to do what they were doing. I lugged my trombone, a huge bag of music, a large dual-deck stereo component tape recorder, and a microphone into Mr. Jacobs' studio.

I can remember reading the entire book *The Art of Brass Playing: A Treatise on the Formation and Use of the Brass Player's Embouchure* by Philip Farkas (Principal Horn, Chicago Symphony Orchestra, 1936–41, 1947–60) during my bus ride. I studied every relevant aspect of the function of the body and tried to memorize the shapes and pictures of the embouchures that Farkas had included in the book: those of the legendary brass players from the CSO. While I was setting up all of my gear, I casually mentioned to Mr. Jacobs that I had read Mr. Farkas' entire book; he smiled and nodded knowingly as I finished getting ready. Then with a kind, unfading smile he said, "You should take that and lock it in a drawer." I was a little stunned and confused at that statement, and Mr. Jacobs must have sensed that. After a moment of silence, still smiling he said, "And if I write a book, you should lock that in a drawer too." (Heath, 1995) I had no idea how large a part of Mr. Jacobs' philosophy and teaching style was wrapped up in what he had just declared. He acknowledged the brilliant work and playing of his colleague, Philip Farkas, and told me that it was *my* approach that was in error. Knowing the contents of Farkas' book, Mr. Jacobs knew that I was looking for the right *physical* approach to

playing the trombone. He already knew the questions I had, and the answers I was looking for, even before I played a note. He was gently telling me that the book was not where I was going to find those answers. In that first lesson, he said, "As human beings, this is simply not how we function. We function on the basis of *product not process*." (Heath, 1995) What he meant was that we need to focus on the result rather than the means of achieving it. Despite the jarring start, we continued on to what would be one of the best and most encouraging lessons I would ever experience.

I played an etude for Mr. Jacobs, and it was very unremarkable. Then he asked me if I could imagine what Charlie Vernon would sound like playing that same passage. I said, "Yes, of course," because Charlie was one of my musical heroes. Mr. Jacobs continued, "Now, turn up the volume very loud in your brain and show me what Charlie would sound like." (Heath, 1995) Immediately, I played the first few notes again and they were amazing. Mr. Jacobs responded jokingly, "Well, Charlie is obviously a way better player than you are." (Heath, 1995) He told me that he was guiding my thoughts and getting me to stop asking questions and to start issuing statements. He followed that by assuring me that a great sound like Charlie's could be mine, but I would have to develop the habit of focusing on the art of music rather than the mechanics of making it.

During another of my early private lessons with Arnold Jacobs, he said to me, "Don't do it right, just sound better than anybody else; then the next generation will want to do it your way." (Heath 1995) The world of music has seen this pattern emerge time and again. Countless musicians have sought and struggled to meet the standard of excellence set forth by great players who came before them. As they have labored toward the goal of sounding like the masters, generations of musicians naturally have

asked the question, "How do I do what they do to sound like they sound?" Although brass players have experienced high levels of success in their playing and teaching via other methods, this question has driven many players to experimental applications based only on personal experiences, feelings, or observations. Rumors, opinions, and erroneous information have abounded. Although some players had knowledge of the physical responses of the body, this knowledge was often overshadowed by their misdirected focus on the concept of physical function, which became a stumbling block rather than a stepping stone. Those early lessons with Mr. Jacobs were the beginning of a study for me that would have a major impact on the direction of my performance and eventually my own teaching. Over the next several years I studied everything I could find about Mr. Jacobs' teaching and his life.

It was because of my study with Mr. Jacobs that I sought out M. Dee Stewart (Professor Emeritus (Trombone) 1980-2016, Brass Department Chair, Indiana University, 2007–2014). I was so impressed with Mr. Jacobs' teaching and the effect it had on my playing that I wanted to study with one of his most successful students, thus making me now a second-generation student of Mr. Jacobs. I studied with Professor Stewart during both my master's and doctoral degrees. During my time with Professor Stewart, he told me about a project that he had begun over thirty years ago—a project so intriguing to me that I had to look into it. Along with compiling written testimonies by the students of Arnold Jacobs, and publishing them in his book *Legacy of a Master*, Professor Stewart had gathered the verbal testimony of a small sampling of Mr. Jacobs' students as well as video recordings of panel discussions, interviews, and presentations with Mr. Jacobs during the Second International Brass Congress in 1984.

## ABOUT THIS DOCUMENTARY

In 1984, the Second International Brass Congress was held on the Bloomington campus of Indiana University. Arnold Jacobs was the honored guest, receiving the highest honor at the congress because; "he was the strongest force for brass playing and pedagogy in all of our lifetimes." (M. Dee Stewart, 1984) Jacobs was regarded as a master performer and pedagogue. During the event, Professor Stewart held a series of interviews and a panel discussion with Arnold Jacobs and some of his most successful students. These students are now representative of some of the most prominent figures in the world of brass playing. They independently testified as to the effect that Mr. Jacobs' teaching had on their performing and teaching. Many said it was a turning point in their lives, and had become a new standard for their own performing and teaching. People from all over the world had gone to Mr. Jacobs—for various reasons. Some went because they thought he was "the breathing teacher." (Erb, 2013) Many went "on crutches," with problems ranging from exhaustion and paralysis, to emotional and psychological issues affecting their playing (fear, anxiety, frustration, etc.). (Erb, 2013) Some went simply because he was known as the greatest pedagogue and performer of the day, and they believed Jacobs could "make [them] the greatest player[s] in the world." (Vernon, 1984)

During the conference, a series of videos was recorded. Panel discussions hosted by Professor Stewart with Arnold Jacobs, his colleagues, and his students were captured professionally on video. Professor Stewart interviewed ten students of Mr. Jacobs who, at the time, represented nearly fifty years of his teaching influence. These students were some of the top brass performers and pedagogues in the world: Ronald Bishop, Stephen

Chenette, Richard Erb, Irvin Hollingsworth, Keith Johnson, Robert Allen Karon, Mark Lawrence, Daniel Perantoni, Robert Tucci, and Charles G. Vernon.

Nearly thirty years after the Second International Brass Congress, I began contacting the musicians interviewed in 1984 who were still living. When I conceived this project, I intended to bring them all back to Indiana University to conduct the interviews in the setting and format identical to that of 1984. However, in consideration of their age and station in life, and after speaking with Professor Stewart, we decided that with the technology available today, the interview process would be just as effective if I were to go to them. The foundation of this study is their testimonies from both 1984 and 2013–16. The style and format of the follow-up interviews mirrored those recorded in 1984. To maintain validity and establish reliability, the questions from the original interviews were revisited, but the interviewees were not reminded of their past responses, so they could present their current opinions without the bias of hearing their previous responses. The participants were also presented with a list of new questions that focused on Jacobs' principles and their application to brass playing today.

**Interview Questions (selected from, but not limited to)**

*Original Questions asked by M. Dee Stewart in 1984:*

1. How long did you study with Arnold Jacobs?
2. What was the reason you initially began to study with Mr. Jacobs?
3. Was Mr. Jacobs' approach innovative? If so, how was his approach different?

4. Please tell me some of the effects Mr. Jacobs' teaching had upon your own performing and pedagogy.
5. Did he make any changes in your playing? If so, what?
6. Some people have said that Mr. Jacobs' approach may have been too analytical. What is your opinion on this?
7. Was Mr. Jacobs a role model for your career?
8. Have you found Mr. Jacobs' methods effective in your own teaching? If so, have they been as effective as they were for you?
9. Do you feel Mr. Jacobs' approach to teaching changed over the span of his career?
10. Mr. Jacobs often talked about playing with ease. Can you please talk about this?
11. Do you feel that Mr. Jacobs' extensive knowledge of anatomy and physiology in brass playing got in the way in his teaching?
12. How does Mr. Jacobs' method of teaching relate to your performance?
13. Is there one aspect of Mr. Jacobs' teaching that has helped or influenced you most?
14. Is there a relationship between your success and Mr. Jacobs' approach?
15. How long have you been teaching?
16. Can you discuss the emphasis on the mental aspects of playing in Mr. Jacobs' approach?
17. Is there a general approach in Mr. Jacobs' teaching that you have been able to successfully incorporate into your own teaching?

*New Questions included in the interviews taken by John Bryan Heath 2013–16:*

1. Do you feel that Mr. Jacobs' approach to brass playing and pedagogy is still valid today?
2. How have Mr. Jacobs' methods evolved in your playing and teaching?
3. Do you feel that Mr. Jacobs' approach is affecting the current and upcoming generations of brass players?

At the age of 15, Arnold Jacobs began to study tuba at the Curtis Institute. He also studied voice with Luigi Bocelli. As his vocal study progressed, he found he was experiencing a great deal of physical discomfort and many problems. He came to the conclusion that Bocelli's concepts of strength, and words such as *support your tone,* led him into states of excessive physical contractions, causing great physical strain. His vocal technique also brought about sore throats and extreme vocal fatigue. During the panel discussion in 1984, Jacobs recalled wondering why playing tuba was so easy, when his singing technique was causing him so many vocal problems. This prompted Jacobs to begin the study of *respiration*, during which he began a lifelong study of the anatomy and physiology of the human being. This was a study that would have a lasting impact on the way brass instruments would be performed and taught for generations to come.

Mr. Jacobs became a well-respected expert on the subject. Whereas many people focused on the *physical* aspects of playing, Jacobs' approach was to focus on *how to sound*. His philosophy was to view music as an art form. He believed that we work most efficiently by the stimulus of the *product* (what we want to achieve) and not the *process* (how we are going to achieve it). (Stewart, 1987)

During the panel discussion, Mr. Jacobs shared that he had studied the structure and anatomy of the human body thoroughly, but that as soon as he found out how little that meant when it came to actually making a good sound, he had to go into the study of what he considered to be function. How do we operate the equipment with which we are born? (Jacobs, 1984) In medical terms, this is the study of psychomotor activity, the reflex response to stimuli.

According to his students, Mr. Jacobs had an extensive knowledge of behavioral psychology. He was of the opinion that a brass player can have the most perfect embouchure setting, posture, and tongue placement, but if there is no stimulus in the brain the player may obtain no function at all. (Erb, 2013) While talking with Professor Stewart, Steve Chenette said:

> Arnold Jacobs knows how the body works while playing a wind instrument, but more important, he knows what the mind must do to get the body to work well. From complex knowledge he has distilled a simplicity of approach, which offers all of us the possibility of becoming natural players. The essence of this simplicity is to conceive of brass playing in terms of *song* and *wind*. (Stewart, 1987)

Richard Erb said:

> This is a man who has a knowledge of the … behavioral aspects of psychology. When he worked with me—the changes that he made in my playing … were made by that method. He was able to get into the responses I was making to a given situation and in a very systematic way interrupt those responses and replace them with more appropriate ones. (Erb, 1984)

During one of the discussions with his students in 1984, Mr. Jacobs was asked how he learned about the psychological aspects of brass playing. Mr. Jacobs replied:

> I have studied the structures. I have studied a good deal about the brain. I follow the research in various disciplines. I'm an avid reader on that [behavioral psychology]. I have talked with many expert people in that field. This is a culmination of—what you might say is—many years of investigation. (Jacobs, 1984)

Dr. Sheldon Kirshner (Chicago Attorney and Psychologist) said of Arnold Jacobs:

> What Arnold has done really—based on the information that he had from his students—[he has] intuited the laws that we have come to understand [in behavioral psychology] through intuition and at least 60 years of research. I teach learning theory at a graduate level, and … he's on the money. (Kirshner, 1984)

Although Mr. Jacobs had a vast knowledge of the anatomy and physiology of the complex bio-machinery of the human body, according to Erb (2013) he believed that human beings were operated by a simple set of controls in the brain that were guided by the stimulus of the *product*. He had a knowledge of human structure and function that would perhaps even rival general practitioners of medicine, and was sometimes highly analytical as a teacher because that allowed him to make the appropriate diagnosis of how to help the student physiologically in any given situation. (Erb, 2013) He would use machines and medical gadgets to measure different aspects of respiratory function. His goal was to find the exact need of the student. As a result, he would be able to help the student learn how to think and thereby to play more effectively.

Everything in Mr. Jacobs' studio had a purpose. Merriman Hipps (Trumpet, Minnesota Orchestra) said:

> How can I describe Jacobs' studio? It looked like a mad scientist's laboratory. There were anatomical charts on the walls, and there was the strangest collection of machines, meters, gauges, pipes, and hoses I had ever seen. The centerpiece of this bizarre assemblage was a contraption known to Jacobs' students far and wide as the "Christmas tree." It consisted of a cast-iron base and shaft, which appeared to be part of a music stand with a bewildering assortment of dials, tubes, gauges, and hoses. (Stewart, 1987)

Mr. Jacobs stressed that the dominant factor in the brain must be the *song*, which he defined as the entire picture in the brain of what we wish to communicate with our audience. He believed that the complexity involved in what we are thinking should be in

the interpretation of music, and that it is much more important to focus and develop our concept of *how to sound* rather than *how to play*. (Heath, 1996)

Often the effects of Mr. Jacobs' teaching were immediately apparent. The following is a section from Richard Erb's interview in 2013, in which he recounted working on eliminating Valsalva maneuver with Mr. Jacobs:

> I told you about the problem with different embouchure settings for different registers that I had acquired. Well, he never said a word about that. Not a word. Never. [He] never mentioned it. He got me to play some things—you know—simple things. I was concerned mostly with getting it so I could start the notes…. I got back home and was practicing and … everything [was] going great, but I noticed that my high register wasn't as good as it used to be.... I [was] having trouble: I [couldn't] get above G above middle C. I had had a real remarkable high range before that. [It was] useless, but it was very remarkable. It scared me [when I could not play the high notes] and I [asked] what was happening. He said, "Wait a minute." This is the absolute truth. He said, "Just a minute." I'm talking on the phone here with him. You could hear his papers being shuffled and the pages turned. He said, "Oh, well, you were here on May 23, right? That's three weeks ago. I'm surprised. You should have called me sooner. This was supposed to happen right away." He said, "I changed your embouchure. What you were doing before isn't available anymore, but you don't need it. It will develop again in a more healthful way." It was so funny because he had said, "Oh, you called me late." I thought for a minute that he said, "You called me too late. I can't fix it." It was the exact opposite. He said, "That should have taken place already anyway." So the range came back; everything was much better. (Erb, 2013)

Mr. Jacobs was not above criticism. Some players have criticized his approach as being too simplistic. His philosophy was to reduce the complexity of playing a brass instrument and to redirect the student toward becoming a "fine musician [who is] musically apt to deliver a musical product to somebody else." (Jacobs, 1984) Mr. Jacobs has also been criticized for having been too analytical. He had become an expert in anatomy and physiology, and would at times describe in detail the way that the human body would respond to stimuli. However, the consensus of those interviewed was that

his individualized instruction allowed him to be analytical while not overwhelming even his most inexperienced students.

Mr. Jacobs' deep understanding of human anatomy and psychology, paired with a thorough understanding of behavioral science, allowed him to judge the learning needs of individual students and tailor his methods to their specific learning needs. Whereas one student would need an explanation of the physical approach, that same information might confuse another student. Regardless of learning style, his goal was to find simplicity in the approach to the instrument. When Mr. Jacobs worked with students he would most often take this approach. In his own words:

> We [always] sneak in the back door … [when there is] a problem. We don't confront the problem head-on. [Where] a man has a difficulty [in a particular area], we don't try to correct that difficulty. We find where he can function. Then we can sneak that function into the difficulty. In other words, we overcome their difficulty without them even being aware of it. (Jacobs, 1984)

Keith Johnson addressed this during his interview in 2015:

> All of this information, which he is so filled with—that he just had to talk about—all these electrical things about brain waves and all kinds of scientific stuff—it went over my head … but, it really wasn't [over my head]. It was [said] in a way that I wasn't smart enough to understand at the time. It was deep enough to support what I call the bookends: the beginning and the end. [These are]: take a deep breath; sing through the trumpet. Everything else is just stuff. And there are people that have just ridden me mercilessly because they say, "Well, you're just being so simplistic." And I said, "It's not simplistic when there are a million neurons firing off in your head when you say, 'Hello.' That's not simplistic. That's skill." (Johnson, 2015)

In 1983, Howard Gardner wrote the book *Frames of Mind*: *The Theory of Multiple Intelligences*, in which he defined what he called the eight multiple intelligences: musical/rhythmic, verbal/linguistic, logical/mathematical, bodily kinesthetic, interpersonal, intrapersonal, and naturalistic. Brain-based learning strategies were already being integrated into the modern education strategies of the mid-twentieth

century. Gardner's multiple intelligences took this one step further. He defined an approach that addressed the needs of the individual student, rather than the "one size fits all" approach that was modeled after the early twentieth century factory concept. In her book *Differentiation in the Classroom*, Carol Ann Tomlinson defined individualized, student-centered instruction as *differentiation*. While the typical public school still adhered to the old model, teachers began to tailor their lessons to the specific needs of individual students. Mr. Jacobs' methods, which he was using long before Gardner's 1983 publication, were differentiated based on his understanding of what Gardner would later call the *theory of multiple intelligences*.

Mr. Jacobs began teaching in 1937 and noted that he began to intentionally individualize [differentiate] his teaching in the early 1940s. (Jacobs, 1984) The following statements given are testimony to Mr. Jacobs' student-centered, differentiated approach:

> You have to be very sensitive to your students' needs, and to do that you have to in some way be able to equate with the student and if necessary, even try to think like the student; that means you must study their background a little bit. You must have some knowledge of the student—his use of language. To issue a word—if I use the word *hypertrophy* and the person doesn't know what it means, then we have to change it into "the growth that occurs as in weight lifting, and so forth." We have to find words that have meaning and understanding for the student. We can issue messages from now until Doomsday, but if a student can't receive it there's no meaning. You have to find how you can equate with a student. (Jacobs, 1984)

> It was always—it was very much communicated from person to person rather than from … some kind of a mass media thing. I think that he was really the master of this. He didn't teach any two people exactly the same thing. I mean there were a certain kinds of basic tools that he gave most everybody, but he really zeroed in on each individual. (Robert Allen Karon, 2016)

> In a way, he felt that teaching music was private instruction and that every person was unique. Every person was unique and had to be taught in an addressed matter. (Robert Tucci, 2016)

> He approached the student in a certain way. He approached every one of us, I think, as an individual. Individual problems are your problems, and they're not generalized problems. It's not like *all people from Kentucky can't jump* or something. Jacobs taught absolutely as an individual (Richard Erb, 2013

Mr. Jacobs used a differentiated approach to the instruction of his students because of the learning styles of the individual. This approach has a relationship with the concepts found in Howard Gardner's *Theory of Multiple Intelligences*. Mr. Jacobs used a wide variety of tools and techniques to address the various learning styles and natural aptitudes and strengths of his students. While the end goal was always the musical product, Mr. Jacobs would use many different approaches to find the most effective manner of achieving this product with each student. His goal was to get the appropriate stimulus in the student's brain that would facilitate the end musical result. Some students function very well in the realm of verbal/linguistics, so he would have them make up words to the given musical lines, or he would have them try to become "a story teller of sound." (Jacobs, 1984) For some students, he used devices such as the incentive spirometer or a pinwheel as a visual aid. He would create exercises with these tools, and then would have the student imagine recreating the same effect while playing. One of his favorite methods of finding the stimulus in the brain that would motivate the body into appropriate function was to have the student imagine exactly how their favorite musician would sound on a given note or phrase, and would then have the student focus strongly on recreating that specific sound and musical phrasing while playing.

> I would say that the individual is involved in this very, very much. In other words, you go pretty much by what people want to know. There are people who think along different lines—in a sense— than what I do. You have to steer a person into—what would I say—a heavy dominance of the musical thought. (Jacobs, 1984)

These now-standard theories in education were woven into the fabric of his pedagogy long before being defined by Gardner and Tomlinson.

In the late nineteenth and early twentieth centuries, concepts were prevalent in the approach to brass playing that were based heavily in strength factors and underdeveloped views of anatomy and physiology. Mr. Jacobs believed that the practices for respiration in brass playing were the most detrimental. Some of the most common themes were to keep a very tight gut while playing and to intentionally restrict movements of the torso, particularly in the thoracic region. These concepts were counterproductive for several reasons. During his interview in 2013, Richard Erb said that brass teaching long retained these concepts, and it was not until the 1950s that "Jake began to drag it, kicking and screaming, into the 20th century." (Erb, 2013) In my lessons with Mr. Jacobs, I learned that this "tight-gut" method was not anatomically efficient. It made breathing and playing more difficult, because restricting movement in the thoracic region significantly reduces the amount of air that can be moved in or out of into the lungs.

Mr. Jacobs would often ask his students to show him where they thought their lungs and diaphragm were. Many students would point a little over half way up the sternal region to show where they thought the tops of their lungs were, and somewhere in the mid-abdominal region to show the bottom of their lungs. It was also common for students to point to their navel or even lower to represent their diaphragmatic region. As you can see in Fig. 1, the highest points of the lungs actually reach to the top of the inside of the ribcage all the way up to the clavicles, and the base of the lungs goes from the base of the sternum down around to the back following the lowest floating ribs. (Gottburg, 1998) The diaphragm is located just below the lungs, at the base of the sternum and

behind a little bone called the xiphoid process. Mr. Jacobs described the lungs to me as balloons. As air enters the lungs, they inflate, causing expansion; any air leaving the lungs will cause deflation or decrease in size. Since the lungs fill the entire ribcage and thoracic region, if there is to be air moving in and out of the lungs, there must be movement of the area. (Heath, 1995)

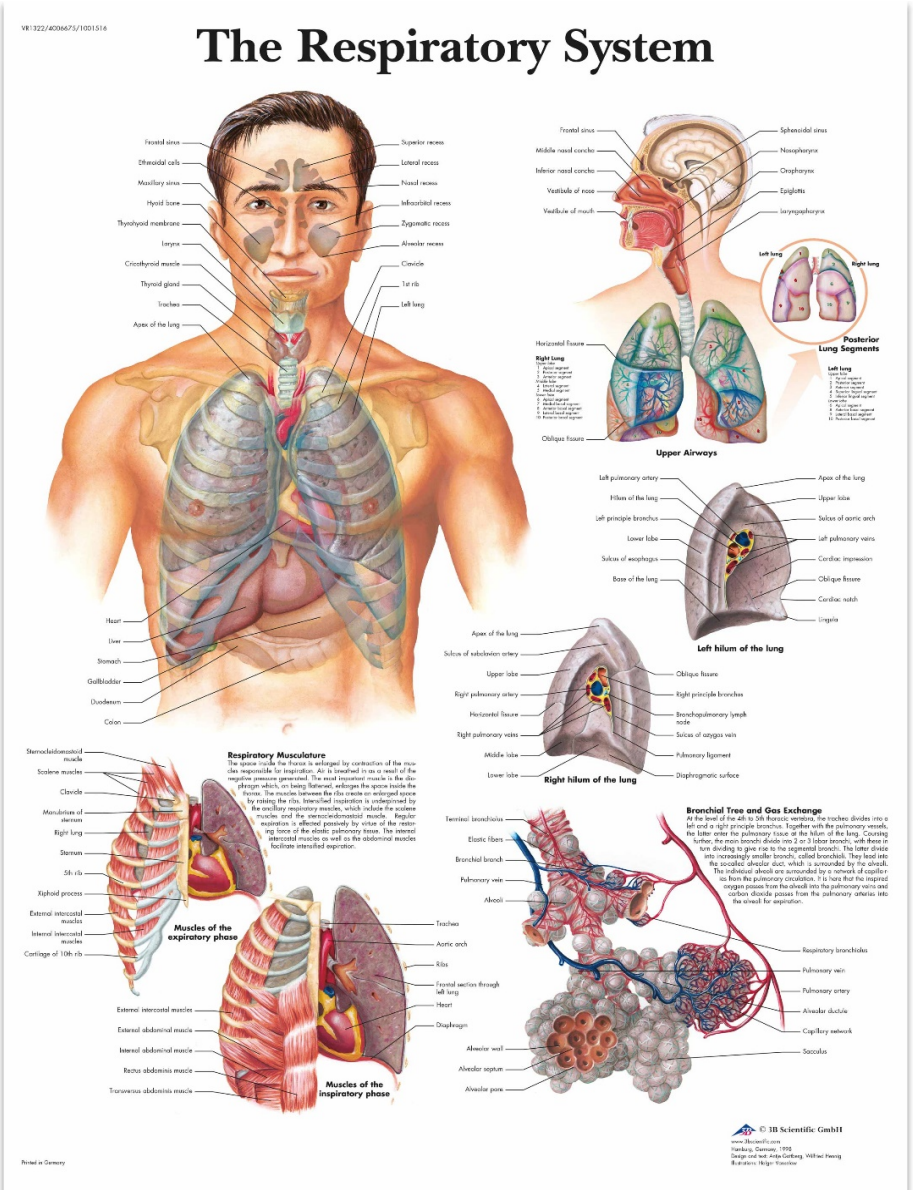


Figure 1. The Respiratory System. (Gottburg, 1998)

Mr. Jacobs cautioned that there should be no movement for the sake of movement, because it is quite possible to raise and lower the shoulders, chest, and abdomen while moving no air whatsoever, and that is detrimental. The concept of blowing from the diaphragm is also a physical impossibility, because it is the chief muscle in the body for achieving low breath pressure, meaning that it is the primary force generating the vacuum required for inhalation. Air leaves the body as a result of the body and lungs becoming smaller. The diaphragm, which acts as a floor to the lungs, contracts vigorously downward, flattening out and pressing down against the internal abdominal organs to bring air into the body, then relaxes in an opposite motion for air to leave the body. The elasticity of the lungs, chest, and intercostal rib muscles cause the lungs to relax into a smaller state. Gravity pulling downward on the ribs and thoracic region also aids in expiration with minimal effort. These factors come into play in a much greater capacity at the fuller points of the inhalation, making it much easier for the air to leave the body. As the lungs empty, increasingly more effort is needed to expel the remainder. (Jacobs, 1984)

The behavior and response of the lower portion of the respiratory system often has an effect on the upper region. If there is significant tension in the lower lungs, that tension will often travel up into the chest and neck, creating more tension in the torso, neck, and head. Steve Chenette was a physically tense player when he went to Mr. Jacobs. The pedagogue tested Steve's vital capacity, which showed he had more than seven liters of air available to him. Mr. Jacobs wanted to explore why someone with such tremendous physical advantages would be simulating the struggles of people with greatly reduced capacities. After some testing, he realized that Mr. Chenette, as was true

for many others, had been schooled in the concepts of minimal function regarding the lungs—the "tight-gut" method. (Chenette, 1984, 2016)

The concept of the "tight-gut" was a point of contention to Mr. Jacobs. Muscles of the body operate in two ways: they contract and they relax. For example, the biceps can contract into a shorter position, affecting the position of the forearm. Then the biceps can relax, letting go of the forearm, and gravity will cause it to limply fall back into place. But the biceps has no power on its own to push the forearm in the opposite direction. There are antagonistic muscle groups to accomplish that: primarily the triceps, which contract, shorten, and thus pull the forearm into another position.

Systems of antagonistic muscles are found throughout the body, including the respiratory system. For inhalation we have one set of muscles that will contract, and an entirely separate set of muscles for exhalation. When you bring multiple antagonistic muscles into contraction states at the same time, you are in a state of isometric contraction. You experience stability, but also a great cancellation of function in regard to movement. If you contract to "show off your arm muscles," you will see the bulges of the biceps, triceps, and possibly the deltoid, and you will feel the hardness of muscle all over, but if you then try to move your arm freely in this state you will find it difficult. (Jacobs, 1984) This phenomenon exists in the abdominal and thoracic region: if you flex for the sake of support, you will achieve a great deal of muscle flexion and hardness in general, but then you have cancelled out the ability of the body to achieve free movement, which means a cancellation of quality air flow as well.

There are always contractions in the act of exhalation, but these contractions occur as a result of the individual blowing, and should never be thought of as causative.

Trying to contract muscles involved in exhalation is one of the greatest hazards in brass playing, because the air or *wind* is the motor force to the vibrating surface of the lips, which feed the "buzz" to the source of resonance, "the instrument." Unless you have sufficient motor force, great struggle and failure ensue. (Heath, 1996)

Most pedagogical methods and ideology can be studied and read about first hand, but Arnold Jacobs was not like most pedagogues. He never wrote down any of his methods. In a private lesson I once asked Mr. Jacobs why he never wrote a treatise on brass playing, and he told me that his teaching was dependent upon the needs of the individual student. Although you may use a particular technique with one student, another student may need to hear the exact opposite in order to succeed. (Heath, 1996)

Each of the participants interviewed between 2013 and 2016 said that they have continued to use Mr. Jacobs' approach as performers and in their teaching. There has been no significant evolution from his concepts. Following are the responses to the question, "Have you been able to use the methods you learned from Mr. Jacobs in your teaching?" (Stewart, 1984; Heath, 2013–16)

> I want to hear him tell me yet again how easy it is. Furthermore, I need to hear it again so I can pass it on to my students in hopes that they may tell their story the way Arnold Jacobs has been telling his story all these wonderful years. (Bishop, 1984)
>
> Absolutely. Jacobs' approach is the foundation of my teaching. He offers an understanding of how brass playing works, and I try as much as I can to pass this on to the students. I never fail[ed] to give credit to Jacobs. (Chenette, 1984)
>
> I found that his method of imparting visualization ... was especially helpful in my teaching. (Lawrence, 1984)
>
> Almost exclusively. (Perantoni, 1984)

When I came to Toronto, an awful lot of people were teaching the old-fashioned methods, and I started telling my students at the University of Toronto the Jacobs approach. That's the way I taught all of my students. (Chenette, 2016)

A child learns to hold on to things. A child learns to walk. A child learns to talk. All of those things are essentially learned by imitation. They're not taught by somebody trying to implant that in somebody. (Johnson, 2015)

Starting in 1968, I taught on the faculty of the National Youth Orchestra of Canada, and I did that until 2005.... I felt when I went there in 1968 that nobody knew anything about Mr. Jacobs ... and I think that I brought what he gave me up there ... and I feel really good about that. (Erb, 2013)

When I was in Santa Barbara or UCLA, I taught all of these things, you know, to the students. I had my own little tack on it, but I showed my students how to do those things. That's the way that I learned how to teach, using his philosophy. (Karon, 2016)

I try. I mean—every student is different, but like I said earlier in the interview, that concept has stuck with me this whole time—the approach ... absolutely. (Lawrence, 2015)

I don't think any of us would be where we are without some good teaching and what he did. I'd say he probably had one of the biggest influences on my teaching style. (Perantoni, 2016)

Almost exclusively. When someone has been as constructive and as productive as Arnold Jacobs was, you don't have to be too inventive on your own. What he taught us was so comprehensive that it covers 99% of general teaching needs. It was a totally comprehensive school of playing, of musicianship, of musical performance, of instrumental performance, brasswind playing, articulation, breathing, sound, style, dynamics. What he taught us was complete. (Tucci, 2016)

Of course, of course—I mean, anything I've done with anybody [has] passed on … the knowledge freely, not holding anything back. I'm always just trying to take what I have and give it freely, and show what can be done. Jake told me, he said, "Only when you take what you have, and make it the best that you can possibly make it (make your playing, make your life, make everything) will you be in competition with the great players. (Vernon, 2014)

## CONCLUSIONS

The video footage of the interviews with Arnold Jacobs' former students at the 1984 Second International Brass Congress demonstrates that his philosophies of brass performance and pedagogy were revolutionary and defined a new standard. My documentary was a case study of the effect of Jacobs' philosophies of brass performance and pedagogy based upon the testimonies of his students over a thirty-year span. This qualitative research study was based on information extracted from the interviews and a panel discussion conducted by M. Dee Stewart in 1984, compared and synthesized with testimonies from the same musicians between 2013 and 2016.

A thorough review of the interview data in comparison with the interviews from 1984 confirms my supposition that the current generation of Jacobs' students, the third generation, is without doubt still being shaped by his ideas and teaching philosophies. His teaching has withstood more than eighty years of challenge and change in the world of brass playing. Based upon the testimonies given by the musicians in their original interview compared with their testimonies thirty years later, any significant evolution of Mr. Jacobs' approach has been largely unnecessary. His methods were already rooted in the learning theory that we now know as *differentiation* and the *theory of multiple intelligences*. Mr. Jacobs' approach to playing and teaching was based upon the product desired, not by any one rigid method. Changes that have occurred his students' teaching have occurred largely due to their own language style and the needs of their students, as was the case with Mr. Jacobs' teaching. There would always be variance in language from student to student. Mr. Jacobs personally said that sometimes he would have to use

completely different language from one student to the next. (Heath, 1996) Jacobs was modeling these methods decades before they were identified and labeled.

Seemingly, no aspect of his ideas and ideals has proven to be extraneous or detrimental to brass playing. The current opinions of these experts in the field, matched with their statements made in 1984, demonstrate this profoundly. In addition to the effectiveness of Jacobs' philosophies initially demonstrated by the original interviews, it is now clear from the recent testimony of the same participants that his approach to brass playing and teaching is viable and continues to influence brass players to this day all over the world.

As a first-, second-, and third-generation student of Arnold Jacobs, I personally experienced his influence in each of these capacities. While studying with him, I was fortunate to receive an education that he tailored to fit my needs. I experienced his vast wealth of knowledge in person, and I had the privilege of getting to know him as a person. His brilliant mind and kind heart created learning experiences that, in my opinion, likely cannot be duplicated. Arnold Jacobs was truly one of a kind. It is rare to find a performer with his skill and musicianship, just as it is rare to find a teacher of his caliber. Finding both of those qualities in one person, who also cared deeply about his students, makes him worthy of a study such as this. It is clear that his influence is still very much alive, going forward into the third generation. Jacobs said:

> I have done my best as a teacher and have tried to be a good friend. My ideas have not always been popular. Right now I am enjoying a rather exalted senior status as a teacher, but I hope my ideas will have some contribution to the pleasure of music making long after I have finished encouraging my students. (Quoted in Stewart, 1987)

The purpose of this project was to document the effect of Arnold Jacobs' philosophies of brass performance and pedagogy over a thirty-year span, and to demonstrate the longevity and lasting impact of his methods in brass teaching. The testimonies of his students, taken from the interviews and a panel discussion conducted by M. Dee Stewart in 1984, compared with those taken by John Bryan Heath between 2013 and 2016, have been captured in the video documentary *Into the Third Generation*, providing undeniable evidence that the story of Jacobs' life is truly *The Legacy of a Master*. (Stewart, 1987)

## APPENDIX 1: ARNOLD JACOBS' TEACHING METHODOLOGY

The transcription of this supplemental video is formatted specifically for the reader to experience the synthesis of the interviews from 1984 and 2013–16. The interviewees' names and the year of the specific interview from which the audio has been transcribed are included. The text has been edited minimally for clarity.

Stephen Chenette (Second International Brass Congress Talk Show, 1984): I'm Steve Chenette from the University of Toronto. You alluded to this a bit just a few minutes ago, but if you would amplify it a bit, I would find it interesting. I had my first lesson from you twenty-two years ago, and I don't think there's ever been a year in which I haven't had at least one or two lessons. In the early years, you were extremely informative about the physical aspects of playing. In more recent years, it's almost entirely musical. Now, is this a general change in your teaching or is this just specific to me?

Arnold Jacobs (Second International Brass Congress Talk Show, 1984): I would say that the individual is involved in this very, very much. In other words, you go pretty much by what people want to know. There are people who think along different lines—in a sense— than what I do. You have to steer a person into—what would I say—a heavy dominance of the musical thought. Steve was the first trumpet player with the Minneapolis Symphony Orchestra for a good portion of his career, and a wonderful trumpet player. You were a graduate of the Curtis Institute of Music, if I remember rightly. You had years there. You had years of training in music and are a very fine musician…. Your approach at that time, as I conceived it in those days was not to enhance your musical thoughts, but to try to give you a better understanding of yourself as to how to cope with your problems. I used a two-fold approach with you, if you'll remember. We used instrumentation to establish flow and we used conversation to give understanding. I did everything I could to try to get the brain to focus on the phenomena of *song and wind*—of *wind*—the ability to use air as a motion phenomenon. My purpose in doing that was simply—we had to get you to form a new pattern, which was more normal to your physical structures. In my studio, if you'll remember, we did quite well with this.

Richard Erb (Interview with M. Dee Stewart, 1984): As far as the psychology goes of what he's done—there are two or three different ways you can approach that. A lot of what people talk about when they mention psychology with respect to brass teaching comes down to: It's always the power of positive thinking, in a sense. It's encouragement. It's developing self-confidence and clearly he helped me in all of those areas. That's not really the most significant thing to me, because when I think of psychology as a term and Mr. Jacobs, I think of the other aspect—or one of the other aspects of that word—which are the behavioral … and the scientific aspect. Certainly, he was encouraging and supportive to all of his students, and very much so to me…. I gained a lot of confidence from my association with him. I think more interesting is the fact that this is [a] man who

has a knowledge of behavior—[the science of psychology]—the behavioral aspects of psychology. When he worked with me, [the changes he made in my playing] … were made by that method. The interesting thing was … he was able to get into the responses that I was making to a given situation…. [In] a very systematic way [he was able to] interrupt those responses and replace them with more appropriate ones.

Arnold Jacobs (Second International Brass Congress Talk Show, 1984): I'm perfectly willing to work with any student and give them any knowledge that I have as to structure. [However], function is a different study. There, we [get] into Dr. Kirshner's field of psychodynamics—thoughts that are going to stimulate motor responses. This is what we use in the art form.

M. Dee Stewart (Interview with Richard Erb, 1984): I have heard some criticism about perhaps his methods being too analytical. Would that be contradicted by what you just said?

Richard Erb (Interview with M. Dee Stewart, 1984): I think it would in a sense, because I don't think that the student has to understand intellectually what's going on [in] the moment. He [Jacobs] does the analyzing, and as a matter of fact, he cautions you that you can't be the student and the teacher at the same time. That's one of his old favorites…. He makes it very clear that [there are] two tracks at work here—one going in and one going out…. When you perform—when you operate your instrument—you should be performing … and your mindset should be on the outward track of communicating with your listener.

Daniel Perantoni (Interview with J. Bryan Heath, 2016): Jake said, "You know there are two sides. There's the mental side—that's where I wear different hats; [there is] the physical side; and [there is] the musical side. There's a hat as a teacher; there's a hat as a player. There's the thinker; there's the doer. When you play you're the doer; as a teacher you're the thinker. I always … kept it simple…. That was the message he gave to me, too.

Arnold Jacobs (Second International Brass Congress Talk Show, 1984): I wear two hats. When I study structure and function, I wear the hat of the investigator—the student. When I am on the stage with the horn, I wear the hat of the performer—the storyteller…. I do not let them cross over.

Daniel Perantoni (Interview with J. Bryan Heath, 2016): I used to ask him what words meant [medical terminology]. He would use words [that] I would have to go back and look up in the dictionary…. Then I used to giggle and say, "OK," and then he would explain it in a different sense. But no, I never thought of him as [being] too analytical. In fact, he always ... told me, "Dan, everything I tell you right now is worthless unless your main goal is making music." I'll never forget that statement, because I had heard that [Jake was too analytical] from some other people, but that's not true at all.

Robert Tucci (Interview with J. Bryan Heath, 2016): At that time he [Jacobs] was deeply involved in study programs with scientists and people from medical professions…. This came through in his teaching. He used a lot of terminology that in the beginning [didn't seem] really [very] easy to understand. But it was—if you speak about medicine you use medical terms; if you speak about cooking you use different terms…. He used a lot of scientific vocabulary at the time and there were some comments about this. One fellow

walked in and said, “Mr. Jacobs, it’s all well and good, but could you say that in plain English?”

Charles G. Vernon (Interview with M. Dee Stewart, 1984): He has a way of—you know, [using] these big long words and philosophizing … and I wasn’t able to grasp on to just the simple concept of it until a little bit later.

Charles G. Vernon (Interview with J. Bryan Heath, 2014): He said, “Your right arm is a reflex response to stimuli.” And I’m [like], “What the hell does that mean?” It took me some time to figure that out.

Robert Allen Karon (Interview with J. Bryan Heath, 2016): For a lot of the people who studied with him, it was difficult for them to adjust to that way of thinking…. When I went to see him I said, “OK. I am going to trust this man. I’m going to totally put my trust in him. There is nobody who knows more about this.” I listened to the people who had studied with him and I said, “I’m just going to trust anything he says.”

Stephen Chenette (Interview with J. Bryan Heath, 2016): People say that he was sometimes very complicated. He did know about anatomy—physiology—anything that [has an impact on] brass playing. He knew about it in great depth. In the early sixties he was much more into the physiological aspects of it … and it was a wonderful education. In a sense, I needed that because I had had people telling me—do stuff this way or that way—with no real valid reason. But Jacobs was so thoroughly knowledgeable in the physical aspects of [playing] that it was impossible not to be totally convinced that what he was telling you was right.

Keith Johnson (Interview with J. Bryan Heath, 2015): All of this information, which he is so filled with—that he just had to talk about—all these electrical things about brain waves and all kinds of scientific stuff—it went over my head. But, it really wasn’t [over my head]. It was [said] in a way that I wasn’t smart enough to understand at the time. It was deep enough to support what I call the bookends: the beginning and the end. [These are]: take a deep breath; sing through the trumpet. Everything else is just stuff. And there are people that have just ridden me mercilessly because they say, “Well, you’re just being so simplistic.” I said, “It’s not simplistic when there are a million neurons firing off in your head when you say, ‘Hello.’ That’s not simplistic. That’s skill.”

Charles G. Vernon (Interview with J. Bryan Heath, 2014): He knew more about what goes on in your body [while] playing than anybody [else]. He knew more about all the many, many muscles that are involved in the anatomy of playing … the physical—what you do when you breathe—all that stuff —[he knew more than anybody]. That’s what people think of as being too analytical. They think he was only analytical. That only meant that he … analyzed our bodies and we took lots of tests. The inspirex— [there were many] different things—the incentive spirometer—where you blow this [device] filled with water and it writes a gauge about your lung capacity….

Mark Lawrence (Interview with J. Bryan Heath, 2015): The devices he used were ways for you to visually see what was happening, because … you can’t see in your lungs. You can’t see in your mouth when you’re breathing…. It was a way to kind of visually let you … observe what was going on. Don’t forget this is the athlete part, not the artist part.

Robert Allen Karon (Interview with J. Bryan Heath, 2016): Now, all of those little toys and stuff that he had you working on—that's your clinical time. You know, you're not going to be getting one of those incentive spirometers going during the concert. You're not going to pull that out of your bag and start breathing on that thing before you have to play a solo or something. No. That's your clinical time—when you're working on something to … improve your breathing with this…. But when you're out there playing—it's all just concentrating on the music and that's it.

Robert Allen Karon (Interview with M. Dee Stewart, 1984): That's the thing that's nice about his teaching. Although he will work with you on mechanics and that sort of thing, near the end of the lesson, he would say just to forget about that stuff. "I don't want to talk about how you do this," he said. "Now you just make music."

Charles G. Vernon (Interview with J. Bryan Heath, 2013): So, he would use these machines—the inspirex—the little things that have Ping-Pong balls; you would blow out and turn it upside down and you [would] suck the ball up like this [and it would go up]. These were used for your mind to see the ball and for making the ball do something. It had nothing to do with what your body was doing. It was your mental idea of what you were trying to achieve. You see that ball going like this [sustaining with his hand]. You don't want to see it going like this [dipping motion with his hand]. You just do whatever happens—whatever it has to do to get it to maintain that level.

Richard Erb (Interview with J. Bryan Heath, 2013): From the general populace of brass players you get either, "Oh yeah, Jacobs, the breathing teacher!" Or you get, "He uses machines." [People said] "He's crazy." [They asked], What's wrong with him?" You still hear it…. That still comes up. But he was not "the breathing teacher." He taught me a more effective way of using my body. That's for sure.

Charles G. Vernon (Interview with J. Bryan Heath, 2014): People think of those [breathing devices] being analytical. That was not his approach. His approach was purely mentally imagining something and trying to make that happen, and let your body do what it's supposed to do. He said many times to me… "If I were to pick this up right here and go like this with it [picking up sunglasses], and then put this on my head and try to look cool, and then take it off like this, and put it back down—the billions of neurons and the muscles that happen to get that to work—you can't think about any of that stuff." So he understood this very well. Some people think he was too analytical and they just don't get it.

Richard Erb (Interview with J. Bryan Heath, 2013): He told me … about the third year of study with him … and he had used scientific equipment throughout that time. Up until that point in time I had really never studied music with him. That's a paradox—because that's what he said you had to do in order to succeed. He said, "Look, if I had you as a student at Northwestern and I had you all four years, you'd never have even seen a machine. Never. We would have worked on your solfege. We would've worked on your ear. We would have worked on your artistic imagination, and you would have [improved]." But he said, "We had to do this with machines. You had three weeks and you had a job. You had to go back to work. That's why." And it worked, and I did.

Charles G. Vernon (Interview with J. Bryan Heath, 2014): So basically, it was like he threw all of that out the window. He said, "I know more about the body than anybody. I have read more about the physical anatomy and the mental things at work when you're playing; but when I put the tuba to my hand, I'm an artist. I sing through it and I let all of that go. I don't think at all about what I'm doing."

Richard Erb (Interview with J. Bryan Heath, 2013): He had the information about the structure and function of the human body—more than most people in the medical field, or in the psychology field; more than your average practitioner. He knew psychology and physiology—human behavior—structure of the body. He knew all of that. Well, I can't claim that I know it like he knows or knew it. I didn't go to medical school and cut up bodies. But I learned as much as I could from him and from my own reading and study, so that I had some basis on which to address a problem other than "old wives' tales," which is what an awful lot of brass teaching is. That's a quote from Vince Cichowicz.

Charles G. Vernon (Interview with J. Bryan Heath, 2014): He was learned. He was smart as a whip. He just knew what was going on so he could go in the back door. He could go in and approach you differently. He approached me differently than anybody else or you.

Robert Allen Karon (Interview with J. Bryan Heath, 2016): One thing about him that is very, very interesting is that he never wrote a book. He never wrote it down like a treatise.

Daniel Perantoni (Interview with J. Bryan Heath, 2016): He also said, "Don't ever write anything down because you can't change your mind." He firmly believed that.

Robert Allen Karon (Interview with J. Bryan Heath, 2016): It was always—it was very much communicated from person to person rather than from … some kind of a mass media thing. I think that he was really the master of this. He didn't teach any two people exactly the same thing. I mean there were a certain kinds of basic tools that he gave most everybody, but he really zeroed in on each individual.

Robert Tucci (Interview with J. Bryan Heath, 2016): He felt that what he had to impart had to be imparted on a direct personal basis. The other thing of course was translation. We said, "Well, your teaching should be translated." He said he felt that some aspects of it might be lost in translation.

Daniel Perantoni (Interview with J. Bryan Heath, 2016): Also, Mr. Jacobs said… "I had to tell somebody just the opposite." Well, I do too sometimes, just to get the right language and communication with a student. Remember, we're not teaching homogeneously—we're teaching one-on-one, and that has a lot to do with the personality and communication of the teacher with a student. You have to relate—whatever it is. OK. That's his influences to me, because he related to me great.

Arnold Jacobs (Second International Brass Congress Panel Discussion, 1984): You have to be very sensitive to your students' needs, and to do that you have to in some way be able to equate with the student and if necessary, even try to think like the student; that means you must study their background a little bit. You must have some knowledge of the student—his use of language. To issue a word—if I use the word *hypertrophy* and the person doesn't know what it means, then we have to change it into "the growth that occurs as in weight lifting, and so forth." We have to find words that have meaning and

understanding for the student. We can issue messages from now until Doomsday, but if a student can't receive it there's no meaning. You have to find how you can equate with a student.

Keith Johnson (Interview with J. Bryan Heath, 2015): A lot of times, it's simply not understanding. It's not "this is right and this is wrong;" it's that "the way it's expressed" is not always clear; and some students—we have to remember this—students all learn at different speeds. No two students learn at exactly the same pace. Classroom teachers don't have the luxury in most cases. There's always some private time, I hope. But they don't have the luxury of spending two hours with one kid while there are 28 sitting in a class throwing paste on the roof or whatever children do these days.

Robert Tucci (Interview with J. Bryan Heath, 2016): In a way, he felt that teaching music was private instruction and that every person was unique. Every person was unique and had to be taught in an addressed matter.

Richard Erb (Interview with J. Bryan Heath, 2013): He approached the student in a certain way. He approached every one of us, I think, as an individual. Individual problems are your problems, and they're not generalized problems. It's not like *all people from Kentucky can't jump* or something. Jacobs taught absolutely as an individual.

## APPENDIX 2: SOLUTIONS IN SIMPLICITY

The transcription of this supplemental video is formatted specifically for the reader to experience the synthesis of the interviews from 1984 and 2013–16. The interviewees' names and the year of the specific interview from which the audio has been transcribed are included. The text has been edited minimally for clarity.

Richard Erb (Interview with J. Bryan Heath, 2013): I had three lessons in that first visit. I came back home and it [referring to the Valsalva maneuver] never happened again…. It was gone. Now, I could still contrive through inattention and stupidity or distraction … to get an attack once in a while … [that I didn't] like so much. I'm still human. It's literally true. He fixed it in three weeks. How?

Stephen Chenette (Interview with M. Dee Stewart, 1984): In my own work with Jacobs I had a lot of things to relearn.

M. Dee Stewart (Interview with Steve Chenette, 1984): How were you able to accomplish this while you were first trumpet in a major orchestra?

Stephen Chenette (Interview with M. Dee Stewart, 1984): His approach is so clear and simple, and it goes with the body instead of against it. It made my work easier right from the beginning, and the more of his ideas that I could incorporate, the better. It was not a problem to try to work it in.

Robert Allen Karon (Interview with M. Dee Stewart, 1984): It turned out that just after that first lesson…. A couple [of] days later when I went back for the next one … things started to open up and I started feeling better.

Daniel Perantoni (Interview with J. Bryan Heath, 2016): I never worked much on music with him. I was a very established player, but I took several things to him and he gave me some really good ideas [about] how to plan it—how to do it. I remember I needed a high G fast. I had to play a recording in a week. I had a really good E-flat but not a G…. [He] gave me an exercise, [and] in 3 days and I nailed it … also, I couldn't double or triple tongue at the time. I could single tongue like a snake but I got in trouble when we were [getting ready for] *Scheherazade* [it was coming up soon]. I couldn't triple tongue at the time. And I said, "How do you triple tongue?" He said… "[Like] this, Dan." Boom, boom, boom…. Frankly speaking, I walked out of there [as if] I could always do it. He made it quite simple.

Robert Allen Karon (Interview with M. Dee Stewart, 1984): I went to Sacramento for an audition for 2nd trumpet. Didn't get the job. Flew to Chicago and had a lesson with Arnold Jacobs—came back—they had an opening for principal trumpet. [I] took that audition and nailed it.

Richard Erb (Interview with M. Dee Stewart, 1984): He was able to look exactly at my performing and [found] the point in the response that wasn't working right … and [he was able to] change it in a very, very short time. He did this by essentially understanding the physiology of the body and how your psychological system motivates that.

M. Dee Stewart (Interview with Steve Chenette, 1984): It sounds like a great deal of emphasis on the mental aspect of performing or of playing.

Stephen Chenette (Interview with M. Dee Stewart, 1984): Well that's of course the ultimate goal.

Richard Erb (Interview with J. Bryan Heath, 2013): It's [really] simple…. This is another thing: when I wrote about it … I didn't do a good job of that. I need to do that again. The first thing you have to do is to appreciate that the atmospheric pressure in the room—X—whatever it is—whatever number—whatever value the atmospheric pressure is inside your lungs—is the same, as long as the airway is open. If I sit here looking stupid [mouth hanging open], and the airway is completely open, the air pressure in here [pointing to his chest] would be only microscopically different from what's out here [outside the body]. You have to get comfortable with that feeling and you do that away from the trombone. You don't pick up your horn and try to achieve that, because the horn is a very powerful cue.

Arnold Jacobs (2nd International Brass Congress Panel Discussion, 1984): Now, the exercises are to be done away from music to establish normalcy as a person.

Richard Erb (Interview with J. Bryan Heath, 2013): You pick it up and whatever you always did is what you're going to do, unless it is interfered with in some dramatic way…. It's all cue–response–reward. You know … the most primitive learning psychology there is. So you have to learn [it] to be comfortable with it, and believe that the air will stay in your body—as long as your body doesn't get smaller—without any interference. Once you've mastered that, you've got a shot. The next thing then to do is to appreciate what makes air come out. You're full of air [demonstrates full breath]—it wants to come out by the body changing size. That's all. So you can do this: you can take a deep breath, and you're so relaxed you can feel it [blowing] on the back of your hands. That's this arm pushing this [his hand pressing against his belly]. It's not me doing anything else. Nothing. Yeah, right—that's pretty crude isn't it? Pretty simple. Once you've got that down, then you can add something to it: which is to forget the arm and just blow at the time you wish to, and work on that for a little while, [until] you can do that whenever you feel like it. Then the next thing is to add the tongue. This is where it gets very complicated, because we are trained—most of us have been—[to] place the tongue, and then you play. Mr. Jacobs said, "No. That's not what you do. You put the thing on your mouth and when you're full of air, and you're ready to play, the tongue should be lying on the floor of the mouth like a dead fish right there." Those were his words. Now, you decide on a rhythmic beginning of air, not tongue—a rhythmic beginning of air [demonstrates air being blown rhythmically]. It's timed. It's rhythmic. The moment that you have decided the air is going to make its entry into the instrument—of course the results of that would be—if you have any luck at all, the lip will vibrate and you'll get some noise out of it. The tongue does this: it goes up and hits something up there, as if you're saying "toh." It's all speech.

Stephen Chenette (Interview with J. Bryan Heath, 2016): He said, "Think words, think 'who—too.'" Sometimes he would have me whisper it and other times he would have me say it. But the "who" would be done on an inhalation and the "too" would be spoken as a normal whisper or word. I can't speak it going in, but it kept air in continuous motion. The air doesn't slow down as you fill up. It's going in at full speed. And you say "too" and it goes out its full speed: "who—too."

Richard Erb (Interview with J. Bryan Heath, 2013): If you said the word "toh," and nothing strange like [an exaggerated] "toh-oh," that is all there is to it…. That is the exact opposite of what I was taught. Because I was convinced there had to be elaborate preparation, and placement of the tongue, settling of the embouchure, put the thing in the right place, and not pressing too hard, but pressing hard enough. Given enough instructions you couldn't play anything. Paralyzed—[which was] literally what was going on.

Stephen Chenette (Interview with J. Bryan Heath, 2016): A couple of professional brass players that got in "choking-up trouble": there was a horn player and this trumpet player and we went for coffee or dinner and I explained the "who—too.'" It fixed their problems. Jacobs said most bad embouchures are the lips really trying to cope with an inadequate air supply.

Arnold Jacobs (Second International Brass Congress Panel Discussion, 1984): If you just take your hand and go [hissing sound] against it with a sibilant "S," you will feel a large pressure of air behind the tongue but very little air at the hand. If you just blow thick air on it, you'll feel tremendous increase in pressure of air against your hand. The quantities of motion are vast compared to thin air. Well, the ability to have the sibilant is not only there at the front of the tongue, it can be through closure in the laryngeal arrangement with the epiglottis having it come up under there, expansion of the musculatures under the tongue, closing off in the airway, to where you actually starve embouchure for the air volume. You can have it for air pressure, there will be oodles of pressure, but the volume of air is too small to operate the embouchure. If you go beyond a critical point, the lip will start to fail. In other words, it will start to be very unresponsive. Up to a certain point there's no harm in the reduction; past a certain point is a disaster. Now, with these people who are suffering lung-volume issues—automatically—now there's a cycling that starts. With his increasing sense of difficulty in tone production, the brain stops being positive [and] starts to say, "What's wrong? This feels terrible." You can't get the sensations in the inter-oral cavity or the pharyngeal. You get it from the lip—the feeling of lack of response, of increasing resistance, and that it doesn't want to respond. What's wrong? You start analyzing it. The first thing is—the signal that should be going down the seventh cranial nerve to provide stimuli for the motor reflexes of the embouchure based on conditioning is not taking place. There's a big question instead of a statement. These people very quickly leave the business.

Richard Erb (Interview with J. Bryan Heath, 2013): So, I was lucky because I understood what he was saying. I will say there were some people who find that whole concept a little mysterious. I still don't know why, but they do. [Perhaps it is because] it's not grounded in … what they expect in terms of watching other people play or what their teachers originally told them…. I don't know. I was lucky enough to understand it right away.

Another funny thing is: I told you about the problem with different embouchure settings for different registers that I had acquired. Well, he never said a word about that. Not a word. Never. [He] never mentioned it. He got me to play some things—you know—simple things. I was concerned mostly with getting it so I could start the notes…. I got back home and was practicing and … everything [was] going great, but I noticed that my high register wasn't as good as it used to be.... I [was] having trouble: I [couldn't] get above G above middle C. I had had a real remarkable high range before that. [It was] useless, but it was very remarkable. It scared me [when I could not play the high notes] and I [asked] what was happening. He said, "Wait a minute." This is the absolute truth. He said, "Just a minute." I'm talking on the phone here with him. You could hear his papers being shuffled and the pages turned. He says, "Oh, well, you were here on May 23, right? That's three weeks ago. I'm surprised. You should have called me sooner. This was supposed to happen right away." He said, "I changed your embouchure. What you were doing before isn't available anymore, but you don't need it. It will develop again in a more healthful way." It was so funny because he had said, "Oh, you called me late." I thought for a minute that he said, "You called me too late. I can't fix it." It was the exact opposite. He said, "That should have taken place already…." So the range came back; everything was much better.

Arnold Jacobs (Second International Brass Congress Panel Discussion, 1984): We [always] sneak in the back door … [when there is] a problem. We don't confront the problem head-on. [Where] a man has a difficulty [in a particular area], we don't try to correct that difficulty. We find where he can function. Then we can sneak that function into the difficulty. In other words, we overcome their difficulty without them even being aware of it. We sneak up on it. You have to do this, because as I say, you have very little communication in a two-way sense with the machine system. The fifth cranial nerve … where the embouchure is concerned is probably purely sensory. There are other parts of it … in various phases where there are certain motor activities. The seventh cranial nerve is a motor nerve that governs the embouchure. What you learn by feel is completely inadequate to make judgments. In other words, your lip feels good when you sound good and your lip feels bad when you sound bad. Which comes first? [Do you] see what I mean? And so … when you teach this sort of subject, you do it based very much on insisting the student becomes a fine musician and becomes musically apt to deliver a musical product to someone else, not [with] how he does it. Get the music—get it all wrong—but make it sound great and the next generation will try to do it your way.

## APPENDIX 3: PROBLEMS AND PARALYSIS

The transcription of this supplemental video is formatted specifically for the reader to experience the synthesis of the interviews from 1984 and 2013–16. The interviewees' names and the year of the specific interview from which the audio has been transcribed are included. The text has been edited minimally for clarity.

Robert Allen Karon (Interviewed by J. Bryan Heath, 2016): I find it kind of interesting that some people still say, "Oh no, you've got to do this. If you don't put your stomach like this … you're not going to play it." No, that's not it. I keep mentioning Arturo Sandoval. When you see Arturo … [playing] away on the timbales and he just scoops up his trumpet and starts to play, he's not setting up this, that, and the other with his mouthpiece [his embouchure]. He just picks it up and starts to play…. It's really all of these things that you start seeing [in] the players that you admire. That's what they're doing, and I like it. It makes you free, really. And I think that that's part of the happiness that comes out of this.

Daniel Perantoni (Interviewed by J. Bryan Heath, 2016): Remember this, too. I'm [really] careful of it. I've seen a lot of my really good friends get in trouble: [to where they] can't play. Thank God the fact that it comes out now that even Jacobs back in that time—we used to think it was a Valsalva maneuver. We were confused about what was happening with dystonia…. I kind of think we get too smart…. We have to be very careful in our teaching. Frankly, [when my students] come to be graduate students they're too smart. I have to … tell them, "Hey listen. Quit analyzing. Quit analyzing." I'm a broken record on that. [I tell them,]"Sit down and just play." [Then] I start getting too analytical [myself]. I have to go back and try to practice and just forget about it. Daydream.... You have to always practice that.

Arnold Jacobs (Interviewed by M. Dee Stewart, 1984): I've watched many fine players go downhill when they've started teaching. Many careers were actually aborted too early by people who became teachers. You have to look at what teaching involves. It involves a tremendous amount of analysis. In other words, there's this magnificent human brain, which we all have trained to learn what the student is doing. You try to hear what they're doing. You try to guess what they're thinking—[You learn] how to communicate [with them]. But the brain is wide open for incoming messages through the eyes [and] through the ears. In other words, the *question state* of the brain becomes very dominant. There's a tremendous risk to this … that you [may] carry over into your practice…. You [may] start self-teaching based on the same questions. [The problem with that is,] we don't play by questions, we play by statements.

Daniel Perantoni (Interviewed by J. Bryan Heath, 2016): "You don't ask questions, you make statements. And this is what you try to always do." And with my students—look, this is

a major university. These guys have majored in business and everything else, so there's a lot of analysis. Don't take [the analysis into your playing]. To be honest with you I'm very careful about that. I think I'm a broken record … speaking of that. I watch out for symptoms of that nature, and I can tell you, usually, it's brought on by thinking too much and bad physical habits. Always take care of what [made] you [a good player] in the first place. And you keep doing it: don't drop that. I'm not one who believes in warm-ups too much … because that can also lead to paralysis.

Richard Erb (Interviewed by J. Bryan Heath, 2013): That led directly to the problem which sent me to Mr. Jacobs in the first place, and this is where it gets ugly. This is what you've asked me to tell you. Are you familiar with the Remington warm-up? You start on the middle B-flat every day. And you [play] expanding chromatic intervals down to low E and lower if you happen to have a [valve]. So I did that. And if you do that the next thing you do is a three-note slur exercise, B-flat– F–B-flat. By then you've been playing for 15 minutes and you haven't played above middle B- flat, then you have to do a five-note slur, which I always found [to be] a terrible challenge. But I did it.... What it … developed into was … combined with the concept of sticking your tongue through the lips and everything else half-way down the throat of the mouthpiece—it got to be where I could play from middle B-flat down with a certain embouchure. When I went in the valve range, it had to change…. above middle B-flat it [my embouchure] had to change again. It finally got to be so bad that the B-natural below middle C—I couldn't play with either embouchure. That was an inconvenience to me. It was getting harder. My training up until then was such that the solution was … you would practice twelve hours a day if you had only been practicing ten. So I did the same thing all-wrong for twelve hours a day instead of eight! It didn't get better.

Robert Tucci (Interviewed by J. Bryan Heath, 2016): He talked a lot about and assured that we did conditioning studies, played long tones, worked on technical aspects of playing, but always to a musical end—not articulation for the sake of articulation, or a technique study for purity of execution or velocity, but always to a musical end.

Richard Erb (Interviewed by J. Bryan Heath, 2013): [I] played the *Ride of the Valkyries* 188 times a day and each time I got a little closer.

Robert Allen Karon (Interviewed by J. Bryan Heath, 2016): OK, so that's called paralysis from analysis.

Richard Erb (Interviewed by J. Bryan Heath, 2013): It was so obvious that [my approach] was not working, but I continued with that regimen. I was in the orchestra three years before I caught on. [Actually] I didn't catch on: Mr. Jacobs [asked] me, "What are you doing that for?" The whole concept of warm-up: it was so inhibiting and so anti-musical. It's sad, but that's not music. Our job as musicians, our first job, is to think of the music. The first thing Jake [had asked] me was, "How much do you practice?" I said, "Oh, I don't know—eighteen or twenty hours a day—some nonsense…. It was a lot." He said, "Let me make a suggestion: When you can't hear it anymore put it away. If you can pay attention to what's musical that's coming out, OK. Practice, but look, it's not a violin—

it's not a piano [which has a lot of notes], it's a trombone. If you can do that for a lot of whole lot of hours a day, you need to get out more"—or words to that effect.

Daniel Perantoni (Interviewed by J. Bryan Heath, 2014): I don't have to warm-up. I play three hours a day. To be honest with you, I'd have to play low in the orchestra—which I don't do all the time. I used to have to pay my dues on that one, just to get some big sounds. But you're right: the best advice I can give anybody is watch out for some of these symptoms. As a brass player, you can overdo [it]. You get tired quick…. Then you can build it up. Also, in [the] orchestra, we make it too hard. These guys sit down and they talk about [three or four cents sharp] and to be honest, it gets boring as hell. I never thought playing in the orchestra [was that hard]. You want to play something hard, play the Vaughan Williams *Tuba Concerto. Die Meistersinger* is a piece of cake. Now, if you sit down and analyze it, and [realize that] you've got 200 measures coming up and … have to play a high C … you do that, and you're done. You just have to learn that. You have to keep reinforcing that. And then, yes, I think I took that away from Jake. I learned a lot myself. He would say, "Why don't you sing it?" I could sing just about anything … [bah doo bah doo dah]. Play it back.

Robert Allen Karon (Interviewed by J. Bryan Heath, 2016): You can't be under the hood of [a] car checking on all of the different things that are going on while you're driving. It's not recommended. So that's one of the things that he was very insistent about…. It's from here [his head] out to there [the audience]. That's it. You cannot be analyzing what's going on while you're performing—you can't do that. Now, all of those little toys and stuff that he had you working on: that's your clinical time. You know you're not going to get an incentive spirometer going during the concert. You're not going to pull that out of your bag and start breathing on that thing before you have to play a solo. That's your clinical time—to be working on something—to improve your breathing and this, that, and the other thing; but when you're out there playing, it's all just concentrating on the music and that's it. You can't be thinking about something else. You know what's really funny is—you'll hear … lots of times someone will go ahead and they'll play a beautiful phrase and it has an incredible high note in it and they play it beautifully. [Then] right after that they'll make mistakes. That's because the guy's looking back saying "Oh, hey. I did pretty good on that." Bam! Crash! You're done. You can't be thinking of other things. It's like I told you with the Cubs. You can't be thinking about the Chicago Cubs while you're performing. You can't do that. It destroys the entire experience—not just your experience as a performer, but it destroys the experience for the audience. Because all of a sudden the music goes stale…. He [Jake] was very much aware of that.

Daniel Perantoni (Interviewed by J. Bryan Heath, 2014): So I'm very careful…. Frankly speaking, the less I have to say, the less I do [say]. [I like to] work a little more on music, and you know, sound, sound, sound—that beautiful sound. We all have that. I can remember his sound, and imitate [it] to you today…. Wow! [It] was fantastic; a lot of overtones; don't work so hard.

Arnold Jacobs (Interviewed by M. Dee Stewart, 1984): We use psychomotor. When you're going to play you will always play based on a message for somebody else [Jacobs buzzes

on the rim of a mouthpiece]. It's a voice … you understand what I'm doing there. In a sense I'm not controlling the embouchure, I'm controlling the sound. When I've controlled the sound, I've controlled the meat. I can't do that if I'm going into a self-analysis. This is simply a read-out of my thoughts. If you have a question you will not have the stimuli in the brain for the reflex response in your tissue. It's that simple.

Richard Erb (Interviewed by J. Bryan Heath, 2013): As far as nineteenth-century brass teaching —for instance, the simple subject of attack—how you start a note. Well, this book, this [is the] good old Arban's method…. it says right there on page 12 under [the] instructive comments: striking or commencing the tone—trying to throw a small seed off the tongue is a good analogy. A pencil or a finger held vertically against the lips is barely touched with the tip of the tongue. OK.

Daniel Perantoni (Interviewed by J. Bryan Heath, 2014): I worked with a kid here the last four years who had severe Valsalva…. I remember Mr. Jacobs working on that with some players—I don't want to mention any names—major players who were having some severe problems, and [they] didn't know what the heck it [was]. You just [kept] going [to] see what [you could] do. You [would] try to expand the range … [and you would] have to start again with very simple things. It has to do with blowing. Most of the time, I'll tell you, the culprit is the tongue. It just locks up [shows clenched fist] and goes back [in the mouth, closing off the air]—where it should be like [this] [shows a loose, relaxed hand].

Richard Erb (Interviewed by J. Bryan Heath, 2013): How do you start? Like it says in this book, you build up air behind the tongue, place the tongue first somewhere—wherever you're going to put it—behind the teeth, out your mouth or whatever…. You build up air pressure behind it in your body, and then you pull [the tongue] away and sure enough a note will explosively result.

Stephen Chenette (Interviewed by J. Bryan Heath, 2016): You know, get a tight gut, you develop the internal air pressure, and then you're ready to play and then say "too" [emphatically]. Oh, I was just choking up.

Richard Erb (Interviewed by J. Bryan Heath, 2013): See, that's where I hit the rocks bad. There is a phenomenon in physiology, which is designed to help you to do other things than to play the trombone. It's universal. Everybody does it. Everybody has it. Your brain is hardwired that when you close the airway with high static air pressure in the body anywhere—it better be in the lungs—static air under pressure; and you say, OK, I'm going to pull the tongue back now, it won't go. It won't go: not when you want it to. This is something I wrote about in articles…. I never did a good job at all explaining why this matters. In music there's something called rhythm, and rhythm describes when [the note begins]…. Well, that maneuver which I described is voluntary in [that] its initiation. I mean, anybody can, whenever they feel like it, go [simulates the maneuver]. But you can't necessarily with any subtlety and accuracy control when it goes away. When it's set up you've lost control.

Richard Erb (Interviewed by M. Dee Stewart, 1984): I had a couple specific things. One was [with] simply beginning notes—what we call the *attack* in brass playing. In a general kind of way, [they were] sometimes difficult to make speak … when I thought artistically they were supposed to. I couldn't understand why [they were not speaking]. I had no idea why this was happening. I had a lot of good advice. None of it seemed to help.

Richard Erb (Interviewed by J. Bryan Heath, 2013): So when I followed all those instructions from here [method books] and from my other teachers and from the Remington warm-up, what happened finally was I would say, "OK it's time to practice," and I would say "middle B-flat," [simulates trying to play]—and then … nothing [simulates the Valsalva maneuver]. That would go on for an extended period of time sometimes. You can see how that would be a disadvantage in the orchestral life though, couldn't you? It's alleviated somewhat when you have a supplied a pulse externally. You can go with the flow that way—usually pretty well. But even then, it's totally unreliable. I didn't understand why the hell it was so hard to start to play when I thought I was supposed to play. That's when my friend Ross Tolbert said, "Look, you [had] better get up there and go see him," and that's what got me there.

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