The Marriage of Two Opposing Cultures

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Abstract

With a heavy dominance on its technical/empirical aspects, the segmented performance, pedagogy, and assessment of Western classical music is undermining its goal of creating art with precision, style, and expressive beauty. This segmentation has its roots in the quantitative assessment processes found in music education and in the note-perfect performance expectations of art organizations. The results are often heard in the uninspired performances of such vital music.

As an alternative, an integral performance, educational, and assessment approach (the IPEA model) will be open for discussion. The IPEA model utilizes the concepts of upward causation (science) and downward causation (art) to equalize the elements found in the music quadrants and it continues with their evolutionary track through the Spiral Dynamics as designed by Beck and Cowan. An all-quadrant/multilevel pedagogical, performance, and assessment approach will result signaling a major shift in Western classical music by addressing the developmental needs of music students/performers without corroding their technical or expressive strengths. This model bridges the gap between the empirical and the artistic sides of music proposing, perhaps, the perfect marriage of two seemingly opposing cultures: science and art.

Introduction

In this age of swift scientific advances, there is arguably no more important issue in music than the balance of science and art. Scientific advances in sound reproduction have given us the power to disseminate and control music in ways unimaginable to the likes of Beethoven, Louis Armstrong, or Elvis Presley. However, today the use of amplified music, ipods, and the Internet rules the music listening experience while the attendance of live acoustic ensemble concerts gradually decreases.[1] Consequently, those scientific advances have also had the power to distort and divide, to a certain degree, the natural ways of experiencing music performances. That is, the uninhibited real-time communication between performer and audience full of nuances, emotions, virtuosity and yes, human flaws.

The divide of the "musical experience," however common amongst the general public, is of concern to performing musicians and music educators as it lies at the root of the segmentation of music making into two opposing cultures: the scientific/technical (measurable) and the artistic/expressive (traditionally non-measurable). The scientific/technical culture will want its music "note perfect;" measuring the format of every attack, every fluctuation in intonation, and every rhythmic slip. The artistic/expressive culture will be concerned with the emotions and the beauty involved in the communication of music letting some of the imperfections go by.

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[1] Numerous reports concerning the negative effect of technology on the "concert going experience" have been published in the past. Most recently, Edward Rothstein examined, in his article titled *Orchestras Still Preserve the Myth, but Who Cares Now?* (Rothstein, 2001) the history of orchestras and suggests recent tastes in culture and new forms of entertainment as reasons for their decline in popularity.

Leaning heavily towards the scientific/empirical side, these two cultures, or sides, of music making are present, in various forms, in today's performance and educational institutions. Failure to integrate and balance the technical and the expressive sides of music will be potentially harmful to the professional lives of musicians and to the most vital element of music making: its power to communicate emotions and beauty.

The communicative power and beauty of music has been vital to our collective existence for thousands of years. One can find music at the root of every culture that has inhabited the earth during that time. Writers throughout history have also expressed its importance. Aristotle wrote in his *Politics* that "music has the power of producing a certain effect on the moral character of the soul, and if it has the power to do this, it is clear that the young must be directed to music and must be educated in it."[2] Emerson added that "music takes us out of the actual and whispers to us dim secrets that startle our wonder as to who we are, and to what, whence, and whereto."[3]

The communicative power of music is readily evident in the performances of musicians from past generations. They performed as if "wearing their hearts in their sleeves" making their personalities shine through whatever recording medium captured their performances. Listen to Pablo Casals play *The Song of the Birds*[4] or Louis Armstrong play *West End Blues*[5] and you will hear examples of these expressive and stylistic performances.[6] However, their performances were not executed with perfect technique. At times, a note might slip or be slightly out of tune and in those early days, audio editing was not possible. Nonetheless, some think that these imperfections lent, perhaps, the human touches that made those performances so endearing.

Contrastingly, today's musicians are expected to play note perfect performances that replicate the sounds of "state of the art" post-produced audio recordings. This expectation is so present that some musicians shrink and in an hurried effort to control the situation shut off their expressive skills and rely on their technical skills to put out note perfect performances. This was

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[2] Aristotle, *On man and the universe: Politics*, trans. Benjamin Jowett (New York, Roslyn J. Black, Inc., 1943).
[3] Ralph Waldo Emerson, *The Collected Works of Ralph Waldo Emerson, (Massachusetts,* Harvard University Press, 1996).
[4] Catalonian Folksong performed and made famous by Casals. He performed this song at the end of his concerts as a defiant message to Franco during the time of Casals' exile from Spain.
[5] West End Blues was composed by Joe (King) Oliver. It was recorded in a 78 revolutions per minute record produced by Louis Armstrong and the Hot Fives on June 28, 1928 for OKeh records.
[6] Lesser known performers, or performing groups of the time, exhibit similar expressive performances.

echoed by David Sternbach[7] when he said that "recordings have conditioned audiences to expect note-perfect performances. As a result, critical standards for live performances have become unreasonable and excessive. Anxious to meet external expectations of perfection, many performers become their own worst critics. While this drive for perfection can be helpful in the practice room, it can wreck havoc in the performance hall." (Rich and Yaghmour, 2005, 1) Unfortunately, this "havoc" often leads to performing with a high degree in introversion in an art form that is geared towards extroversion.

The expectation of note perfect performances has not only germinated in the preferences of the general public but in the center of the lion's den: the arts institutions. Symphony orchestras run auditions that host hundreds of players and in their efforts to select the "right one" they often resort to the quickest and most quantitative selection process: how many notes or rhythms a singular player missed. This, according to the late Vincent Cichowicz,[8] is a more mechanistic way of selection when compared to the more comprehensive audition process held in the 1950s.[9] Educational institutions have also followed suit when holding their seasonal pool auditions[10] driving students to "work hard" to put out note perfect performances overpowering the expressive aspects of music making.

It is ironic that in our day and age of information and understanding of complex issues, the collective entity of high-level music performers and pedagogues has not reconciled the two potential skills to find an integrated approach that focuses on technical development but is simultaneously geared towards musical expression.[11] In the next few pages, I like to open for discussion an alternate model I call the "integral performance, educational, and assessment" model (or IPEA). That is, a performance, pedagogical, and assessment approach that concurrently develops the technical (scientific/quantitative) and expressive (art/qualitative) sides of music.

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[7] Research professor at the College of Visual and Performing Arts at George Mason University.
[8] Bruce Briney, "Vincent Cichowicz: Master musician," International Trumpet Guild Journal (1998): 4-16.
[9] A typical audition in the 1950s included the interaction between judges and performers. Performers were asked to play the same excerpts several times changing styles, tempos, and dynamics.
[10] Pool auditions are held every semester, or quarter, to identify the best performers and give sitting assignments for the various performing ensembles.
[11] There have been examples of individuals, such as Arnold Jacobs and Vincent Cichowicz in Chicago, who have succeeded in integrating the technical and expressive sides of music making. However, they did not establish or develop a scholastic methodology or assessment format. (Loubriel, 2006)

The Two Sides/Skills of Music Making

John Sloboda, professor in Psychology at Keele University, described the technical skills a musician must posses in his article *What makes a musician?*[12] Technical skills include " motor co-ordination and fluency that allow rapid musical passages to be played evenly without hesitation. They also consist of perceptual skills such as pitch acuity, which allows accurate tuning." (Sloboda, 1995, 2) He adds that performers who are merely accurate will be regarded as fine technicians who might come across as dull and lifeless. Good musicians, according to research, show an added value to those perfect notes by adding a varied and whole range of expression. Those "expressions" are present in music through slight changes of tempo, dynamics, pitch, and sound qualities.

Sloboda said that expressive skills are necessary to make a master musician. He added that, "when a music teacher describes a pupil as proficient but untalented, what is being described is a person who has more technical skill that expressive skill. When another pupils is described as talented but lazy, this is probably someone who plays expressively but cannot negotiate technically difficult passages." (Sloboda, 1995, 2)

A complete, or integral musician,[13] will need to have both skills. Consequently, an integral performance, educational, and assessing model that addresses both skills needs to be developed to work within today's music performance practices and educational institutions. This model will be called the Integral Performance, Educational, and Assessment approach (IPEA model) for the rest of this paper.

At this point, you might ask who are today's integral musicians? The answer includes cellist Yo Yo Ma, performing music works ranging from Antonin Dvorak's Cello Concerto to the *Silk Road Project*[14] in Chicago, to trumpeter Wynton Marsalis, playing Franz Joseph Haydn's Trumpet Concerto in the *London Concert* [15] to his 2007 album titled *From the Plantation to the Penitentiary.*[16] These performers exhibit an integral, or balanced, approach to

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[12] John Sloboda, "What makes a musician?" (1995): 18-22.
[13] An integral musician displays a harmonious balance between his or hers expressive and technical skills.
[14] The Silk Road Project is a not-for-profit arts, cultural, and educational organization founded in 1998 by cellist Yo-Yo Ma, who serves as its artistic director. The Project has a vision of connecting the world's neighborhoods by bringing together artists and audiences around the globe.
[15] *The London Concert*, with Wynton Marsalis (trumpet), Raymond Leppard (conductor), and the English Chamber Orchestra, compact disc, Sony Classical Masterworks, 93084
[16] *From the Plantation to the Penitentiary*, Wynton Marsalis (trumpet) and jazz ensemble, Blue Note Label, 73675.

music making. That is, a high level of technical proficiency accompanied by a high level of expressive proficiency.

To look further into the prospect of performing and teaching applied music using an integral approach (IPEA), we will use three system theories.[17] These theories will help "dissect" music making into various elements to better appreciate their symbiotic relationships and be able to negotiate their possible marriage. To do this, we will first look into the essential elements involved in the performing and teaching of a musical instrument.

The System of Holons and the Performance and Pedagogy of a Musical Instrument

The trumpet will be taken as an exemplary musical instrument since it is common to many music genres.[18] By using the "system of holons,"[19] all of the elements that make up a trumpet sound will be discussed. This will also help establish a solid foundation to the IPEA model. However, let us first take a brief look at the system of holons itself.

The system of holons is composed of elements called holons. A holon is defined as "that which being whole in one context, is simultaneously part in another."[20] Everything is composed of holons; that is, holons within holons within holons. In other words, context within context within context. For example, the letter "a" is part of the word "father" which itself is part of the sentence "to my father" and that sentence is part of a paragraph. The same process happens in trumpet playing. The breath is part of the buzzing of the lips and the buzzing of the lips is part of the mouthpiece buzz. The interaction of the IPEA elements just mentioned is shown in the graph titled "the upside-down pyramid."

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[17] The three system theories are the system of holons, the system of quadrants, and the Spiral Dynamics.
[18] The trumpet has been used in military music, symphony orchestras, jazz, rock, Motown, and folk music among many other genres.
[19] The term "holon" was coined by Arthur Koestler author of *Ghost in the Machine* (1976).
[20] Ken Wilber, *Sex, ecology, spirituality* (Massachusetts, Shambhala, 1995), 18.

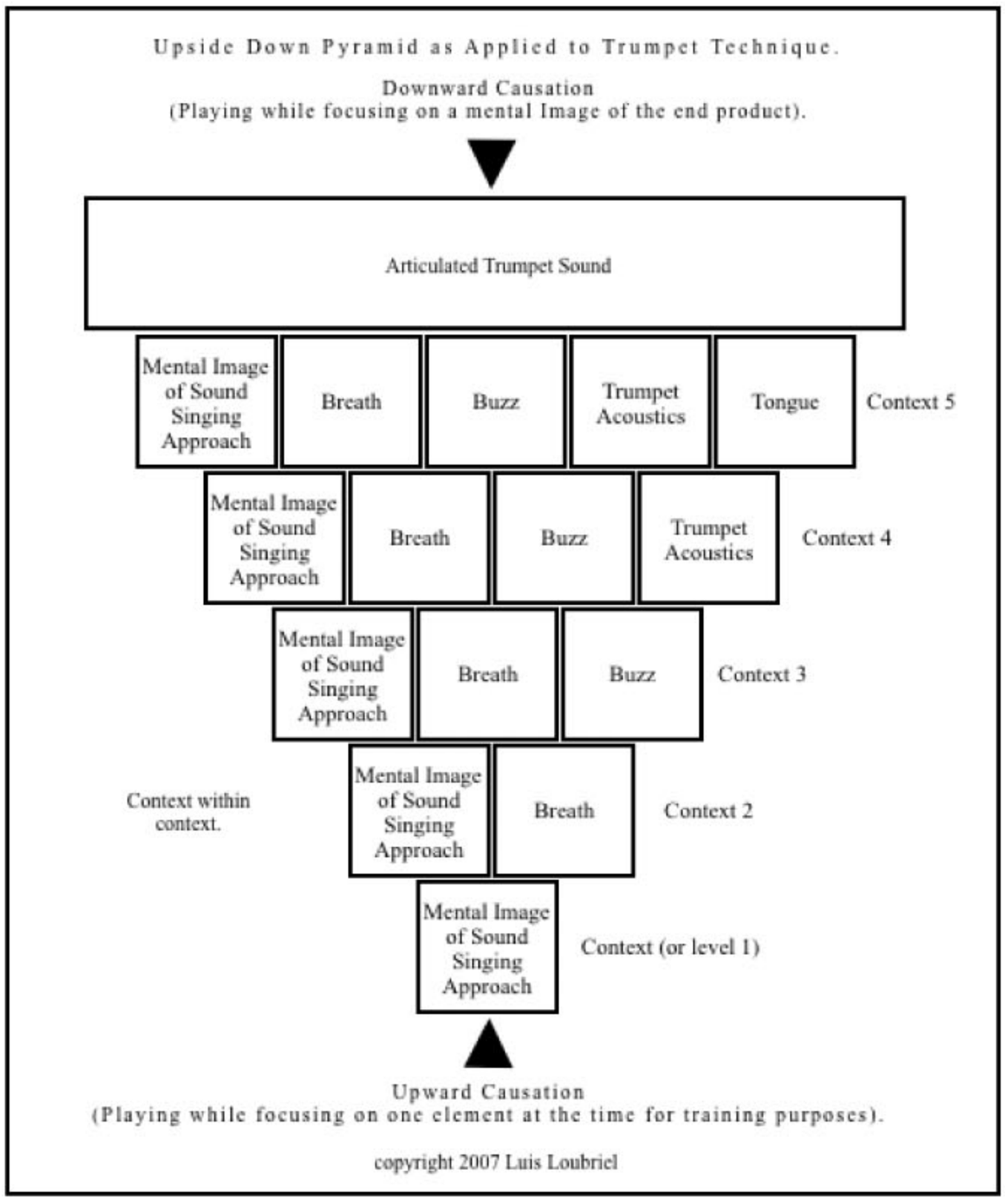

Fig. 1. The upside down pyramid as applied to trumpet technique. Designed and Developed by Luis Loubriel

The various IPEA elements (holons) involved in the production of an open/resonant trumpet tone happen simultaneously when the sound of the trumpet is heard. However, the quality of the collective IPEA elements will determine the quality of the sound.

Describing the Five IPEA Elements that Create a Trumpet Sound

For the sake of review and understanding, we will briefly study the basic IPEA elements that create a trumpet sound. Although all the elements are important, the most essential elements are at the foundation of the pyramid and the least essential are at the top.

a) “Mental Image of Sound/Singing Approach” is at the foundation because if the player does not have a concept of an articulated trumpet sound, he or she will not have the appropriate guidelines to make the instrument function correctly. In addition, in all brass instruments it is important to approach sound production from a musical standpoint since such instruments have an immediate potential of producing distorted sounds.

b) “Breath” is at the second level (or context) because it is the second most essential element in brass playing. Breath serves as the energy source in the process of producing an articulated trumpet sound. The quality of the breath is important because any change in the quality of its air column shows instantly in the quality of sound produced by a player.

c) The buzzing of the lips is at the third level. The buzz is activated by the will and the “singing thought pattern” of the player to produce a musical tone. The buzz is "propelled" by an active column of air blown by the player. This is similar to the action shown by an oboe or bassoon reed when it is activated into vibration by the wind column blown through it. However, in trumpet playing the surface tension necessary in the lip for attaining a desired pitch and tone quality is provided by the will and the musical thoughts of the player.[21]

d) “Trumpet playing/acoustics” is at the fourth level. It serves the purpose of amplifying whatever the player buzzes into the instrument. It is also the first element in brass playing that is outside the player.

Trumpet playing/acoustics is divided in two parts: first, the musical instrument itself that affects the amplification of the signal that is put inside it. Second are the various acoustical principles that apply to trumpet playing.[22]

f) Finally, the “Tongue” is at the fifth level. It includes its uses in articulation as well as its role in controlling the air column inside the player’s oral cavity.

Further Along the Five IPEA Elements

As already mentioned, the five IPEA elements (or holons) are present when a trumpeter plays a note. This is possible because they participate in a process where each element (holon)

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[21] Incidentally, the act of buzzing is also similar to the act of singing because in singing, the musical message travels via the seventh cranial nerve down to the desired “effector” (vocal chords) in order to activate the motor functions necessary to produce a musical tone.

[22] These principles have to do with the laws of sympathetic resonance. For example, players should be aware that the potential a brass instrument has to amplify a certain pitch is relative to the frequency of the note buzzed into the instrument.

preserves its individuality (e.g., the mouthpiece buzz is still a mouthpiece buzz when it is played in the horn) while adapting itself to another element (e.g., the mouthpiece buzz will adapt to the quality, size and/or weight of the trumpet). In other words, each element transcends itself as it becomes part of another context while keeping part of its identity in the process.

As the IPEA elements preserve and adapt themselves to and with each other, they also evolve and in doing so they follow a tenet common to all things that evolve. This evolution is essential if a player is going to perform music from different genres (or contexts) with the proper technique and expression.

Upward and Downward Causation – Science and Art

Common sense dictates that the lower holons set the possibilities for the higher holons and that the higher holons set the possibilities for the lower holons. For example, if the lowest holon (the mental image of sound) is of high quality, the possibility for a higher holon (such a 'buzz') to be high in quality increases. In other words, as the various holons increase in quality (e.g., clearer mental image, more open and full breath) the possibilities of producing a high quality articulated trumpet sound increases. The opposite procedure is also true. As the final product increases in quality, the potential for its holons to be high in quality increases. This happens when a player clearly mentalizes[23] a high quality version of each note, including all its luster and emotions, before he or she plays them.

This tenet describes the phenomena of downward and upward causation. In this paper, these terms are synonymous with the study of art (downward causation) and science (upward causation) as related to music making. This will be our next subject.

Downward and Upward Causation in the IPEA Model (Uniting Science and Art)

It seems somewhat of a paradox why integral performers and teachers insist in the use of both procedures. One procedure being the practice of each individual holon to increase the possibility of success of the end product (primarily done with the use of empirically measured

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[23] This term is found in the *Oxford Companion to the Mind* as mental imaging, "Mental imaging was for sculptors, painters, and other artists, the notion of a richly pictorial life. It has been assured without saying – as much as a richly linguistic inner life has been assured without saying – as much as a richly linguistic inner life must mark the essayist, judge, poet, and others concerned with the sound of language, a mind full of sounds to the musician, or a mind full of smells the perfumer." (Gregory, 1987, 354)

exercises). The other procedure being the increase of the quality of the end product so the quality of the lower holons increases (primarily done with the use of mental concepts).

However, when we look closer, the two processes are not contradictory because, in practice, they apply to two different types of training: the technical and expressive. These two types of training are essential for integral performance and teaching.

An example of technical training is when a student's playing has a deficient holon (e.g. corrupted breathing) that has to be replaced by a new holon (e.g. correct breathing). In this case, the student will practice that individual holon separately, by using a spirometer[24] (or other similar breath measuring apparatus), until that holon is corrected and becomes a condition reflex, or habit. As a result of this correction, the end product (articulated trumpet sound) will improve in quality.

Expressive training happens when a student, who already has "good playing holons" solidly established, plays the pieces in his or her repertoire following the mental conceptions and emotions appropriate to the piece of music at hand. This takes the form of expressive skills.[25] An integral teacher using the IPEA model will know when to use the technical, expressive, or a combination of the two types of training.

Expressive training usually engages more inspiration and expression than technical training. For that reason, master integral teachers[26] advice to practice both types of training, expressive and technical, with the same level of inspiration.

Unfortunately, some of the performance and applied music teaching practices in use today are driven by the analytical and step by step procedures inherent in technical training leaving the expressive power of music to the side. Nonetheless, if we continue with the exploration of the IPEA model, we will see that working with both sides, the technical and the expressive, will yield the best performances along with a continuous evolution of performance and teaching skills.

The Four Sides of the IPEA Model and the Expressive and Technical Sides of Music

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[24] A spirometer is an apparatus for measuring the volume of air inspired and expired by the lungs.

[25] The balance between downward and upward causation (music making and drills) in a player's daily practice should be about 65% music making and 35% drills. (The balance changes if the player performs daily. In this case, the player should focus on daily drills not to lose the balance in his or her playing).

[26] Master integral teachers include Arnold Jacobs and Vincent Cichowicz.

The acquisition and development of the five IPEA elements of trumpet playing, by using downward and upward causation, will suffice to create a fundamental articulated trumpet sound. However, to perform expressively and communicate emotions while playing in different music genres, we must go a bit farther down the evolutionary track including all of the sides, expressive and technical, of music making.

By using the Spiral Dynamics,[27] as developed by Don Beck and Christopher Cowan, we will be able to understand how the five IPEA elements create a unit called a MEME that has four counterparts (or quadrants). Those MEMEs will house the expressive and the technical skills. We will also see how the four MEMEs create, when united, a vMEME (or value MEME). This is a larger entity that can be developed, corrected, and assessed through the various stages of development inherent in music performance and pedagogy.

The Spiral Dynamics and the IPEA Model

The Spiral Dynamics utilizes the concept of "vMEME" (or value MEME) by mapping its development by way of a spiral format. A "vMEME" is better understood by comparing it to human genes; what human genes are to the science of the body "vMEMEs" are to the science of the mind.[28] The vMEME in trumpet playing is also called a "singing thought pattern"[29] that players use to mentalize the music as they perform. However, before we look at the Spiral Dynamics graph we will discuss the two concepts used in the spiral: the vMEME and its MEMEs.

The Construction of a vMEME and its Various MEMEs

A MEME[30] is described as a unit of cultural information, such as a cultural practice or idea, that is transmitted verbally or by repeated actions from one mind to another mainly by the use of imitation. A vMEME is a larger organizing principle that serves as an attractor to various

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[27] Spiral Dynamics aimed at managing diversity and complexity by combining the work of American Professor of Psychology, Clare W. Graves, British Biologist Richard Dawkins, and Polish-American psychologist Mihaly Csikzentmihaly into a system theory (Beck and Cowan 1996, 3).

[28] What biochemical genes are to cellular DNA, MEMES are to our psychosocial and organizational human systems. These include the dynamics of change, leadership, complexity, alignment and integration (Beck and Cowan 1996, 4).

[29] This is a thought pattern that activates (or summons) a cluster of all of the expressive and technical experiences a player has had in his or her lifetime.

[30] This term was first used by Richard Dawkins in his book The Selfish Gene (1976).

MEMEs by binding them into a cohesive package of thought.[31] In other words, the concept of the "singing thought pattern" used in trumpet playing is a vMEME that is composed of four MEMEs that in turn are composed of five IPEA elements.

The four MEMEs[32] that compose the "singing thought pattern vMEME" are: 1) the Physical Aspects MEME (measured empirically), 2) the Aural Skills MEME (measured empirically), 3) the Mental Image of Sounds MEME (not measured empirically), and 4) the Performance Attitudes MEME (not measured empirically).

The four MEMEs can be viewed in a column format by using a psychograph[33] to trace the development or regression of individual MEMEs.

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[31] Donald Beck and Christopher Cowen, *Spiral dynamics: Mastering values, leadership, and change* (Massachusetts, Blackwell Publishing, 1996), 31.

[32] In trumpet playing, the four MEMEs are learned and developed through a combination of all the sensory musical experiences and of private practice a player has had. Those experiences are turned into a functional MEME by subconscious and conscious processes (including development of conditioned reflexes and vicarious learning).

[33] A graphic representation or chart of the personality traits of an individual or group.

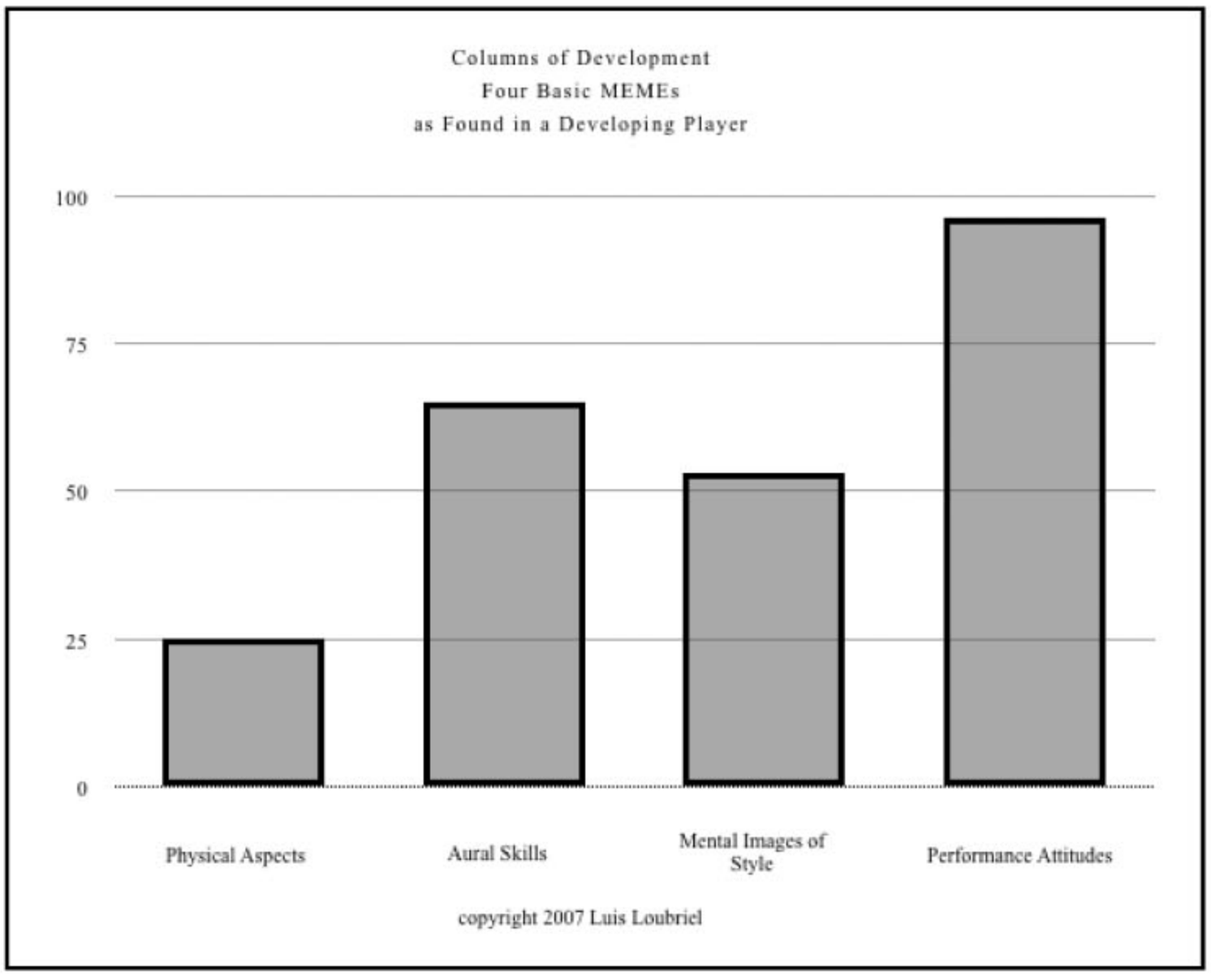

Fig. 2. The Psychograph. Designed by Luis Loubriel

As the four MEMEs are developed and equalized, a player will advance to a new stage of development that will bring more complex expressive and technical skills. It is important to know that the efforts a trumpeter in practice, in trying to reach higher stages of playing, will be futile if he or she focuses on one or two MEMEs (technical and/or expressive) of playing knowing that there are deficiencies in the other two or three MEMEs. As a result, the player might hit a temporary "plateau" in his or her development.

Only by using the four MEMEs simultaneously, a player will play the trumpet, or any other musical instrument, based on the "singing thought pattern." The "singing thought pattern"

vMEME is essential for expressing emotions in music since it is the most flexible and effective medium of communication between the brain and the body.[34]

A vMEME, such as the singing thought pattern, will tend to evolve over time through the process of private practice and practical musical experience. We can also call that growth or development. According to the Spiral Dynamics graph, there are six distinct stages in the "first tier" of that evolution process. Stage one, represents the vMEME of a beginner player while stage six represents the vMEME of an advanced player.

At each stage of evolution, a player will be able to perform using the same four MEMEs with a correlated degree of technical fluidity and musical expression. However, as the player evolves, the MEMEs will demonstrate a higher level of growth and complexity. At higher stages, the player will potentially be able to be physically stronger (Physical Aspects MEME), play more in tune and in tempo (Aural Skills MEME), be able to play in better style (Mental Image MEME), and with more expression of emotions (Performance Attitudes MEME).

The second tier of the evolutionary process starts at stage seven. Stage seven, represents an integral player who is able to play correctly with other professional players at a first class level. Stage eight, represents a "universal player." This type of integral player is able to play at a first class level various musical styles from around the world. Examples of this are, again, Yo Yo Ma and Wynton Marsalis.

For the sake of reviewing the materials we have discussed so far, we should understand that the "Upside Down Pyramid" we studied in part two is an operational representation of the five IPEA elements that compose a MEME. Therefore, we can say that the "singing thought pattern vMEME" is composed of four MEMEs that, in turn, are composed of holons (elements).

One of the practical uses of "unpacking" trumpet playing by using holons, MEMEs, and vMEMEs is the ability to target any problem (or deficient holon), in either the technical or expressive sides, that affects a player at any stage of development. This is similar to having a comprehensive map to see where the problems are in relation to the other elements in trumpet playing. The IPEA model will take the "guess work" out of trumpet performance and pedagogy while saving performer and teachers, as well as their students, from unnecessary frustration.

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[34] By using the "singing thought pattern" the brain will send down signals down from the cerebellum through the seventh cranial nerve to the effector (the lip muscles in this case). Analytical thoughts will not follow this trajectory.

Now that we understand how the five basic elements of brass playing compose a MEME and how four distinct MEMEs create the vMEME (singing thought pattern), it is time to look at ways in which the vMEMEs can be used in the performance, education, and assessment processes.

Creating a Working IPEA Graph

In order to work with the IPEA model, a multidimensional graph, used to trace the interactions of the four MEMEs, is needed. However, first we must understand how the four MEMEs of brass playing interact by looking at the System of Quadrants[35] developed by Kenneth Wilber.[36] Wilber's system of quadrants shows an integrated representation of four distinct quadrants that make up any given phenomenon. The four distinct quadrants are: 1) behavioral elements, 2) communication elements/forms, 3) shared cultural elements, and 4) intentional/volitional aspects. Wilber places in each quadrant the respective elements and organizes them in hierarchical order.

What is important to understand, is that each quadrant will represent a different side of each of the IPEA elements. For example, in the upper right quadrant (the behavioral quadrant) the first element, the mental image of sound, will include the behavioral (or physical) aspects involved in the acquisition, development, and use of the mental image of sound (e.g. neurological changes in brain development and function as related to music cognition).

The lower-right quadrant will represent the aural skills (or communication elements) found in the acquisition, development, and use of the mental image. The lower-left quadrant (the shared cultural aspects) has all of the stylistic aspects involved in the acquisition, development, and use of the mental image of sound. Finally, the upper-left quadrant (the intentional volitional) includes the performance attitude aspects involved in the acquisition, development, and usage of the mental image of sound.

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[35] Kenneth Wilber, *Sex, Ecology, spirituality*, (Massachusetts, Shambhala, 1995), 121.

[36] Kenneth Wilber is an American integral thinker and author. Working outside academic circles, he has taken from a variety of disciplines including psychology, sociology, philosophy, mysticism, postmodernism, science, and systems theory to synthesize what he calls an integral theory of consciousness.

Benefits to Performers – Working with the IPEA Model

By examining the four sides of each element, performers will have a comprehensive (or integral) look of that element. The benefits of looking at each element using this IPEA model extend to: 1) the diagnosis of problems for that particular element will have better chances of being correct since no side has been left out, 2) positive lasting change will be possible in a player's performance since the health and longevity of the IPEA elements depend on the health of each one of their four quadrants, and 3) the player will be able to find correlations (or connections) among the IPEA elements to be able to find more efficient ways of developing them. This will also make it possible to assess a performer's technical and expressive skills.

Notice that working from the Upper Right Quadrant (free breath) onwards follows a course of upward causation (that is, working one element at the time to improve the end result). On the other hand, working with the Upper Left Quadrant (intensity of breath) onward follows a course of downward causation (that is, working with the end result to affect all of its elements). By working in this fashion, exercising the free breath and/or practicing the intensity of breath, a performer will benefit by mastering the technical and expressive sides of his or her breathing skills.

In trumpet playing, the complete IPEA model graph, showing the representation of the various elements in the four quadrants is, therefore, the ideal assessment and training instrument for integral musicians:

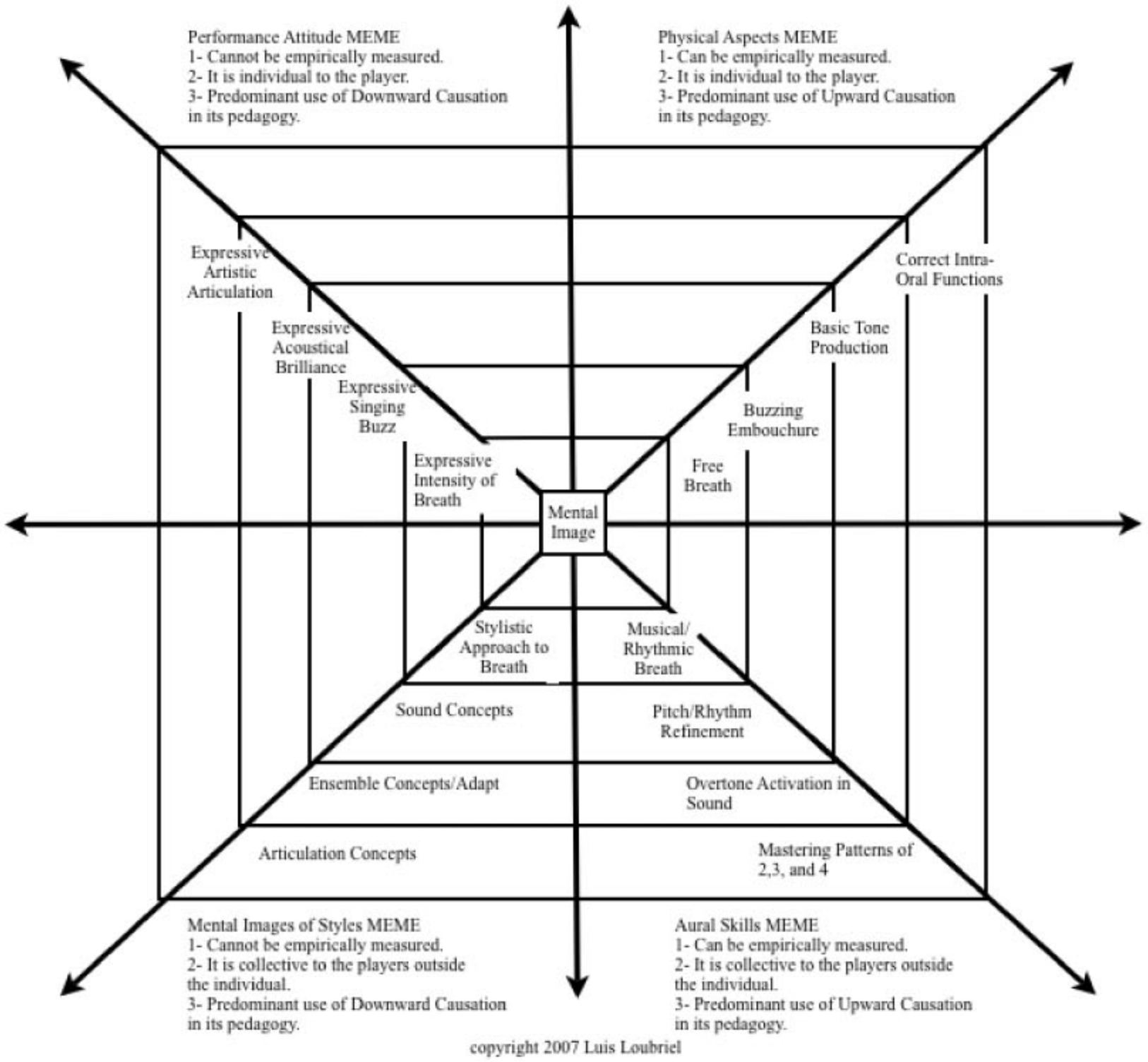

Fig. 3. Full quadrants representing correlative technical and expressive representations of each of the five IPEA Elements. Designed and developed by Luis Loubriel.

Notice that the right side of the graph (physical and the aural skills quadrants) can be empirically measured using scientific tools to deduct quantitative data. For example, it is common to measure a player's use of the "free breath" by using an "air pressure gauge." On the other hand, the left quadrants, the elements of style and performance attitudes, are not commonly evaluated using scientific procedures.[37]

The marriage of science and art happens from this point on since the performance of the technical and the expressive sides happens in tandem, showing the interconnection and dependence of each element, making science and art partners working towards a common goal.

[37] However, modern researchers, such as John Sloboda are taking forward steps towards this end.

Teaching with the IPEA Model

Integral teachers will work with the elements in each quadrant very much the way composers use recurrent "themes" in the theme and variations compositional form. For example, in any particular lesson a "theme" (a MEME and its various elements) could be brought up at various times in order to emphasize or reinforce it using downward causation. Teachers will also be able to emphasize and/or reinforce deficient MEMEs in order to improve the "singing approach vMEME" using upward causation. The improvement of the student's sound and musical expression should be the end result of an integral applied music lesson.

Students as Individuals and the Use of the Psychograph

At this point, it should understood that students will come to the music studio with their four basic MEMEs developed at different levels making them prone to perform in a segmented manner. That is, performing technically well but with no expressive skills or vice versa. Consequently, those MEMEs will need to be balanced (or equalized) making the focus, or theme, of each lesson different with each student. Figure two represents the columns of development, or MEMEs, as found in a generic case study of a student with under-developed Physical Aspects and Mental Images of Styles columns. This student will need to practice a comprehensive (all of the IPEA elements) program of physical training (using musical materials)[38] concurrent with a program of the study of musical styles (using recordings and live concerts).

Assessing with the IPEA Model

If the system of quadrants and the psychograph are combined, the result is a complete IPEA assessment graph. This multidimensional graph can be used as a complete, or integral, assessment instrument. The IPEA assessment graph clearly identifies the elements that need development without neglecting any of the four MEMEs. The following shows a generic case study of a trumpet student with several deficient elements:

[38] Etudes, concertos, characteristic solos, and drills.

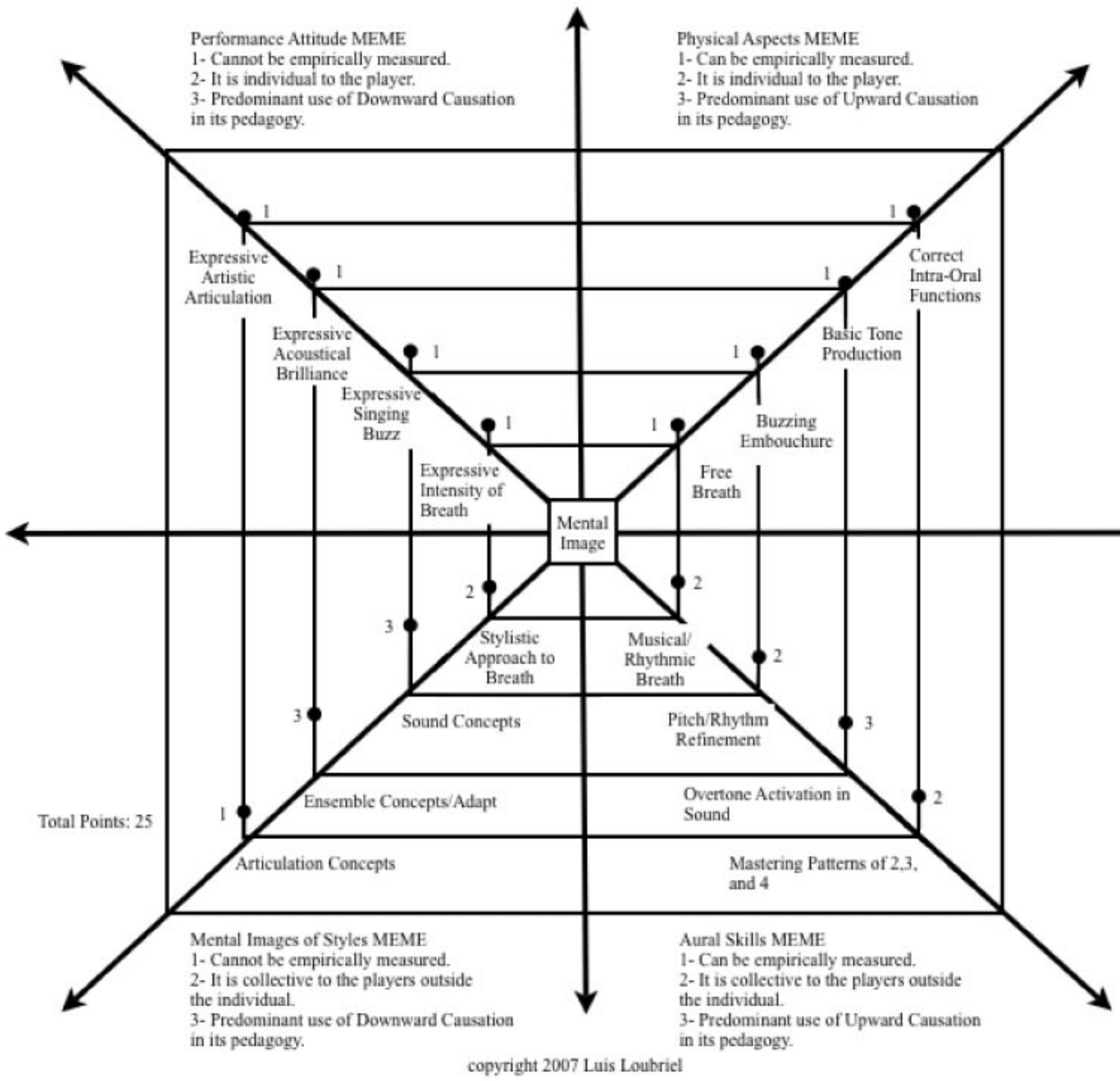

Fig. 4. IPEA Assessment Instrument. Number "1" represents underdeveloped while number "5" represents fully developed. This chart shows a player with deficiencies. Designed and developed by Luis Loubriel.

In contrast, a typical mono-dimensional assessment chart in current use in educational institutions looks as follows (1 meaning poor and 5 meaning excellent):

	1	2	3	4	5
Technique			X		
Tone			X		
Musicality		X			
Rhythm				X	
Stage Presence		X			
Total Points:	14				

Fig. 5. Typical Mono-dimensional Assessment Chart.

An integral teacher should strive to bring each column to equal levels of development so the student advances to a new stage. Once the columns are equalized,[39] the student will incorporate into his or her playing all of the skills involved in that new stage.

The Ever Changing vMEME – a Look into the Future

A vMEME, such as the singing thought pattern, is an ever changing and evolving structure of thought. Each player or teacher will have to continually negotiate the perfect balance of the technical and expressive sides to maintain his or her performance health throughout daily changes such as sickness/injury, shifting life conditions, and the aging process.

[39] The term "equalized" is used to describe the balancing of the four columns. It should be mentioned that musicians are able to have successful performing careers with un-equalized columns of development (e.g. Miles Davis and Chet Baker).

Conclusion

By addressing the four quadrants present in the IPEA model, a performer or teacher will be able to perform and teach with technical and expressive fluency while maintaining a consistent evolutionary track. This way, the IPEA model will serve as a comprehensive assessment instrument as well as a clear "map" for development.

The performer using the IPEA model will train using upward causation, assisted by empirical instruments such as the metronome and tuner, to perfect his or her technical skills while rehearsing and performing using downward causation. This way he or she will unite the expressive and technical sides without compromising either.

The teacher using the IPEA model will teach addressing the improvement of each element of the IPEA model while encouraging and inspiring the student to employ downward causation. Although the use of downward causation is preferable, a teacher will always have to use of upward causation for developmental and remedial students. The exclusive use of upward causation is not recommended since it tends to produce uninspired performances.

The assessment of performances, such as recitals and auditions, can be conducted using the IPEA Assessment Instrument. The information in this instrument will give the teacher and the student a clearer view of the student's weaknesses and strengths signaling areas that need further improvement.

The challenge of using the IPEA model lies in the lack of knowledge and understanding of integral principles by the general music teaching population. Most applied music teachers are performers by training who do not need the intricate knowledge of the IPEA model to perform or teach advanced students with no major technical problems. However, to address the developmental needs of students and players regarded as remedial cases, while maintaining their expressive skills, knowledge of the IPEA model is necessary.

It is my hope that the information discussed in this paper will serve as a guide to future musicians, who strive to perform and teach expressively, achieve their goal of communicating the emotions and beauty inherent in music.

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