Gesture and Body-Movement as Teaching and Learning Tools in Western Classical Singing

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Signed

Julia Nafisi

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Abstract

This thesis investigates the use of gesture and body-movement as teaching and learning tools in Western classical singing. The introduction draws together a number of theoretical threads to argue why this study has been undertaken and what its objectives are. These threads are elaborated on in the literature review which covers the fields of Vocal Pedagogy, Learning, Gesture Studies, Choral Rehearsal, Music Education and Acting. The study uses two methodologies: survey and experiment. Using terminology devised by the author as Nafisi-system of singing movements, a survey amongst singing teachers in Australia and Germany establishes the prevalence and thus relevance of gestures as tools to enhance and/or illustrate explanation and/or demonstration in the communication of singing related concepts; similarly the survey confirms that voice teachers encourage singing students to use gesture and/or body-movement as tools to facilitate understanding and learning of physiological functions, thought concepts or musical ideas. The survey further yields a wealth of hitherto unknown information about many facets of voice teachers' use of gesture and movement in their teaching, testifying both to the potential power and controversy inherent in this teaching tool. While the survey had collected teachers' subjective assessments, the experiment sought to actually prove the effectiveness of gesture and body-movement. Following the argument that the quality of the vocal tone constituted the single most important factor in Western classical singing technique, it was propounded that a teaching intervention could only rightfully claim validity if its efficacy was evident in an improved quality of vocal tone and an experiment was designed to show just that. Within the limits of the experimental design, the results were unambiguous: Compared with a teaching intervention that emulated 'traditional' voice teaching without movement, the teaching interventions that incorporated gestures and/or body-movements were clearly superior in their efficacy in two out of four tested vocal tasks and equally as effective in the other two tested vocal tasks.

Chapter 1: Introduction

Context and Theory

This thesis investigates the role of gesture and movement in the teaching of singing, particularly vocal tone production, and overlaps a number of separate yet interconnected fields of enquiry. On one side there is singing and the teaching of singing with various considerations regarding the nature of singing, voice science and vocal pedagogy; on the other side there are gesture and movement, two concepts which, although rather distinct are here dealt with side by side in their role as teaching and learning aids. The link between singing and gesture has its rationale in the nature of the first and the potential to communicate of the latter. In order to contextualize the study, the introduction touches on the nature of singing, gesture and movement, and the challenges of teaching and learning. It goes on to expose gaps in existing research and propounds a number of contentions; it further provides an overview of the methodologies used in this study and delineates the thesis structure.

Singing and vocal sound

Few sounds can touch a human heart quite like the human voice. Simultaneously primeval and sophisticated, the voice is arguably the main instrument of human communication as well as the earliest musical instrument. Far beyond what is being said in words, a host of information is – often involuntarily or unconsciously – conveyed by the mere sound of a voice. Akin to the ability to "read" another's body-language, most people possess a highly developed capacity to "read" another person's voice – irrespective of the fact that one might not always take note of one's perceptions. When listening to someone talking in a language we do not know and without seeing the speaker we will usually be able to tell the speaker's gender, approximate age and emotional state and even take a good guess of the general nature of what is being said. A voice might strike us as attractive, erotic, cold, threatening, aggressive, wheezy, strong, weak, boring, and so on although we will probably be quite unable to say what exactly makes us form that impression.

The vital role of speech and language in the development of humankind is widely acknowledged whereas the role of music is much less researched and surrounded by some controversy (Pinker et al., 1994; Pinker, 2003; Mithen, 2005; Mithen et al., 2006). Pre-modern communication may be envisaged as vocally uttered "holistic phrases" each with

a unique meaning and making "extensive use of variation in pitch, rhythm and melody to communicate information, express emotion and induce emotion in other individuals" (Mithen et al., 2006, p.98) suggesting that music and language might indeed have the same origin; it seems safe to assume with Fischer-Dieskau (1985, p.9) that "modulated vocal sound" (*modulierter Laut)* evolved into singing and thus stands at the beginning of all music making.

Virtually every culture has its own singing tradition, often rooted in spiritual or cultural events and distinguished by its characteristic vocal style. Within what is broadly termed as "Western" societies, singing galvanizes millions in contemporary popular music that includes styles as diverse as Jazz, Country, Gospel, R & B (Rhythm and Blues), Pop, Rock'n Roll, Punk, Hip Hop, Broadway, Rap, Funk, House, Music Theatre, Folk, Soul, and so forth; genre definitions can be fluid as styles constantly fuse and evolve. Western classical singing has grown over a 500-year period of relatively linear musical development in central Europe and arguably reached its peak in the 18th and early 19th centuries, the so called *bel canto*[1]era. The advent of large orchestras from the middle of the 19th century has shifted the preference towards larger – that is louder –voices, a development that, although deplored by some, has long since made the ability to produce a big, projecting sound imperative for opera singers. Music written for highly trained operatic voices imposes technical demands that require exceptionally strong and flexible voices of considerable range. Operatic roles typically give room for artistic liberty or personal interpretation only within the limits of stringent vocal and stylistic demands. However, the training principles of bel canto are often referred to as a method to achieve healthy and effective voice production also where the goal of the singer might not necessarily be aspiring or restricted to operatic singing.

Basic musicality, manifest in the ability to match the pitch of one's own vocal tone to that of another singer or an instrument, is arguably sine qua non for all singing. While anecdotal evidence suggests that a relatively large number of people are convinced that they "cannot carry a tune", actual tone-deafness, or *amusia,* a neurogenetic disorder affecting the processing of musical pitch, afflicts only about five percent of the general population (Nan et al., 2010). Negative self-assessment of one's singing ability is often

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[1] Italian, literally meaning "beautiful singing"; first used in the late 17th century: The term originally refers to the Italian singing tradition particularly of the late 17th, 18th and early 19th centuries but has come to denote the highest ideal of Western classical singing in general.

due to a lack of training or simple exposure to music possibly aggravated by an early experience of a relative, friend, teacher, choir director or the like suggesting to a child that they were "tone-deaf", his/her voice was in some way unpleasant and that he/she should remain silent (Thurman & Welch, 2000). The inner barriers towards singing faced by "involuntary non-singers" are often extremely difficult to overcome. Husler and Rodd-Marling (1965, p.2) refer to them as "inhibited singers" and argue that "man" was "naturally a singer". This study does however not deal with issues arising from real or imagined lack of musical hearing and the singing under discussion here is understood to meet basic pitching requirements.

The fundamental difference between singing and playing an instrument lies in the obvious fact that in singing player and instrument are one and the same. The implications of this give rise to a number of surprisingly different viewpoints: singing may – simultaneously or exclusively – be regarded as natural or artificial, simple or complex, an intricate bio-mechanical function, an emotional outpour, a spiritual or a visceral experience. Descriptions of the vocal instrument as both "the whole person" and "the body" (Callaghan, 2000, p. 15) lead into deeper philosophical territory and it seems fair to assume with Reid (1975) that the voice consists of both, *soma* and *psyche*[2] (see also Chapter 2).

The sound of a voice that is the *quality of vocal tone* is arguably the single most important factor in any singing performance. While reviews on non-vocal musical performances very rarely include references to make, model or rarity of the musical instrument played in performance, singers are predominantly judged by the quality of their voice (Himonides & Welch, 2005; Himonides, 2009). The voice is the "initial tool" of the singer as "much of the expressive power of song lies in the voice itself" (Stark, 1999, p.xxv). The various sound-ideals typical to different vocal styles can, to a large part, be described through and distinguished by their acoustic properties. Musical styles whose vocal ideal lies close to the sound of speech arguably pose fewer difficulties in regards to vocal tone production than styles that require a vocal tone that follows a very specific sound ideal like Western classical music. The ideal 'classical' or 'operatic' vocal tone may by some be regarded as highly stylised but it can also be said to be based on healthy and very

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[2] Greek: soma = body as distinct from psyche = soul

efficient voice use, ultimately resulting in a sound whose acoustic properties allow it to soar easily over a large orchestra. The importance assigned to the vocal sound itself in this genre is such that singing technique in the classical tradition is predominantly concerned with vocal tone production as the singer strives to optimize the functioning and coordination of the vocal apparatus to realize a specific sound ideal.

The basic physiological facts of human voice production have, at least in principle, been known since the mid 19th century (Raphael et al., 2007): The respiratory system produces the energy source for the voice (air stream from the lungs); the vocal folds, situated within the laryngeal assembly vibrate in the airstream to generate the basic sound; the so-called vocal tract (the pharyngeal space within the neck and the oral cavity, complemented by the nasal cavity) modifies the sound (Titze, 2000; Welch & Sundberg, 2002). While in mechanical principle the voice consists much like a woodwind or brass instrument of a pump, a vibrator, and a resonator it is not a fixed construct of timber or brass but part of a living person. The bodies of professional athletes or dancers arguably have distinct physical specifications predisposing them to their craft (Cunxin, 2003) but singers come in all sizes and shapes and their vocal apparatus appears to be remarkably undistinguishable from that of non-singing human beings. Although the vocal organ does not consist of the larynx alone, the latter has, particularly in popular belief, long been almost synonymous with the vocal instrument. However, there is little to suggest that a singer's larynx and vocal folds differ physiologically in any way from a non-singer's, but rather anecdotal evidence of the contrary:

> On the death of Francesco Tamago, the world famous tenor and 'vocal wonder', a commission of doctors and scientists performed an autopsy on his larynx. To their astonishment and disappointment, all they were able to report is contained in the following sentence: 'The organ differs from that of a normal person only in that it exhibits an unusually large number of scars on the wall of the pharynx caused by catarrh' (Husler & Rodd-Marling, 1965, p.4).

In the meanwhile some "genetic inheritance factors" favourable to singing have been identified. They include specific "anatomic dimensions, tissue density and elasticity" as well as the "neuromuscular predilection for the task of singing like the brain's ability to sequence instructions for and transmit instructions to the muscles and the muscles ability to carry out those instructions" (Nair, 2007, pp.15-16). Apart from these physiological requirements, vocal talent would arguably also include a certain musicality and a

preparedness to express emotions loudly. It is clear that innate physiological characteristics of the vocal instrument and the singer's wish and ability to utilize the same are inextricably linked. But despite a lot of debate and some research concerning vocal ability and musicality, the question whether "innate talent" exists, what it may consist of and how big a role it might play compared to practice remains controversial (Howe et al., 1998; Gladwell, 2008; Helding, 2011). This question which permeates many disciplines as "nature versus nurture" debate is however of no concern in this study and singing is discussed here as a skill that can be taught and learned –although the level of attainable achievement might differ from individual to individual.

The whole purpose of any teaching and learning lies arguably in the passing on and receiving of some knowledge and/or skill. The fact that these seemingly closely related concepts are actually quite distinct from one another and the very nature of this distinction touch to the core of this study. Knowledge has been defined as **"**acquaintance with facts, truths, or principles; perception of fact or truth; clear and certain mental apprehension"; and skill as "the ability that comes from knowledge, practice aptitude, to do something well; competent excellence in performance; expertness; dexterity" (Macquarie, 2013). While one appreciates the connection between the two – particularly where skill is said to "come from knowledge", it is also clear that the difference lies in the emphasis on 'mental apprehension' on one side and the 'practical performance' on the other. In order to understand the depth of this discrepancy that can extent to a complete disconnection between the two, one must only think of a *motor skill*: Possessing for instance great knowledge about the mechanical workings of a bicycle and the principles of balance as well as knowing that one should move both legs alternately in a circular motion does in no way mean that one can ride a bicycle. It is even rather doubtful if the theoretical knowledge advances the practical skill in any way– the two may well seem to be completely separate things.

Singing is a skill in which, in rare cases, highest levels of mastery may be reached without even the slightest theoretical knowledge about either the vocal apparatus or theory of music – as countless anecdotes of "uneducated" singers with wonderful "natural" voices and musicality confirm. That these singers doubtlessly possess a wealth of what might be called "intuitive" knowledge about their skill does not remedy the astounding possibility of a complete disconnect between theoretical knowledge and practical skill. In order to realize that knowledge of the voice and vocal music alone does not make a singer one

must only think of voice experts, like ear-nose-throat-specialists, vocologists[3] or conductors of vocal music who may know everything there is to know about the vocal apparatus or vocal music respectively while still remaining quite incapable to actually sing. The difference between theory and praxis is nicely reflected in the adage the German poet Goethe put into his *Mephisto's*[4] mouth: "Grey, dear friend, is all theory and green the golden tree of life[5]" (Goethe, 1808). The notion that theory and praxis can have little to do with each other and that the former may even at times somehow contaminate the latter lies at the heart of one of the great controversies within the singing and singing teacher community and has served as an argument for the decline of bel canto with the advent of voice science (Reid, 1950, Helding, 2007, see also Chapter 2).

Interestingly an explanation for the perceived disconnect between theoretical knowledge and practical skill may come out of the very camp of the scientists: Considering the processes involved in singing as bio-mechanical and motor-related, suggests that "central principles of perceptual-motor learning, may also apply to voice instruction" (Verdolini 2002, p.48). One of these principles concerns the crucial role of the direction of attentional focus in both the acquisition and the performance of motor skills. It has been shown that attention to the internal mechanism of a physical task tends to be detrimental to performing that task while attention to an external goal tends to be beneficial (Wulf, 1998, 2001, 2007). Consequently the presentation of a large explicit knowledge base may not be helpful to acquire a skill (Poolton et al., 2005, 2006). There is evidence to suggest that singing belongs to a system that functions well without awareness of the mechanical principles and attention to physiological and biomechanical facts might actually inhibit performance. It appears that science is catching up to and reaffirming anecdotal evidence of many singers' almost fearful aversion to directing their attention to the biomechanics of what they do. The frequent use of metaphors and imagery by teachers of singing might therefore not – as is sometimes alleged – be due to limited acoustic and physiological knowledge of some singing teachers, but rather be proof that this phenomenon and its

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[3] Vocology is the science and practice of vocal habilitation invented (simultaneously but independently) by the US American Prof I. Titze and Prof G. Gates.

[4] Also *Mephistopheles*: a witty demon, also 'the devil' in German folklore. In the *Faust* legend the world-weary scholar (Dr Faustus) wagers his soul in a pact with Mephisto.

[5] „Grau, teurer Freund, ist alle Theorie und grün des Lebens goldner Baum".

implications for the singer has long been grasped intuitively and empirically by many teachers. A detailed account of this discussion will be given in Chapter 2.

As mentioned above, the "classical", bel canto based approach to learning to sing focuses on tone production and, through specifically designed vocal exercises, dissects the process into separate steps. Using exercises instead of songs allows a focus on vocal tone production by momentarily separating it from musical expression and emotion. This approach may be said to be over-emphasizing the bio-mechanical side of vocal tone production and neglecting the natural instincts often awoken by the wish to express oneself in song. The rationale for this approach lies in the conviction that there Isa physiologically effective, healthy and therefore objectively correct way of producing the voice throughout its range and on all vowels – and that the singer has to master this to some degree before he or she can successfully apply their voice to song. Without music and emotion to "carry" one through a song but left with for instance just a major triad to be sung on an 'ee' vowel, the singer is forced to focus on the sound of his/her voice – an endeavour that can be challenging.

The vocal instrument might be considered as somewhat akin to a partly "disassembled" and possibly "un-tuned" instrument: With all the bits and pieces present, the singer often does simply not know how to make them work together in a way that allows him or her to produce and control the sound he or she wants to make music with. The singer's instrument is neither visible nor entirely subject to the conscious mind; it relies on a delicate and highly complicated mechanism that is substantially internal and poorly innervated for sensory feedback. The voice's wonderful capacity to reflect emotions directly and "rawly" is also a potential liability because emotions are notoriously hard to control. Furthermore, all organs used for singing have multiple and often vital functions – like breathing or swallowing – that compete with their singing function and can also hardly be consciously controlled. Learning to sing according to a specific sound ideal means that the singer has to make this unconsciously controlled and 'emotional' breathing-swallowing-speaking-primal-sound-making' apparatus understand what new functions it is supposed to execute so that it becomes a singing apparatus, a vocal instrument.

The greatest difficulty in the teaching of vocal technique appears to lie in the *communication* of specific vocal demands, a process that has to happen on two levels: the singing teacher has to communicate his or her suggestions to the student and the student

has find a way to actually do it – that is the student has to take in what the teacher says and get his or her body to carry out the task. It seems that vocal problems frequently stem from our body simply not understanding what our mind wants – and unless the body understands what the mind wants, it cannot possibly do as asked. The problem may be not so much an inability of our minds to understand a particular task or even an inability of our body to fulfil a particular demand but a break down in the communication of one's mind to one's body: One can have well understood the necessity to for instance lower one's larynx, lift one's soft palate or contract one's crico-thyroid[6] muscle. The difficulty may lie in just how to tell one's body this and it is at this point that a new player enters the stage: maybe gesture and movement can bridge this gap in the chain of communication.

Gesture and movement

The role of the body in singing can be viewed from two different angles: As observed above, singing is obviously a 'bodily instrument' as vocal tone production requires the coordinated functioning of several interconnected physiological mechanisms. Consequently singing may be considered a motor skill with several ensuing implications for the learning process. However the body may also be seen to play quite a different role in this context: Research in areas far removed from voice or singing related enquires has shown that the gestures we make – often unconsciously – are closely related to inner processes; we seem to not only feel, but also *think* with our bodies. Gestures that visualize thought processes and movement may feed back into the brain, modulating and altering thoughts and feelings (Fast, 1970, 1977; Seitz, J., 1993, 2002, 2005; Seitz, R. 2000; Beattie, 2003; Goldin-Meadow, 2003; Kendon, 2004; Pearce, 2006). The notion of a 'bodily-kinesthetic' intelligence as one amongst other intelligences (Gardner, 1983) admits the idea of a learning process that takes place primarily through the body. This and Wulf's (2007) findings regarding the important impact of an appropriate "external focus" (p.35) in motor skill learning make a good starting point for an argument in this case: A gesture capturing an image of a particular sound and/or illustrating a physiological mechanism or an energizing and/or relaxing movement might provide the perfect

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[6]Tensor muscle of the larynx whose action tilts the thyroid cartilage resulting in elongation of the vocal folds.

'external focus' for a singer and be at the same time a way of telling one's body what to do.

The supposition of a connection between voice, gesture and body movement is of course by no means new. Music educators and choral conductors have long tapped into gesture and body movement as teaching aids and their benefit in these contexts is well documented. The Swiss music educator Jaques-Dalcroze[7] first developed a method of learning and experiencing music through movement in the late 19th century. His method became known as *Eurhythmics* and within only a few decades two other music educators conceived their methods which should prove equally influential: the *Kodály-Method* and *Orff Schulwerk.* Although there clearly are differences between the three methods (see Chapter 2) they all not only acknowledge but explicitly make use of an intrinsic connection between music learning and movement. Although there have been further developments in the implementation of these methods, the core understanding of the benefit of gesture and body movement in early childhood music teaching remains unshaken and could be reconfirmed in recent studies (Liao et al., 2007, Liao, 2008). Also in the field of choral conducting many references to the beneficial use of gesture and body movement can be found (Chagnon, 2001; Hibbard, 1994; Wis, 1993, 1999) and it has been shown that using gestures and movement in the choral rehearsal has a significant positive effect on learning and understanding of both vocal and musical concepts (see Chapter 2).

Although these findings suggest an – albeit not clearly defined – beneficial effect of gesture and movement on music learning and group singing respectively they do not necessarily warrant conclusions regarding the use of gesture and movement in the singing studio: As the choral studies investigate a large group of people singing together, it is rather difficult to distil the effect of the movement on each singer's individual voice and some of the effects might also be attributed to the wish to blend in with other singers and the more or less unconscious copying of another's vocal tone. And although Kodály, Orff and Dalcroze all began their work with young adults, it appears that the methods of music education explicitly involving gesture and body-movement are today addressed mainly at young children. Moreover gesture and body movement is used in these methods mainly

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[7] 1865 – 1950

to teach musical concepts and understanding whilst the quality of the vocal sound is of minor or no concern.

Although there is anecdotal evidence that teachers of singing use gestures as a means of enhancing communication in their teaching, there is no data about the actual prevalence of this teaching method, let alone any information regarding the rationale behind it. Similarly, while again anecdotal evidence points to gesture and body-movement being encouraged by many teachers to help their students learn, there is no research data regarding the impact of the use of gesture and body-movement on the vocal tone in adult singers in a one-on-one teaching context – that is there is nothing to say that these were actually effective tools of teaching vocal technique. This study set out to fill these gaps in existing research by collecting hard data about the prevalence of the use of gesture and body-movement in the teaching of singing and by investigating the actual effect of the same on the quality of the vocal tone.

Aim of the Study and Methodology

The aim of this study was to investigate the use of gesture and body-movement in the teaching of singing and approached the subject from two main angles. The first can be summarised in the following central contention and consequent sub-contentions:

1. Gestures and body-movements are widely used tools in the teaching and learning of singing;
    a. The various gestures and movements encountered in the context of teaching and learning singing can be identified and categorized in a way that will be accepted by a significant number of voice teachers;
    b. A significant number of voice teachers use gestures to enhance explanation and/or demonstration;
    c. A significant number of voice teachers encourage their students to carry out gestures as well as body-movements whilst singing to enhance their learning experience;
    d. There are some universally accepted and used gestures and body-movements in voice teaching;
    e. There is a shared rationale for using gestures and body-movements in voice teaching;

The first step in approaching the subject matter was a thorough review of material in a number of fields surrounding and overlapping the main enquiry, namely Vocal Pedagogy, Learning, Gesture Studies, Choral Rehearsal, Music Education and Acting (Chapter 2). It could be shown that while the topic of gesture and body-movement in the context of teaching and learning yields a huge body of literature there is very little material pertaining directly to the narrow focus of this study. The reviewed literature particularly on vocal pedagogy, vocal tone and motor learning has however provided the foundation for the subsequent survey and experimental designs and strengthened the arguments behind their rationale.

The literature review revealed also that the author's own previous research into gesture as a pedagogic tool in the singing studio (Nafisi, 2007, 2008, 2013) remained the only attempt to categorise the gestures used by singing teachers in the communication of singing related concepts. The logical way to approach the first contention that is to investigate the prevalence of the use of gesture and body-movement in one-on-one vocal teaching was to survey a large number of voice teachers. Only a survey had the potential to grant insight into the by definition very private setting of a voice studio. The value of the survey hinged on the quality of its questions: the terminology used needed to be broad enough to include all possible movements and specific enough to elicit meaningful responses. In the absence of a generally accepted nomenclature regarding the many gestures and movements encountered in voice-teaching, the original study (Nafisi, 2007) was taken as a base for the development of a comprehensive categorisation system of singing gestures and movements. The developed terminology facilitated the formulation of the survey questions while the survey in turn acted as a validity test for the categorisation system itself (see Chapters 3 and 4).

Taking advantage of the author's bilingualism and in order to add breadth to the study, the survey was conducted amongst members the *Australian National Association of Teachers of Singing* (ANATS) and the *Bundesverband Deutscher Gesangspädagogen* (Federal Association of German Singing Pedagogues, BDG) thus targeting members of voice teacher associations of highest professional standing. The survey went to the core of this study's first contention including all its sub-headings and yielded a large amount of very specific and hitherto unknown data. Most importantly it could be established that gesture and body-movement were indeed used by a significant number of voice teachers

and in a variety of ways whilst the terminology introduced in the survey was universally and unquestioningly accepted (see Chapters 3 and 4 for details).

Apart from establishing the prevalence of both gesture as a tool for communication and gesture and body-movement as tools to facilitate learning in the singing studio, this study also sought to find proof for the efficacy of the latter. Following the argument that the quality of the vocal tone constituted a vitally important factor in Western classical singing technique (Himonides, 2009) it was propounded that a teaching intervention could only rightfully claim validity if its efficacy was evident in an improved quality of vocal tone. This led to the second contention and consequent sub-contentions:

2. Gesture and body-movement are helpful tools for the acquisition of vocal technique, namely vocal tone production;

    a. There is a significant benefit – measurable in the quality of singers' vocal tone – in using a vocal teaching method in which the student is instructed to carry out specific gestures and/or body-movements whilst singing compared to a vocal teaching method in which the student follows verbal instruction with an unmoving body;

    b. This benefit is evident in the rate in which the quality of vocal tone improves as an immediate result of a first teaching intervention;

    c. This benefit is evident in the rate in which the quality of vocal tone improves after the same teaching intervention has been applied over a number of weeks;

    d. This benefit is evident in all tested exercises;

    e. This benefit is evident independent of participants' previous singing experience;

    f. The positive effect of the incorporation of gestures and body-movements is being felt by a majority of participants;

The survey had gained intelligence about the status quo of the use of gesture and body-movement in current classical voice teaching. The sum of many subjective views on the topic did however nothing to prove that gesture and body-movement were indeed valid tools in teaching and learning of voice production. The endeavour of validating the efficacy of gesture and body-movement as learning tools called for an experiment: A number of participants of diverse age, gender and singing back grounds were taught four

simple vocal exercises. The exercises were then worked on in consecutive sessions following one of two types of teaching instructions by the researcher. Each participant sang two exercises following one type of teaching intervention and two exercises following the other. The teaching interventions were distinguished in that they either required participants to carry out gestures and/or body-movements while singing or required participants to follow instructions with an unmoving body (see Chapter 5). It was argued that the efficacy of the respective teaching interventions would be evident in the change of participants' vocal tone quality. All sessions were video and audio recorded and subsequently organized into comparable short sample files. Each participant's recordings of an exercise after the first and last teaching intervention was to be compared to his/her first take (that is their 'base-line recording') of that same exercise. Evaluations were carried out by a large number of professional voice teachers who marked any perceived change in vocal tone quality on a rating scale (see Chapter 6). The resulting large amount of data was analysed in view of the second contention as well as a few other aspects which had arisen over the course of the experiment. It could be shown that the specific gestures and/or body-movements employed in the experiment had had a beneficial effect in all four exercises: equally as beneficial in two of the tested exercises and clearly more beneficial in the other two tested exercises, compared to the control teaching intervention (see Chapter 7).

Outline of Chapters

The complexity of the subject matter required minute organisation of all procedural steps. This thesis comprises nine chapters:

1. Introduction

This chapter provides a background and theoretical framework for the study. It points to existing research and exposes the gap that this study seeks to fill. It further provides an overview of the study's aims and the employed methodologies as well as outlining the structure of the thesis.

2. Literature Review

This chapter provides an overview of the existing material surrounding and overlapping the study's subject matter. It covers the fields of *Vocal Pedagogy,* with the subheadings:

nature of the singing voice, vocal tone (formation and perception) posture, breathing and the teaching of singing. *Learning,* with the subheadings: motor learning (the body learns) and the role of the body in knowing (the body helps learning), *Gesture Studies, Choral Rehearsal, Music Education and Acting.*

3. Survey: Terminology, Design and General Data

This chapter argues the need for devising a coherent terminology in order to design a survey questionnaire and introduces the system of singing movement devised by the author. It outlines the survey design and procedure and reports the findings from the surveys first section.

4. Survey: Gesture and Body-Movement in the Singing Studio. Responses and Results

This chapter provides a detailed report of the survey responses and puts them into context with existing research. The results give a good insight into the status quo of the use of gesture and body-movement both as a tool of communication and as a tool to facilitate learning in the teaching of (Western Classical) singing in Germany and Australia.

5. Experiment: Outline and Design

This chapter outlines the rationale and design of an experiment set up to investigate the validity of the use of gesture and body-movement as a tool to improve vocal tone.

6. Experiment: Procedure

This chapter gives a step by step account of the operations followed to obtain and record the experimental data and details the coding procedure.

7. Experiment: Data Preparation, Analysis and Results

This chapter reports how the large amount of data was cleaned and prepared for analyses. It details the demonstration of measurement validity, gives a step by step account of all analyses undertaken and presents the results.

8. Discussion

This chapter examines and justifies the decisions taken in the design and procedure of both survey and experiment and discusses the findings correlating them to other studies.

9. Conclusion

This chapter summarizes the study's arguments and findings, connecting them back to its original objectives. It discusses the study's direct and wider implications, acknowledges its limitations and point out future research.

Chapter 2: Literature Review

There exist to date little research and only relatively few empirical reports specifically about the use of gesture and body movement as learning tools to facilitate better tone production in Western classical singing. There is however a lot of material about neighbouring subjects of relevance to this study. In the endeavour to cover all relevant areas, this literature review considers the following fields of research:

- Vocal Pedagogy: focusing on and limited to reported facts and different outlooks on the nature of the singing voice, vocal tone (formation and perception) posture, breathing and the teaching of singing.
- Learning: giving a brief overview about learning theory, then focusing on motor learning ('the body learns') and links to voice teaching and 'the role of the body in knowing'
- Gesture Studies: focusing on and limited to the role of gesture and body-language in communication and the processing of thought and emotions.
- Choral Rehearsal: focusing on and limited to material on the use of gesture and movement as teaching and learning tools in the choral context
- Music Education: focusing on and limited to the history and tradition of gesture and movement as tools for the acquisition of musical concepts
- Acting: focusing on and limited to the use of gesture and movement as tools to evoke moods and emotions in the actor.

It should be noted that, although the study has a certain international component with the survey having been conducted in Germany as well as in Australia, the literature review is, with very few exceptions, limited to publications in English. A comprehensive inclusion of Non-English material or even just German material would have led far beyond the scope of this enquiry.

Vocal Pedagogy

Singing has long played a major role in rituals and ceremonies across cultures and beautiful singing has always been revered with early European testimonies citing the

legends of Orpheus[8] and King David[9]. There is evidence that teachers of singing have approached their subject through critical enquiry at least as far back as the 13th century (Timberlake, 1990). However, the earliest documented 'method of singing' can be found in a number of letters by the lutenist, singer, philosopher and physiologist Giovanni Camillo Maffei in 1562. He begins with a description of anatomy and physiology acknowledging the influence of Aristotle[10] and Galen[11], thus showing that even then prime consideration was given to the physiological mechanism of voice production (Sell, 2005). Since then, there has been a huge literary output about all aspects of singing, vocal teaching and voice science. Particularly the latter has gained ground in the last decades with an enormous increase in physiological and acoustical knowledge and voice science has largely become an integral part of vocal pedagogy (Collyer, 2010). The review of the mountainous material under the broad heading vocal pedagogy has been limited to aspects of greatest pertinence to this present study, namely considerations on the nature of singing, breathing, posture and support, vocal tone quality and teaching methods.

The nature of the singing voice

The uniqueness of the vocal instrument is conveyed in the fact that the sheer sound of a voice plays a crucial part in the judging of any vocal performance. The voice is the "initial tool" of the singer as "much of the expressive power of song lies in the voice itself" (Stark, 1999, p.xxv). Consequently, and contrary to non-vocal, instrumental performances, it is common for a review of a singing performance to make a reference to the actual instrument – the singer's voice (Himonides, 2009).

The basic physiological facts of human voice production have, at least in principle, been known since the mid 19th century (Raphael, 2007): The respiratory system produces the energy source for the voice (air stream from the lungs); the vocal folds, situated within the laryngeal assembly vibrate in the airstream to generate the basic sound; the so called vocal tract (the pharyngeal space within the neck and the oral cavity, complemented by the nasal cavity) modify the sound (Titze, 2000; Welch & Sundberg 2002). In vocalization, the groups of muscles that constitute the respiratory system compress the

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[8] Greek mythology: Orpheus, who has been given his lyre by the god Apollo, sings so beautifully that he mesmerized gods, men, beasts, and even plants.
[9] Second king of Israel (1040 – 970 BC); apart from being a famed warrior, he played the harp and sang for King Saul.
[10] Greek philosopher (384 – 322 BC) the first to create a comprehensive system of Western philosophy.
[11] Roman (of Greek ethnicity) physician (129 – 200 AD), medical researcher and philosopher.

lungs to generate an upward flowing airstream which sets the edges of the vocal folds in vibratory motion; the resulting pulsed air waves travel upwards through the vocal tract where they are modified before they leave the mouth through the lips (Welch et al., 2004; Himonides, 2009).

This basic mechanism was cast in serious doubt when French scientist R. Husson proposed his *neurochronaxic* theory in 1950: according to this theory the vocal folds "vibrate as a consequence of individual nerve impulses (generated at the fundamental frequency [f_o] rate) sent to the *vocalis* muscle[12] rather than as a consequence of the action of expired air on the vocal folds" (Raphael, 2007, p.86). The implications of this theory were widely and seriously discussed (Collyer, 2010) for instance by Vennard (1957) and Reid (1975). Although the neurochronaxic theory was conclusively rebutted in 1958, Husler and Rodd-Marling's *Singing. The Physical Nature of the Vocal Organ* maintained even in the revised 1983 edition that "it is not the out-flowing breath that sets the vocal folds vibrating" (Husler & Rodd-Marling, 1983, p.55); it seems that the idea of the vocal folds being capable of self-vibration still has its advocates today – if only for its "exceptional value in training voices" (Husler & Rodd-Marling, 1983, p.56).

The previously described "aero-dynamic" (Raphael, 2007, p. 87) principle of voice production (Himonides, 2009) appears now widely accepted and is presented, albeit with some minor differences in the depictions of the breathing apparatus, larynx and resonating chambers in most major books on singing and voice science of the last decades (Sundberg, 1987; Bunch, 1993; Miller, 1996; Thurman & Welch, 2000; Callaghan, 2000; Caldwell & Wall, 2001; McCoy, 2004; Chapman, 2006; Nair, 2007; Smith, 2007).

In the wake of ever increasing knowledge of the singing mechanisms, Richard Miller, "arguably the preeminent vocal pedagogue of the 20th century (Nisbet, 2010, p.103) maintains that the singing voice is "a corporal instrument that obeys physical laws and an acoustic instrument, obeying the laws of acoustics (Miller, 1996, p.85). However Johan Sundberg, whose *The Science of the Singing Voice* (1987) has long become a standard work thoroughly describing the structure and functions of the vocal organs in singing, from the aerodynamics of respiration through the dynamics of articulation, illustrated with over a hundred instructive and significant diagrams and drawings concedes that

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[12] Vocalis muscle is another name for the *thyro-arytenoid* muscle, a paired broad, thin muscle that lies parallel with and lateral to the vocal fold. It functions in fine tonal control.

"voice cannot be equated with voice organ", and that "voice is something personal" (Sundberg, 1987, p.1). There are a number of singing experts who insist that "singing is never a matter of the voice alone" but "body and spirit, inspired by the soul and carried on the breath" (Rao, 2001, p.9). And Hemsley (1998, p.7) postulates that the "whole objective of learning to sing is to improve the connection between the emotional, poetic, and musical impulses, and the body, which responds by producing appropriate sound". It appears that the controversy inherent in these statements arises from a misunderstanding: While no-one will seriously doubt the physiological mechanisms underlying the vocal instrument, there appears to be a wide spread albeit unscientific and possibly sentimental conviction that the singing voice might be more than simply a sound with specific acoustic characteristics.

Vocal tone (formation and perception)

The vocal tone quality heard when a singer sings depends on a variety of factors affecting the sound generated when the vocal folds are set into vibration by an air stream from the lungs (voice source) and the shape of the vocal tract (resonator). Thurman and Welch (2000) explain that the complex sound pressure waves that include the fundamental frequency (f_0) and an array of overtones produced by the vibrations of the vocal folds determine tonal characteristics. Sounds that are acoustically rich, exhibit many harmonics above the fundamental frequency. Himonides and Welch (2005) demonstrated that the uniqueness of the human voice comes from the individual and collective filtering and modification of the sound within the vocal tract which is made up of several interconnected chambers; and also the tongue modifies the spaces in the oral cavity and upper pharynx to create a complex variety of different sounds.

Changes in pitch are produced by variations in the mass and length of the vibrating vocal folds; these arise from the action of two sets of internal laryngeal muscles. The contractual dominance of one of these muscle groups over the other plays a crucial role in what is described as voice *registers*. Dominance of the crico-thyroid muscles has the effect of stretching and lengthening the vocal folds. These then tend to vibrate more quickly in the airstream from the lungs producing a perceptibly higher pitch. The high register in which the "vocal folds are stretched thin by the combined action of the crico-thyroids and posterior crico-arytenoids" and in which "glottal closure is brief and incomplete for each cycle" (Bunch, 1993, p.78) has also been called "light mechanism" (Miller, 1996, p.133). When another set of muscles, the thyro-arytenoids are dominant, their contraction reduces

the folds' length and increases their overall vibrating mass, resulting in a slower vibratory pattern with a perceptibly lower pitch (Himonides, 2009; Welch & Sundberg 2002). The low register in which the "thick vocal folds close firmly for each vibratory cycle" in which there is a "large amplitude of vibration" (Bunch, 1993, p.78) and in which the thyro-artenoids are dominant has also been called "heavy mechanism" (Miller, 1996, p.133).

Thurman and Welch (2000) point out that the terms which are still most commonly used today: chest voice – when prominent vibrations are felt in the upper chest, head voice – when prominent vibrations are felt in the head, and a blending of the two in middle voice, originate from the Middle Ages, "when singers thought that their voices came from different places in their bodies" (p.422). The main register change where the "shortener" muscles (thyro-artenoids or TA) must give way to a dominance of "lengthener" muscles (crico-thyroids or CT) occurs for all voice types in the area between C4 and F4 (Cowley, 2010). Apart from these two, there are "the pulse resister (vocal fry[13]), the falsetto (for males) and flute register (for females) and the whistle register" (Thurman & Welch, 2000, p.423). The change from one register to another is often called an "event" (Miller, 1996; Caldwell & Wall, 2001), but is also known "as 'passage', 'passaggio', 'transition', 'break', 'register break', 'lift', 'channel', 'bridge', 'ponticello (little bridge)', or 'change note' and the takes on this phenomenon range from a "Two Register View" to a "Ten Register View" (Caldwell & Wall, 2001, p.35).

The apparent confusion and controversy arises because there is "no generally accepted clear description of the term *register*" with the most common description being "a phonation frequency range in which all tones are perceived as being produced in a similar way and which possess a similar voice timbre" (Sundberg, 1987, p.49). Cowley (2010, p.132) concludes that "registers exist and are perceptually evident", and that there are "perceptual, acoustic, physiological and aerodynamic elements to vocal registers". She goes on to explain that although "numbers and names vary depending on professional orientation", the "most common number is two main registers for male voices and three for female voices." A lot of research has gone into this phenomenon (Echternach et al., 2010; McCoy, 2004; Miller & Schutte, 1993; Sundberg, 1987) a more detailed

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[13]Old term for the very lowest register, probably only used in speaking, also referred to as pulse or creak (Callaghan, 2000)

exploration of which lies however outside both the scope and focus of this literature review.

McCoy (2004) summarizes that vocal tone (as all musical sounds) consists of simultaneously occurring, inter-related frequencies at different amplitudes. The lowest of these frequencies, which usually corresponds to the named music pitch, is called fundamental frequency f_0. Other frequencies present in the sound are called overtones. Harmonic overtones are whole number multiples of the f_0 and always present in the same pattern: unison, octave, perfect fifth, perfect fourth, major third, minor third, minor third, major second, major second, major second, major second and minor second. Inharmonic overtones that is non-whole-tone multiples of f_0 are also called *partials*. If present they are perceived as roughness and in singing they are associated with damaged or dysfunctional voices (McCoy, 2004, p.22).

The timbre of a voice is the result of varying energy peaks in the overtone spectrum of a tone. In the acoustic terminology of the human voice these energy peaks are known as *formants*. According to the so-called the source-filter model (Sundberg, 1974, 1987, 2006; Titze, 2000; McCoy, 2004) formants are created by vocal tract resonances that appear at certain frequencies and enhance particular harmonics (whilst damping others) of the complex waveform emanating from the vibration of the vocal folds (Sundberg, 1987). There are five formants that have been found to be crucial to vocal communication and our perception of voiced sound (Titze, 2000). Our labelling of vowels is determined by the relationship between the lowest two formants and is generally dependent on jaw opening and tongue shape respectively. Vocal colour and carrying power of the voice depend primarily on the relationships between the other three (the third, fourth and fifth) formants (Sundberg 1987). A clustering of these, achieved by a specific configuration of the vocal tract (usually by opening the pharynx and lowering the larynx) results in a particular energy peak, known as 'the singer's formant cluster' or simply 'singer's formant' (Sundberg, 1974, 1987, 2006, 2011; McCoy, 2004; Himonides 2009). Because the singer's formant appears in a part of the frequency spectrum where the typical classical music orchestra sound is relatively weak, it is a way of naturally amplifying a singer's voice to be heard with relatively little effort above the sound of a full orchestra. Incidentally it is also the most perceptually sensitive region in the human auditory spectrum (Hunter & Titze, 2005).

It appears that, although teachers and students may not always be aware of the basic acoustic explanation, many of the metaphors used in conventional singing teaching relate to underlying formant manipulation in order to shape vocal behaviour (Callaghan, 2000) and there is evidence that 'directional imagery' is often used by singers and singing teachers to achieve particular 'vocal placement' (Hines, 1983; Moorcroft, 2007 – see also below *Teaching Singing*). A characteristically 'dark' voice has formants that are relatively lower in the spectrum compared to voices whose quality is described as 'light' or 'bright' (Sundberg, 1974; Himonides, 2009). Relative spectral alignment and strength of particular formants is also implicated in perceptions of the 'placement' of the singing voice, such as being either 'forward' ('in the mask') or 'backward' (Vurma & Ross, 2003). The former is usually regarded as a preferred vocal quality for Western classical singing performance (Emerich et al., 1997) and it has been found that manoeuvres increasing the jaw opening and moving the tongue forwards indeed raises the energy of the first two formants (Vurma & Ross, 2003). Graphs of *Long Term Average Spectra* (LTAS), show mainly three different dimensions: fundamental frequency (pitch), amplitude (loudness) and spectrum (timbral characteristics) and have been accepted as an accurate visual representation of sung sound and its different vocal qualities.

Thurman and Welch (2000) argue that as "breath flow-to-larynx functions and vocal tract acoustic influences are crucial to the creation of vocal qualities" (p.517), a link can be made between those voice quality producing functions and the word groups that describe vocal qualities; looking at vocal fold closure on a continuum with 100% breath flow and 0% muscle engagement on one side and 100% muscle engagement and 0% breath flow on the other, one gets:

Table 1

Impact of breath flow and muscle engagement on vocal fold closure

←100% breath flow, 0% muscle engagement ----------------- 100% muscle engagement, 0% breath flow→		
Incomplete vocal fold closure results in vocal sound which is breathy, airy	Optimal vocal fold closure results in vocal sound which is (from softer to louder) firm/ flutier, richer/warm/mellow, richest, brassier	Intense-hard vocal fold closure results in vocal sound which is (from softer to louder) pressed/ constricted, edgy/tense, strident/harsh

A similar correlation can be seen between adjustments in the vocal tract dimensions and vocal quality:

Table 2

Impact of vocal tract dimensions on vocal quality

Increased dimensions of vocal tract	Optimal dimensioning of vocal tract	Decreased dimensions of vocal tract
generally result in vocal sound which is		
over-dark, throaty, sob-like, woofy, bottled-up	of balanced resonance, and either darker/fuller or brighter/more brilliant	over bright, narrow, squeezed, pinched

(Thurman and Welch, 2000, pp.517 – 519)

However, matching conventional labels of various vocal tone qualities with scientific explanation remains an ongoing challenge and Titze and Story (2002) write:

> Descriptions of voice quality have traditionally consisted of qualitative terms such as warm, shrill, twangy, creaky, shrieky, breathy, yawny, gravelly, hoarse, ringing, dull, nasal, resonant, rough, and pressed. While commonly used in both clinical and non-clinical situations, the acoustic and articulatory correlates of these terms have not been well defined. In comparison, the characteristics of vocal registers have been somewhat better defined and are often given the generally accepted labels of modal, fry, and falsetto in speech, and chest, head (or mixed), falsetto and whistle in singing. Work is now ongoing to address a few of these voice qualities on a physiologic and acoustic level (p.3).

The main reason for disagreement regarding descriptive terms appears to be that they vary among the specialists: "Physicians and speech therapists, actors, singers, and voice teachers, voice coaches, and voice scientists share neither the same listening mode nor a common vocabulary to describe the perceived quality of a voice" (Henrich et al., 2007, p.2). In a bid to find a common terminology, a multi-disciplinary research group endeavoured in a three year study to establish a grid to describe voice quality perception. It was found that some of the described concepts (namely respiratory and vibratory dynamics) met with good consensus while others (namely vibrato and vocal placement perception) remained controversial (Henrich et al., 2007).

It becomes clear that the definition of a 'beautiful' or even 'good' vocal tone is very difficult indeed, particularly in distinct acoustic terms and Collyer (2010), states wryly that to "define a beautiful voice by its acoustic characteristics" has always been "the holy grail of acoustic analysis" (p. 95). Studies focusing on the well-known singers' formant (Sundberg, 1974, 1987) as a predictor for professional standard of the singer were inconclusive and Mitchell and Kenny (2004) demonstrated that acoustic analyses like LTAS do not reliably match perceptual judgments by expert listeners and therefore cannot be used to define or predict voice quality. Similarly it could be shown that "while LTAS provides information on energy distribution, measurements performed on the LTAS were unable to differentiate between experimental conditions, whereas the human ear produced the most reliable assessment of voice quality" (Mitchell, 2008, p.440). Collyer et al., (2009) on the other hand suggested tentatively to use the smoothness with which the spectral balance changes with changing sound level as an indicator for perceived vocal quality but the quest remains open.

There exists a strong correlation between perceived vocal quality and acoustically measurable features of the vocal tone, namely intonation and vocal timbre (Ekholm, 1998; Watts et al., 2006; Kenny & Mitchell, 2006) and "strong correlations have also been observed among different descriptors that assess quality, such as colour/warmth, resonance/ring, clarity/focus, and appropriate vibrato, which indicate that these factors converge on the same underlying construct of overall vocal quality" (Kenny & Mitchell, 2006, p.56). It appears however that in their judgment, listeners often relied on "personal constructs to assist with their judgment strategies" whilst "they often cannot articulate the components of sound quality on which their judgments were based" (Kenny & Mitchell, 2006, p. 56). On the other hand, separating the various features of a musical performance

did not offer additional insights into the evaluation of the performances (Thompson et al., 1998; Merritt et al., 2001; Fink, 2006). And a number of studies regarding the speaking voice and the perception of its various pathological conditions have also confirmed the high value of the human ear in the evaluation of vocal tone qualities (Kreimann et al., 1988, 1990, 1993; Klatt, 1990; Milbrath, 2003; Bunton, et al., 2007).

Posture

Posture is regarded as the basis for all other vocal considerations, it "determines the alignment and balance of the body, and good bodily alignment is the beginning of efficient breathing and fundamental to healthy singing" (Bunch, 1993, p.24); Callaghan (2000) similarly states that "body alignment affects all aspects of singing" (p.52) and virtually every larger publication on voice science, vocal pedagogy or singing dedicates a chapter or two to 'posture', 'body alignment' or 'postural alignment' to facilitate better tone production (Vennard, 1967; Reid, 1975; Sundberg, 1987; Bunch, 1993; Miller, 1996; Thurman & Welch, 2000; Callaghan, 2000; Caldwell & Wall, 2001; McCoy, 2004; Chapman, 2006; Nair, 2007; Smith, 2007).

Treatises on singing before the middle of the 19th century however offer only scarce information about the recommended physical posture of the singer, apart from hints like "when the head is erect and natural, the vocal organs remain relaxed and natural" (Coffin, 1989, p.8, quoting Mancini[14]). Manuel Garcia I[15](or Garcia *père* [father], to be distinguished from his son Manuel Garcia II[16] or Garcia *fils* [son]), celebrated tenor and the most influential teacher of his time, was the first to write a book on vocal technique *Exercises pour la voix* (exercises for the voice*)* published in Paris between 1819 and 1822. Here he states: "the position of the body must be erect, the shoulders thrown back, the arms crossed behind; this will open the chest and bring out the voice clear and strong, without distorting the appearance of either face or body" (Miller, 2006, p.206).

After a short singing career Manuel Garcia II turned entirely to teaching and his interest in the physical functions of the singing apparatus led him to invent the first primitive laryngoscope. He also devised much of the terminology still in use today and Miller states: "never in the history of solo singing has one individual so influenced vocal

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[14]1714 – 1800, Italian singer and singing teacher
[15] 1775–1832
[16] 1805 – 1906

pedagogy as did Manuel Garcia" (Miller, 2006, p.207). It should however be noted that Garcia's methods were highly controversial from the beginning and his allegedly substandard proficiency as a singer has been used to cast doubts on his validity as a teacher (Hemsley, 1998; Helding, 2008).

Influential America voice pedagogue Miller advocates the "noble posture" (1996, p.153), a term that appears to have been first mentioned by Manfredini[17] in 1797 as "*una nobili attitudine*" (Sell, 2005, p. 25) depicting a relatively high position of sternum and ribcage. Nair (2007, p.82) calls the same posture "the proud posture", characterized by "an elongated spine, sternum in a comfortably high attitude, tips of shoulders relaxed and slightly forward, abdominal musculature ready to provide active support, body weight distributed to that hips are level and weight rests on both feet". He gives special consideration to the singer's chin elevation, claiming that there is "one point in every singer's chin elevation (that is the position of the head) that will produce the most natural feeling and the best sound" (p.91) and describes the ideal posture as "equilibrium stance" (p. 105).

Lamperti[18] emphasized that "the position of the body should be erect…the shoulder joints free and loose, with the shoulders slightly thrown back to allow that chest due freedom in front without raising it" (Coffin, 1989, p.64). Lehmann (1993) emphasizes the importance "to bring the body under control, that is, to remain quiet" arguing that, "the quieter the singer, the more impressive is every expression he or she gives" (p.106). Reid (1950) simply asks the singer to "assume an upright, comfortable position" before singing (p.37).

Detailed descriptions of the singer's ideal posture can often be confusing and even contradictory: Vennard (1967) for instance states that "before trying to play any instrument, one should learn how to hold it. Vocally this means posture ... head, chest and pelvis should be supported by the spine in such a way that they align themselves one under the other – head erect, chest high, pelvis tipped so that the 'tail is tucked in'" (p.79). Miller on the other hand associates the "tucked in tail" as part of "the tilt and tuck method" of what he calls the "Germanic technique" and of which he disapproves strongly (Miller, 1977, p.24).

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[17] 1737 – 1799, Italian composer, singer and music theorist
[18] 1811 – 1892, Italian singing teacher

Bunch does expressly not recommend the pelvis to be tilted, stressing that in good posture "the natural curves of the vertebral column are preserved" (Bunch, 1993). She goes on to say that a person is "posturally well balanced if they can stand walk and sit without a pronounced increase in muscular activity". Chapman (2006) describes postural alignment in some detail, yet points out that "because there is a huge variety of body and voice types among classical singers" there is "not one formula for producing successful singers when it comes to posture" (p.24). She also uses body-movements like "walking about easily", "crouching over the piano", "standing in an apelike posture" (p.21) to unlock tensions and inhibitions and in particular to achieve the primal sound[19], a hallmark of her teaching.

Caldwell and Wall (2001) dedicate two chapters of their very comprehensive *Excellence in Singing: Multilevel Learning and Multilevel Teaching* to the 'teaching and learning of a supportive body' and 'teaching and learning the gestalt[20]' emphasizing the fundamental importance of proper body-alignment. The similarly comprehensive *Bodymind and Voice* (Thurman & Welch, 2000), encompasses medical and psychological issues in some depth, and calls "body balance" and "body alignment the most fundamental voice skill" (p.326). Thurman and Welch maintain that "physical stability" must entail "optimum balance alignment of your body" involving a "dynamic accommodation to Earth's gravitational field that enables the widest range of possible movement with the least necessary engagement of muscles" (p.333). The notion that "posture is not a static or fixed position, rather it is an active stillness or a physically quiet attitude" (Sell, 2005, p.71) is mirrored in the term *dynamic posture* employed by Bunch (1993). Feldenkrais, 1981 (p.43) calls "human posture…a dynamic equilibrium" and some suggest that the word posture itself might even "trigger inefficient balance alignment in bodies, because of its connotation of a rigid setting, or fixing" (Thurman and Welch, 2000, p.337). Yet, whilst the term 'dynamic posture' may evoke a sense of freedom and elasticity, the physical state of body recommended for singers whilst singing is still almost universally an essentially stationary one.

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[19]Referring to innate human sounds such as crying, howling, wailing, laughing, groaning, yelling, spontaneous joyful exclamations, grunts, the vocalized sigh and yawn.
[20]German = shape, form; term used in psychology/philosophy: an integrated unit of physical or psychological phenomena with properties not derivable by summation of its parts ("a whole that is greater than the sum of its parts").

School or methods of body-alignment like Alexander Technique[21], Feldenkrais[22], Yoga[23], Tai Chi[24] Pilates[25], are referred to and recommended as helpful in most major publications on singing in the last decades (Bunch, 1993; Miller, 1996; Thurman & Welch, 2000; Callaghan, 2000; Caldwell & Wall, 2001; McCoy, 2004; Chapman, 2006; Nair, 2007; Smith, 2007). A few studies have investigated the direct application of some of these methods to singing: Alexander Technique could be shown to effect not only an increase of kinesthetic self-awareness, but also an alleviation of vocal strain as well as an increase of vocal resonance through release of neck muscle tension and a better *Use of the Self* (Alexander, 1984, title; Jones, 1972; Lewis, 1984; Lloyd, 1986; Heirich, 2005). Carman (2004) and Kuhn (2006) report of successfully incorporating Yoga in warm-up exercises and Hatha Yoga[26] in particular has been called "a scientific system of mind/body maintenance that can be used to purify and prepare vocal artists for optimal use of their whole person in service to the art of singing" (Moliterno, 2008, p.52). Rao (2001) blends Tai Chi with bel canto vocalization exercises in a "holistic, organic and healthful approach to singing" (p.1) while Nelson (2005) finds great benefit in applying the Feldenkrais method to voice training.

Breathing and support

It has been noted that, breathing is "almost certainly one of the most controversial subjects in vocal pedagogy" (Sell, 2005, p.73) and Bunch (1993) points out that, as the body of scientific literature about the respiratory system increases, so do the discrepancies: It appears that quite simply not everybody is the same and singers and teachers of singing often adhere to tradition or sensations that might not reflect the actual physiological mechanism. As a result "there are almost as many techniques of breathing as there are performers" (Bunch, 1993, p. 23) or, put differently "as many opinions and teaching styles" (in regards to breathing) "as there are teachers" (Keense & Bell, 2005, p.372). It

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[21] Educational discipline developed by F. Matthias Alexander in the 1890s focusing on "the good use of the self" through body alignment and awareness.

[22] Educational system developed by Moshé Feldenkrais around the middle of the 20th century centred on movement, aiming to expand and refine the use of the self through awareness.

[23] Traditional physical and mental disciplines originating in India.

[24] Traditional Chinese soft martial art technique rooted in philosophy.

[25] Physical fitness system developed by Joseph Pilates in the early 20th century focusing on core postural muscles.

[26] Hatha Yoga is a holistic yogic path, including disciplines, postures, purification procedures, gestures, breathing and meditation.

has been shown that (successful) breathing for singing can be highly individual (Hixon, 1991) and that lung-volume use and chest-wall kinematics are unique to each individual (Collyer et al., 2011).

The basic mechanisms of quiet respiration seem quite clear: In inspiration (intake of breath) a message from the brain prompts the diaphragm – a large dome-shaped muscle that separates the contents of the thorax from the abdomen – to contract and flatten somewhat, moving downwards and pulling the lungs with it. The enlargement in the thorax causes a big drop in air pressure in the lungs and this vacuum-like condition causes air to be sucked in. During exhalation, the diaphragm relaxes and the lungs recoil (Bunch, 1993; McCoy, 2004). The diaphragm is thus the most important muscle of inspiration and is always actively engaged in inspiration, being responsible for at least 60 - 80% of increased lung volume. Other muscles of inspiration are the external intercostals muscles running in an oblique direction down toward the midline of the body (McCoy, 2004). In quiet breathing (without phonation) an inspiration-expiration cycle is brief, (about one second for inhalation and three seconds for exhalation (Miller, 1996; Sell, 2005) and it is important to note that in quiet respiration inspiration is an active process whereas expiration is purely passive. In singing however the exhalation phase is much prolonged and the pressure of air setting the vocal folds in motion plays an important role in vocal tone production, making active and skilful control of this usually passive exhalation process a necessity.

Descriptions of breathing techniques abound and a mere overview can be provided here: In "agreement with almost all voice pedagogues" McCoy (2004, p.93) summarizes four principal methods of breath management: 'clavicular'[27] (upper chest), 'thoracic' (lower chest), 'abdominal' (belly breathing) and a balanced breath (a combination of the latter two. Clavicular breathing (characterized by a pronounced lifting of the shoulders) is widely seen in the general population but is discouraged for singing because it offers little control of the out-flowing breath. Thoracic breathing (in which the lower ribcage expands during inhalation) offers significant advantages over clavicular breathing in terms of regulating air pressure. The abdominal breathing method relies solely on diaphragmatic contraction for inhalation; as the diaphragm descends, it displaces the viscera, resulting

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[27] Referring to the clavicle (collar bone)

in a visible outward movement of the abdominal wall during inhalation. Exhalation is caused but contraction of abdominal muscles against the viscera which in turn press the diaphragm back to its resting place. If executed to the extreme, these methods have also been referred to as 'belly-in' (emphasizing maintaining a high, stable ribcage) and 'belly-out' emphasizing maintaining stable abdominal pressure) or the 'up-and-in' and 'down-and-out' methods of support (Titze, 1994; Callaghan, 2000; Collyer et al., 2011). The Italian *Appoggio*[28] method is a combination of the best attributes of thoracic and abdominal breathing – arguably what is above referred to as 'balanced breathing': Inhalation occurs through contraction of the diaphragm and the external intercostals, accompanied by some relaxation of the abdominal musculature resulting in an expansion, extending around the base of the thorax and the middle to lower abdomen. Exhalation is controlled by the abdominal muscles and external intercostals (and possibly the diaphragm) which work in gentle antagonism to control air pressure (Miller, 1996; McCoy, 2004).

A crucial factor for a supported tone is the so-called 'sub-glottic pressure' (the pressure created by the flow of expired air against partially closed (adducted) vocal folds, (Bunch, 1993). Lamperti coined the phrase *lutte* (or *lotte*) *vocale*[29], the basis for the Appoggio breath management which is fundamental to the 19[th]century Italian School. Lutte vocale describes the continuing action of the inspiratory muscles which strive to retain air in the lungs, thus opposing the expiratory muscles (Miller, 1996).

The above described balanced-breathing technique appears to have become, in principle, the predominant approach within large parts of the classical singing community and is, with some variance in the amount of detail offered and some detail itself referred to in most English language publication on voice pedagogy of the recent decades (Sundberg, 1987; Bunch, 1993; Miller, 1996; Thurman & Welch, 2000; Callaghan, 2000; Caldwell & Wall, 2001; McCoy, 2004; Chapman, 2006; Nair, 2007; Smith, 2007). Many recommended breathing exercises tie in with the above mentioned body-alignment schools aiming mainly to increase awareness of the breathing process but there are also breathing schools of a more mechanical/functional nature like the Accent Method[30] which

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[28] Derived from the Italian verb *appoggiare* [to lean on]
[29] Italian: "vocal struggle"

[30]The Accent Method was developed by the Danish Prof Svend Smith (1907-1985) who taught and researched at The Danish Institute for Speech and Hearing. It is a rational voice therapy that was developed

is for instance highly recommended by Chapman (2006) and also gaining ground in Australia.

Teaching singing

The huge increase in physiological and acoustical knowledge in the last decades and its ready availability to all interested parties through bookshops, databases and e-journals translates almost automatically into an imperative for all professional teachers of singing to be reasonably well informed. While articles and papers have by nature always a well-defined subject, there is no clear distinction between voice science and vocal pedagogy in books and it is not always clear if the perspective taken is that of the voice scientist, the singer, the singing teacher or a combination of these. The more scientifically inclined focus on physiology and acoustics, (Vennard, 1967; Sundberg, 1987; Titze, 2000; McCoy, 2004). Others (the majority) offer a combination of physiological and acoustical facts and explanations in various degrees of thoroughness as well as musical and pedagogical considerations (Reid, 1975; Bunch, 1993; Miller, 1996; David, 1995; Davis, 1998; Thurman & Welch , 2000; Callaghan, 2000; Caldwell & Wall, 2001; Ware, 1968, 2004; Kayes, 2004; Chapman, 2006; Nair, 2007; Smith, 2007) and some (Hemsley, 1998; Rao, 2001) avoid biomechanical or acoustic descriptions altogether. The fact that McCoy (2004) called his book *Your Voice: An Inside View. Multimedia Voice Science and Pedagogy* without addressing teaching and learning at all may be taken as indicative to how poorly defined the term 'vocal pedagogy' actually is. The line between information about the vocal mechanism (physiology, acoustics), practical application of this knowledge (voice production/singing) and the actual act of teaching these to the student (pedagogy) is noticeably blurred; considering that the term 'pedagogy' is a synonym for 'teaching' which quintessentially means imparting or communicating knowledge or skill (Macquarie, 2013), one may be excused to expect at least some mention of the latter.

The question of how exactly knowledge is best communicated so that it evolves into a skill owned by the student-singer is only beginning to be studied objectively. There are several different aspects to this problem: Firstly there is a palpable controversy between advocates of factual teaching and users of imagery. The dispute between 'singers' and

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to treat stutterers and people with pathological or weak voices. The Accent Method helps the student to coordinate breath, vocal function, articulation, body-movement and language.

'scientists' originates with Garcia's II presentation of the laryngoscope at the Parisian Académie des Sciences in 1840, which "effectively established an alternate track in the world of elite vocalism, a scientific track that was to grow in importance and influence from that moment on" (Helding, 2007, p.141). Johan Sundberg, arguably one of the most influential voice scientists of our time asks "Why should a successful singing teacher bother about the functioning of the voice?" and then concedes "My view is that science does not have very much to offer" (Sundberg, 1988, p. 11). The eminent voice pedagogue Cornelius Reid[31] saw one of the reasons for the "inevitable decline of the bel canto singing style" in the "entry of the scientific investigator into the field of vocal endeavor", adding that "a large majority of the greatest singers and teachers of singing…have never had the slightest scientific knowledge of anatomy, physics, or physiology". (Helding, 2007, p.142, quoting Reid). He maintains that "great scientists have never been known to have been great singers, nor have scientists ever been noted as the trainers of outstanding singers" Reid (1950, p.178).

The fact that the language of singing teachers is often full of terms borrowed from the worlds of spatiality, forms, shapes, texture, and colour (Thurman & Welch, 2000) particularly when it comes to describing vocal tone quality is at least partly due to the ongoing challenge in matching conventional labels with scientific explanation (Titze & Story, 2002) as discussed above (see *Vocal Tone*). As Bunch (1993, p.82) puts it, imagery and metaphor are prevalent in the teaching of singing because "adequate verbal description for a sensory experience … is nearly impossible through strictly scientific and mathematical terms" as "certain vocal qualities simply defy quantification". Patenaude-Yarnell (2003) states that "for as long as they have been singing, students, performers, and teachers have read, heard, and coined figures of speech and mental images relating to healthy vocal habits … and the sensations felt in producing a beautiful tone" (p.185). Ware (1968) maintains that "since singing involves the mind's ability to re-imagine and replay pitch, rhythm, tone, word, and emotion, the power of mental imagery in singing cannot be overstated" (p.17) and Vennard (1967) describes directional focus imagery as the "prime essential of good tone" (p. 150). The use of visualisation through images to help singers develop a beautiful and flexible tone is also advocated by Skoog (2004) and

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[31] 1911 - 2008

Titze (1997, p.77) recommends the use of "images that contain the right number of physiological buzz-words".

Miller, on the other hand, finds it "not correct to make up imagery about physical and acoustic processes, because those factors are factual" (quoted in Blades-Zeller, 2003, p.87) and is adamant that "today's student wants not flowery imagery but practical assistance" (Miller, 2004, p.196). He further states:

> Vague imagery is insufficient for adequate communication. The teacher may well know what a "rounder" sound means to him or her, but the term itself does not tell the student what "rounder" means nor how to "round" the sound. Asking for more or less space in some particular part of the vocal tract can produce a wide variety of results, most of them not intended. The reluctant student may be perfectly right to resist the pedagogy being presented because it is based on illogical verbiage. Putting the tone "up the back of the throat wall and over into the forehead," "into the masque," "down the back of the throat," "out the chimney on the top of the head," or "out the funnel at the back of the neck," "singing on the breath," and "spinning the tone" are useless admonitions, inasmuch as none of these things can be done (Miller, 1998 , pp. 41-42).

The heat of the argument seems somewhat fabricated because the two approaches are actually not necessarily exclusive of each other. Thorough understanding of the physiological-mechanical processes by which the singing voice is produced might be justifiably deemed indispensable for the teacher, but to find a way of presenting those concepts to students in a way that they can understand is just as necessary (Callaghan, 2000). Knowledge of physiological and acoustic facts does not automatically mean that this knowledge needs to be passed on to the student. The language a teacher chooses – it might be more 'flowery' or more scientific – does not per se say anything about the teacher's own knowledge, and might simply be an acknowledgement of students' different learning styles (Gardener, 1983; Callaghan, 2010).

While one point of the argument is how much physiological and acoustic knowledge is indispensable for the teacher (Miller, 2003, 2004; Sell, 2005; Collyer, 2010; Callaghan 2010), it is quite another if this knowledge is crucial, merely circumstantial or possibly even harmful for the singer. Hemsley (1998,p.22) for instance warns of the danger of "internal feelings, imagination and spontaneity being lost through adjustments and improvements at the purely physical level" as the "whole objective of learning to sing is

to improve the connection between the emotional, poetic, and musical impulses, and the body, which responds by producing appropriate sound" (Hemsley, 1998, p.7). Michael (2010, 2011, 2012) has endeavoured to bring some clarity into the debate by *Dispelling Vocal Myths* in a thus titled series of articles in the Journal of Singing. She takes phrases commonly encountered in the singing studio like "sing from your diaphragm" (Michael, 2011, p. 548), outlines very clearly the real physiological mechanisms involved and interprets what singing teachers might be trying to say with certain metaphors. She concedes that as "we cannot directly sense the 'working parts' of the vocal mechanism, the use of imagery in the teaching of singing is necessary" (Michael, 2011, p. 550) but warns of the danger of creating misconceptions. In order to find out how deep this theoretical rift actually runs in actual teaching practice, Ware (2013) conducted a survey in the USA and Canada amongst members of the College Music Society who identified as voice pedagogues. She found that a substantive majority of teachers (76%) actually attested both science and imagery to be 'very helpful' or 'helpful' and 83% reported that "a combination of imagery/imagination and voice science/mechanics" had proven most successful in their studios (Ware, 2013, p. 415). Yet more than half (56%) of respondents believed that they were in a minority and that the singing teacher community remained philosophically divided in the science versus imagery question.

An interesting way to denote and communicate physiological concepts to the student has been found by Jo Estill[32] (Estill & Colton, 1979; Caire & Klimek, 2012): The different functions and mechanisms of the larynx in singing are being explained and learned with the help of hand gestures that somewhat mirror the mechanisms in question. This allows teachers to remind students to use a particular function by showing them the respective hand sign/gesture. The original system is reserved for Estill trainees who may adopt and modify the principle (Kayes, 2004). It appears however, that the gestures are used here mainly to demonstrate the respective functions and not in order to facilitate them.

It has been observed that "learning science has not been applied with any system or rigor to voice training, whilst voice science has become an integral part of vocal pedagogy (Verdolini (2002, p.47). Research into preferred training styles in voice studios (in the

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[32] (US) American singer, singing voice specialist and voice researcher (1921 – 2010). Estill voice training is a program of developing vocal skills based on deconstructing the process of vocal production into control of specific structures in the vocal mechanism

US) strongly underlines the notion that knowing 'what' to train does not necessarily translate directly to 'how' to train it (Helding, 2008). Although conceived in relation to teaching in general, the types of knowledge necessary for the expert teacher defined by Shulman (1987, 1999) seem for instance eminently suited to be applied for the teaching of singing. He distinguishes: Content Knowledge (knowledge of the subject matter to be taught), Pedagogical Knowledge (how to teach) and Pedagogical-Content-Knowledge (teaching expertise particular to the content) (Callaghan, 2010). In order to shed light on this difficult issue it has been found necessary to consider learning in general.

Learning (a brief excursion)

Learning is commonly defined as "knowledge acquired by systematic study; the act or process of acquiring knowledge or skill" and also the "modification of behaviour through interaction with the environment" (Macquarie, 2013). However, from the psychologist's point of view, learning is actually "an extremely difficult concept to define" (Hergenhahn & Olson, 1993, p. 2), and is somewhat laboriously described as "all relatively permanent changes in potential for behaviour that result from experience but cannot be attributed to temporary body states such as those induced by illness, fatigue or drugs" (Hergenhahn & Olson, 1993, p.7).

A system to measure the goals of learning was put forward by B. Bloom in 1956 (Bloom et al., 1956). Known as *Bloom's taxonomy,* it showed the stages of learning as *Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation,* and is still relevant today in its revised version*: Remembering, Understanding, Applying, Analysing, Evaluating and Creating* (Anderson, 2001). According to Swiss developmental psychologist Jean Piaget[33] (1929) we all start out perceiving the world entirely through our five senses in what he called the *sensorimotor stage[34]* and all basic motor skills acquired up to around age seven require no logical thinking at all. Up to around age 12, all learning appears to work best in conjunction with practical aids and only then is the human able to acquire knowledge solely through reasoning. Other influential learning theorists are for instance L. S. Vygotsky[35] , J. Dewey[36] and C. G. Jung's[37] whose theory

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[33] 1896 – 1980
[34] The first of four stages in Piaget's theory of cognitive development.
[35] (1896 – 1934) Russian psychologist.
[36] (1859 - 1952) US American philosopher, psychologist and educational reformer.
[37] (1875 – 1961) Swiss psychologist.

of *Psychological Types* (Jung, 1921) laid the ground for later extensive research into the theory and praxis of learning (Hergenhahn & Olson, 1993; Catania, 1998; Lefrançois, 2000; Taylor, 2008; Merriam, 2008).

The notion that "individuals perceive, organize and process information differently on the basis of either learned or inherited traits" (Chambel & Guimarães, 2009, p.1369) gave ground to various theories of learning styles, also referred to as "cognitive styles" or "learning strategies" (Cassidy, 2004, p.420; Hartley, 1998). A sense of just how complex this topic is maybe gained when Cassidy's *Learning Styles: an overview of theories, models, and measures* (2004) details some 23 models of either "cognitive-centred, activity-centred or personality-centred" learning approaches (Cassidy, 2004, p. 424) propounded between 1962 and 2001.

Closely related to theories of learning is the theory of multiple intelligences proposed by Gardener (1983) which shattered the "IQ myth that confused logic with intelligence" (Chambel & Guimarães, 2009, p.1370). Gardener argued that intelligence as it was traditionally defined, did not sufficiently encompass the wide variety of abilities humans display. He suggested that each individual had a set of various intelligences determining the ease or difficulty with which information presented in a certain manner can be learned. Gardener (1983, 1993) distinguished seven intelligences and later added two more:

1. Verbal-Linguistic: The ability to use words and language;
2. Logical-Mathematical: The capacity for inductive and deductive thinking and reasoning, as well as the use of numbers and the recognition of abstract patterns;
3. Visual-Spatial: The ability to visualize objects and spatial dimensions, and create internal images and pictures;
4. Body-Kinesthetic: The wisdom of the body and the ability to control physical motion Musical-Rhythmic: The ability to recognize tonal patterns and sounds, as well as a sensitivity to rhythms and beats;
5. Musical: High sensitivity for rhythm, tone, pitch and music;
6. Interpersonal: The capacity for person-to-person communications and relationships;
7. Intrapersonal: The capacity to introspection and self-reflection; a deep understanding of the self;
8. Naturalist: Connection to and sense for natural environment and living things;
9. Spiritualist/Existential: Connection to and sense for religion and 'ultimate' issues.

Regarding this last 'intelligence', Fawson and Woods (2011) write that "Gardener strongly believed that this type of intelligence existed but had not sufficient evidence to support it" (p.42).

Gardener believed that every person possessed – albeit to different degrees – all eight (or nine) intelligences and that all intelligences could be developed to adequate competency in most people (Honeybourne, 2006). His theory has been criticized as inviting over-simplification and the assumption that people could be identified by one particular intelligence (Klein, 1997). It has also been argued that the multiple intelligence theory was centred around the content of learning in distinct fields, whereas learning styles focus on the process of learning (Silver et al., 2000).

A learning style model that ties in well with Gardener's theory is the broadly used VAK (later VARK) system, developed by the New Zealander Neil Fleming in 1987 (Chambel & Guimarães, 2009; Cherry, 2012). Using main sensory receivers or modes to determine dominant learning styles, it distinguishes: *Visual learners* who do best with visually presented material; in the original model this group included two sub-channels: spatial (preferring charts, demonstrations, videos etc.) and linguistic (preferring written material). In 1995 Fleming revised the model and gave these two concepts the same level of importance by renaming visual-linguistic into *'Read-Write'* (preferring written material) resulting in the VARK (Visual, Aural, Read-Write, Kinesthetic) model. The differentiation between visual-spatial (Visual) and visual-linguistic (Read-Write) learners is more in line with the above presented theory of multiple intelligences. *Auditory learners* do best with aurally presented material. There is growing evidence that there exists another differentiation within this group in that there are "those who learn best what they say out loud (talkers) and those who do better when listening to others talk (listeners)" (Chambel & Guimarães, 2009, p.1373). *Kinesthetic learners* do best while touching and moving; whilst Chambel and Guimarães, (2009) identify two sub-channels within this group: tactile (perceptible to touch) and kinesthetic (aware of one's own body, adaptability to movement), the terms tactile and kinaesthetic are also used interchangeably (Cherry, 2012).

The existence of distinctly different learning styles has also been underlined by brain-imaging technologies that have helped demonstrate that different learning styles use different parts of the brain (Tileston, 2005) but a more detailed account of this field of investigation would lead too far from the core of this study. Every teacher of singing will

however have experienced that not every student can be taught using the same method – a fact that suggests that differences in learning styles may be just as relevant for voice teaching they are for teaching and learning in general.

In the context of this present study, two aspects of learning are of particular significance: The first arises from considering singing as a biomechanical task involving the coordination of highly complex motor functions which suggests parallels between learning to sing and general motor skill acquisition. Secondly there is what Wis (1993, p.23) calls the "role of the body in knowing", that is the role of movement in the acquisition of knowledge amidst mounting evidence that "movement enhances and informs perception" (Rosenbaum, 2010, p. 29).

Motor-learning: the body learns

One might think that differences in learning styles as discussed above were also recognized as relevant for the learning of motor and sport skills yet surprisingly little research seems to have been done in this area. Indeed, one of the few studies found emphasises the scarcity of research into the effectiveness of learning style based instruction in the acquisition of motor skills and highlights the need for a "learning style assessment tool specific to motor skills" and calls for "a test of the learning style hypothesis" (Fuelscher, et al., 2012, p.69).

There is extensive evidence that the brain uses discrete systems for different types of learning and that motor learning is distinct from 'book learning' (Damasio, 1989, 1994; Zola-Morgan et al., 1982; Taylor et al., 2008). According to many experimental observations "motor learning belongs to a system or type of process that does not require awareness and specifically awareness of the mechanical principles being learned" It has also been shown that principles found for other physical skills apply to voice as well (Verdolini, 1997, 2002; Helding, 2007, 2008).

Despite this evidence there is still relatively little scholarly enquiry specific to singing and the acquisition of motor skills (Nisbet, 2010). Yet, the growing interest into the field is palpable in an albeit limited number of articles (Verdolini, 1997, 2002; Helding, 2007, 2008; Bergan, 2010) and at least one doctoral thesis (Maxfield, 2011). Motor skill acquisition distinguishes between factors that produce only temporary changes in performance and the relatively permanent changes in performance characteristic to learning (Proctor & Dutta 1995). Motor learning has been defined as "a set of internal

processes, associated with practice or experience, leading to a relative permanent change in the capacity for skilled behaviour, a state sometimes termed habit" (Schmidt & Lee, 2005, p.320). It appears that a number of points raised in motor learning research are of great pertinence for voice training: As much depends on the student's developmental stage, a three-phase model of motor learning has been developed by Fischman and Oxendine (2001): Novices start out in the cognitive phase of motor learning, the *what-to-do* phase of learning (Verdolini, 2002) that relies heavily on listening and observation; information about and some attention to biomechanical mechanisms is unavoidable in this phase in order to establish general motor skills (Nisbet, 2010). In the much longer associative phase, the *how-to-do-it* phase (Verdolini, 2002) the learner is aware of the biomechanics of his/her instrument without constantly focusing on it, relies on feedback from a teacher and must practice the motor skills to acquire accuracy and consistency (Fischman & Oxendine 2001). In the autonomous phase (which might be called *can-do* phase) learners/singers are able to use their skills at an optimal level as they shift from reliance on cognition to trust in their skills (Schmidt & Lee, 2005). Teachers should be able to identify these different stages and to adjust their teaching approach accordingly (Poolton et al., 2005) but, as other factors like a student's learning style (Gardener, 1983) also play a role, finding the optimal teaching method will remain difficult. Although no publications could be found to corroborate this observation, there seem to be obvious parallels between this three stage model and the revised Bloom's taxonomy discussed above: both knowledge and skill acquisition happen in distinctive stages that could be marked on a continuum.

A crucial role in motor learning has, particularly through the work of Gabriele Wulf, been found to be played by the *attentional focus*: There is growing evidence (Hodges & Lee, 1999; Wulf et al., 1998; Wulf & Prinz, 2001; Wulf & Weigelt, 1997; Ziegler 2002; Wulf, 2007; Wulf et al., 2010) that using instruction to direct the learner's attention to the biomechanics of a task to be learned potentially disrupts both performance and learning. In fact "learning can be greatly enhanced if references to the performer's movements are avoided as much as possible and if their attention is instead directed to the desired movement effect" (Wulf & Prinz, 2001, p. 657).

Verdolini, (2002) propounds that "motor learning belongs to a system or type of process that does not require awareness and specifically, awareness of the mechanical principles being learned" (p.48) and goes on:

> Not only is it evident that motor skills are readily acquired without awareness of mechanical principles, but furthermore, several studies have indicated that explicit verbal instructions about mechanics are useless or even harmful to learning. All in all, we conclude that there is little basis in the scientific literature to support the use of verbal instructions about the mechanics of singing or any other motor behaviour (p.48).

There is mounting evidence that attention to physiological and biomechanical facts might actually inhibit performance and the presentation of a large explicit knowledge base to a student-performer is actually not the best method of acquiring skill (Poolton et al., 2006). This certainly seems like a direct contradiction to Miller's (2003, p.318) creed that a "singer's attention should be directed to what local events are prohibiting freedom in specific areas". It appears that science is catching up to and reaffirming anecdotal evidence of many singers' almost fearful aversion to directing their attention to the biomechanics of what they do, like Cornell McNeil[38] describing his sensations when singing: "if you're talking about a column of air which is free to vibrate, your vocal chords and your larynx have absolutely nothing to do with it and you should never think about them at all...You leave them alone...It's automatic and I don't like to think about it!"(Hines, 1982, p.152). Similarly Reid (quoted by Cherland, 2003, p.59) reportedly insisted that is was "harmful for the singer to think about singing as something they consciously do" and that "students must willingly abandon concentration on any individual physical techniques they have learned, so that they can sing without inhibition". Helding, (2008) writes that alongside evidence that "directly issued mechanical commands, such as 'lift your soft palate', or 'engage your abdominal muscles', potentially inhibit learning" it has been found that also "the use of imagery in voice teaching has the potential to induce the same negative effect, and for the same reasons; it is thought that imagery meant to circumvent direct mechanical commands ironically draws attention to the movement itself, and thus has the potential to depress learning" (p.421).

Both Helding (2008) and Verdolini (1997, 2002) raise another important point which until recently has gotten very little attention in the vocal pedagogy literature: The fundamental

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[38] (1922 – 2011) renowned American baritone

difference between temporary changes in performance and actual learning – that is relatively permanent changes in performance typical to motor skill acquisition – (Proctor & Ducca, 1995) is also evident in singing: Marcus (2004, p.99) emphasizes that "the ability to learn starts with the ability to remember. An organism can learn from experience only if it can rewire its nervous system in a lasting way; there can be no learning without memory". The crucial point is that "the learner cannot be said to have learned a thing if it cannot be repeated" that is if something is "truly learned is evidenced by its repeatability" (Helding, 2010, p.74). And there is even evidence that "many manipulations that enhance immediate performance depress long-term learning" (Helding, 2008, p.314), an effect that has been dubbed the 'master-class syndrome' (Helding, 2010)

The role of the body in knowing: the body helps learning

The role of body-movement in the acquisition of knowledge also described as the "role of the body in knowing" (Wis, 1993, p.23) is by no means an undisputed one. The argument is rooted in a far-reaching philosophical discussion which can only be touched on here. On one side of the body-mind interrelation is the Cartesian[39] philosophy that sees body and mind as two separate entities, the mind as the only reliable existence ('I think - therefore I am') and the body as a machine, entirely ruled by the mind and the world as a mere extension of the mind. From this viewpoint, the body serves necessary functions, but it is the mind alone that reigns supreme in the acquisition of knowledge (Johnson, 1987). As influential as Descartes' ideas were and still are, they were from the beginning opposed by empiricists such as Hobbes[40] and Locke[41] (Melchert, 2002) and later particularly the French phenomenological philosopher Merleau-Ponty[42] who stated that we "come to know ourselves and our world via our body before we have any conscious objective view of our bodies or ourselves", and "the body is our general medium for having a world" (Merleau-Ponty, 1962, p.33) or, as Wis (1993) puts it, we "think through the body before we think about the mind" (p.33).

This notion is also corroborated by modern neuroscience suggesting that the brain does not simply manage or execute the body's activities but that we literally "think with our bodies" (Seitz, J., 1993, p.50). Seitz directly challenges Descartes with the statement "I

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[39]after the French philosopher René Descartes (1596 – 1650)
[40]1588 – 1679, English philosopher
[41]1632 – 1704, English philosopher
[42]1908 – 1961, French phenomenological philosopher

move - therefore I am" and continues "it's time to jettison antiquated ideas about the relationship between mind and body. Your body "thinks" just as much as your mind" (p.51). Assigning a new level of relevance to movement, Seitz, J. (1993, 2002, 2005) referring to Gardener's theory of multiple intelligences (see above) singles out kinesthetic intelligence as particular important for learning and suggests that there are "three core cognitive components of kinesthetic intelligence: motor logic, kinesthetic memory, and kinesthetic awareness" (Seitz, J. 1993, p.55).

Growing knowledge about the links between the body and the brain appears to warrant the notion that the connection is a two way street – not only are bodily movements controlled by specific parts of the brain, but they in turn also feed back into other specific areas of the brain potentially influencing thoughts and emotions as well as vegetative, reflexive inner mechanisms (Damasio, 1994; Seitz, J., 1993, 2002, 2005; Rosenbaum, 2010). There have been huge advancements in the field of functional mapping of the human brain, namely via functional magnetic resonance imaging (Seitz, R. et al., 2000). The human brain, weighing less than six pounds, can store more information than all the libraries in the world. Communicating with itself through billions of neurons and their connections, its functions depend on the coordinated activities of individual neurons (Taylor et al., 2008). According to Damasio (1994) the *cerebellum* at the back of the skull and the *basal ganglia* (a group of nuclei, situated at the base of the forebrain) are critical for the acquisition of motor skills, whereas the *hippocampus* is integral to the learning of facts and spatial navigation. In the lower half of the brainstem, the *medulla oblongata* controls automatic functions like respiration, heartbeat like reflexes. Breedlove et al., (2007) speak of a "hierarchy of Movement Control: The motor cortex receives information from other cortical areas and sends commands to the thalamus and brainstem, which pass commands to the spinal cord. Both the cerebellum and the basal ganglia adjust these commands" (p.325).

Research has shown that the brain uses discrete systems for different types of learning (Taylor et al., 2008). The realization that most activities are a combination of different tasks all of which are being controlled by different parts of the brain, gives us an inkling as to the complexity of the learning process. Apart from neuroscience there is another scientific discipline that concerns itself with the impact that movement might have on the brain and the interconnection between thinking and moving: Gesture-studies is a sub-

channel of psycholinguistics that deals with various aspects of gestures and body-language.

Gesture Studies

Oratory gestures are an age-old part of human communication and were taught and skilfully employed for instance by the Greek and Roman orators. The types of gestures used and taught in the art of oratory were carefully, intentionally and consciously produced and gesturing as a useful skill for orators continued to be of interest until the late 19th century.

The psychology of 'nonverbal behaviour' began to be of greater interest with the emergence of psychoanalysis around 1900. Familiar to everybody, yet strangely mysterious, 'body language' became a fashionable term particularly in the 1970s. The notion that most of our 'body talk' is happening without our being fully aware of it or even against our will gave rise to more populist books such as *Body Language* (Fast, 1970), *The Body Reveals* (Kurtz & Prestera, 1976) *Body Language of Sex, Power and Aggression* (Fast, 1977). The reader jumps at the implied promise that being able to read someone's body language will be tantamount to reading their thoughts and feelings and that by learning at least parts of the body's vocabulary we will be able to manipulate others without their conscious knowledge. Other studies suggest that there are not only extensive cultural variations in the use of gesture but also "some quite interesting sex differences…for instance greater expansiveness in male gestures" (Argyle, 1988, p.202) and that individuals have "characteristic gestures or gestural styles" (p.200). As Beattie (2003) points out, some sensational studies (Mehrabian, 1967; Argyle, 1988) seemed to prove that what was said was completely overpowered by how it was said. This warranted the theory that body language and verbal language did not complement but compete against each other. Beattie (2003) however points out that some studies that led to somewhat questionable results like "nonverbal behavior is thirteen times more powerful than verbal language in the expression of interpersonal attitudes" (Beattie, 2003, p.27) were flawed by a methodology that used rather manufactured settings which were likely to induce the study subjects to act and react in unnatural ways.

The general perspective regarding the role of body-language from 1970 until quite recently was that humans used two quite different 'sets of languages' for communication: verbal language and nonverbal communication. The idea was that whilst verbal language

was largely used to convey factual information, body language was used to convey our emotional state (McNeill, 1992, 2005). The two were thought to act quite separately reflecting the above mentioned Cartesian dualism[43] and research of the time showed that in the communication of interpersonal attitudes, nonverbal communication far outweighed spoken language. This notion is however rejected by more recent studies (Beattie, 2003; Goldin-Meadow, 2003; Kelly et al., 2008) as the depth of the interconnectedness of thoughts, emotions and movement is becoming more apparent.

There have been various attempts at compiling dictionaries of gestures (Morris, 1994; Bäuml, 1997) which give interesting background information as to various gestures' origin and how they may change their meaning in different cultures. Gesture studies began to emerge as a recognised field of study as a result of certain developments in linguistics (Goldin-Meadow, 2003; Kendon, 2004; McNeill, 1992, 2000, 2005). Since 2001 there has been a dedicated journal (*Gesture*) and, since 2002, an *International Society for Gesture Studies* exploring the origin and role of gesture in human communication. It could for instance be shown that gestures carry a significant percentage of information in a conversation, information that is lost when the gesture is not seen (Beattie, 2003; Goldin Meadow, 2000, 2003, 2004) or more carefully put, that they provide a "significant, moderate benefit to communication" (Hostetter, 2011, p.297).

Apart from the communicative power of gestures there is the already mentioned aspect of how gesturing may affect the way we think. Numerous psychological studies show for instance that gestures are also being produced when the listener cannot see the speaker (for instance on the telephone) and that even congenitally blind people gesture – even when talking to another blind person (Goldin-Meadow, 2003, p.141). All this suggests that, apart from conveying information, *Gestures* indeed *Help Us Think* (Goldin-Meadow, 2003, title).

Research in neurology and advances in the above mentioned brain mapping enable researchers to trace the change in brain activity whilst moving and gesturing. This might in the long run help solve the mystery why and how the way one moves actually feeds back into the brain (Leiner et al., 1993). There is ground to the suggestion that the brain

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[43] in essence: the separation of mind and body

does not simply manage or execute the body's activities but that we literally 'think with our bodies' (Seitz, J., 1993). Greater insight into physiological processes has confirmed the hypothesis that for instance by simply by making the facial expression you help the development of the feeling associated with the expression. So you can 'think' yourself happier by changing the expression on your face, which changes how you feel (Seitz J., 1993). The exact mechanisms underlying this effect have however not yet been discovered and although in the last 20 years "Neuroscientists have made impressive advances in understanding the microscale function of single neurons and the macroscale activity of the human brain", the "mechanisms of perception, cognition, and action remain mysterious". Research initiatives like the Brain Activity Map are designed to gain further understanding "how the brain produces perception, action, memories, thoughts, and consciousness" (Alivisatos et al., 2013, p. 1284; Perkel, 2013).

The notion that gestures may have even further reaching effects than previously acknowledged has also found entry into the more populist *Definite Book of Body Language* (Pease, 2006) in which it is alleged that "crossing one's arms whilst listening to a lecture" results in a "significant drop in retentions of what was taught as well in a more critical and negative attitude towards the lecturer" (Pease, 2006, p.91). Unfortunately this rather sensational finding is mentioned only in passing without further details of the study in question.

Choral Rehearsal

The material on choral rehearsal and conducting practice shows that, like in voice teaching (see *Vocal Pedagogy* above) imagery (metaphors, analogies and similes) are constantly used to communicate musical concepts. The use of gesture goes hand in glove with spoken language and often a metaphor is used to create a bridge between a theoretical problem and a movement (Skoog, 2004). Uniquely suited to transport musical concepts, not to speak of the necessary of communicating over a noise level, conducting gestures play an equally large role in expressing and communicating musical ideas (Skadsem, 1997; Stollak, 1998; Peterson, 2000).

A number of studies (Sousa, 1988; Cofer, 1998) were carried out to determine if commonly used conducting gestures were 'emblematic' gestures that is movements which had "one unmistakable meaning that would be spontaneously understood by a majority of onlookers" (Cofer, 1998, p.361). Cofer argued that this definition was to

include the standard repertoire of non-verbal conducting gestures because instrumental conductors made use of musical conducting emblems. The study demonstrated that the recognition level depended on the age and experience of the performer and that conducting gestures were a mix of emblems that are spontaneously understood by a majority of people and gestures whose meaning required explanation. In his essay *The Art of Conducting*, Leonard Bernstein emphasized that the most important skill of a conductor was to communicate all his knowledge and ideas to the orchestra "through his eyes, arms, face, fingers and whatever vibrations may flow from him … His gestures must be first and always meaningful in terms of the music" (quoted in Wis, 1993, p.133).

While some discussion focuses on gesture as a means of communication that is gesture employed by the conductor or choral instructor, other studies look at gesture and body movement as learning tools. Wis (1993) attempted to find a theoretical ground for the practical use of gesture in a choral context in her doctoral thesis *Gesture and Body Movement as Physical Metaphor to Facilitate Learning and Enhance Musical Understanding in the Choral Rehearsal.* She defines metaphor as "a concrete reference for an abstract concept" and goes on to state that "metaphor is always rooted in a sensory origin; without physical experience, metaphor and metaphoric thought could not exist" (p.107). The term 'physical metaphor' is used to denote gestures, taken from other life spheres, for instance from the context of sport, that can be used to describe musical and vocal concepts. In a similar study, Hibbard (1994) found that the use of movement as an instructional technique with choral singers was indeed an effective pedagogical tool when certain conditions regarding nature and execution of those movements were fulfilled.

In order to better understand those researchers' respective theories, Chagnon (2001) thoroughly examined the empirical studies by Hibbard and Wis and confirmed that movement could be used to modify musical qualities such as dynamics, rhythm, tempo, articulation, and intonation as well as to improve vocal skills such as breath management, posture for singing, and the projection of tone; movement also helped to refine qualities associated with choral singing such as diction, balance, blend, timbre and textual interpretation. Physical activities were further found to heighten the concentration of individuals and unify a group's focus on a task at hand, promoting a greater depth of learning (Chagnon, 2001). Bailey (2007) reports from a choral festival where she "watched kinesthetic exercises in the choral rehearsal strengthen vocal technique and musicianship skills and enhance artistic expression" (p.22) and Park (2009) reports from

the successful incorporation of Tai Chi into choral warm-ups. Similar results are found by Crosby (2008) who finds great benefit in applying Jacques-Dalcroze Eurhythmics to choral rehearsal and states: "teachers must encourage movement in the rehearsal! Kinesthetic movement of the external creates a positive connection to the internal" (p.31).And as mentioned above under *Vocal Pedagogy*, Rao (2005) incorporates Tai Chi movement practices into her vocal teaching both with choirs and solo voice students but she is one of very few who openly do so as all these individual and sometimes pioneering incorporations of movement into choral rehearsal seem to be only rarely transferred into solo-voice training.

Music Education

Music education pioneers like John Curwen (1816-1880), Emile Jaques-Dalcroze (1865 – 1950), Zoltan Kodály (1882-1967) and Carl Orff (1895-1982) found, each in their own individual way, that learning was most effective when based on a physically experience; each developing their idiosyncratic methods, they all used gesture and/or movement as key elements to teaching music. Dalcroze developed teaching strategies that incorporated kinesthetic movement into the musical learning paradigm. He championed natural gestures and whole-body movement to connect students' daily experiences with their musical learning (Crosby, 2008) as he found that "the acuteness of our musical feelings depended on the acuteness of our bodily sensations" (Finley, 1971, p.21). Dalcroze's teaching method, known as *Eurhythmics* [44], is a system of rhythmic education that uses bodily movements to represent music (Schnebly-Black & Moore, 1997). According to Leeds (1985), Dalcroze developed his method out of the conviction that traditional teaching methods were wrong both in their objectives and in their methods after he realized that his tertiary music students could not really internalize rhythm and other musical elements. He thought that instrumental technique should not be taught as an end in itself but only as a means to artistic expression and with the aim to educate musically developed human beings. Focusing on tone and rhythm as the two basic elements of music, Dalcroze found that movement was an ideal means by which the body could learn to understand music and started to write whole 'gesture songs' for his programs. These were the first steps in a method designed to give the body training that was highly refined

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[44] Greek, literally: good flow.

and detailed in its immediate response to every element of music (Jaques-Dalcroze, 1921; Ingham, 1913; Crumpler, 1982). In this way, although rhythm plays a central role in Dalcroze understanding, his method is far from being only a system of rhythmic education. Movement and gestures are also employed in relation to phrasing and the emotional content of the music (Spector, 1990; Caldwell, 1993, 1995).

Whilst Dalcroze regarded movement as central to music learning, Kodály employed movement rather as an adjunct tool in his method. He used for instance 'movable-do' *solfège*[45] and hand signs which are performed during singing exercises to provide a visual aid to musical skill acquisition (Kodály, 1965). Kodály had adopted the hand signs devised by Curwen that did however not retain the basic understanding of the supremacy of the tonic in Curwen's earlier system. John Curwen had developed the 'Tonic Sol-fa' in the 1840s, basing his method again on several other English and Continental ones, mainly the 'Norwich Sol-fa' of Sarah Glover[46] (Southcott, 2007) who did however not use gestures in her system. It is arguably from Curwen's ideas that all subsequent methods of using gestures to denote grades of scales have grown (Stevens, 2008). And more recent studies like Liao's (2007, 2008) prove anew that gestures help children pitch in their singing. Apart from the evidence that movement can be a great tool for internalizing musical concepts, there is strong evidence regarding the huge benefit of movement and music for the physical, mental and intellectual development of children (Baney, 1999, Levinowitz, 2004; Ferguson, 2005).

Carl Orff developed his own system of early childhood music education. The system known as Schulwerk began in 1924 when the composer Carl Orff and the dance specialist Dorothee Günther[47] opened the *Güntherschule* in Munich as an educational centre for music, dance, gymnastics and rhythmic movement. Orff and Günther found there was no adequate elementary music for the dance schools and set out to fill that gap by finding and creating a music that "begins in movement" (Fassone, 2006, p.3). Orff Schulwerk is based on a principle attributed to the Chinese philosopher Confucius[48] and adopted by Orff: "Tell me – I forget. Show me – I remember. Involve me – I understand" (Saliba,

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[45] Also *solfeggio* (Ital.) or *sol-fa* is a method to teach musical pitch.
[46] 1786 – 186
[47] 1896 – 1975
[48] 551 – 479 BC

1991, p.10, quoting Orff). Opposed to all strict methodology, Orff aimed to enhance creativity in the child based on the belief that every child was to some degree an artist (Smith, 1979; Shamrock, 1995). In his approach traditional music is assimilated and worked with always on the basis of elemental, easy to grasp structures. Orff's 'elemental' music does not mean easy music, but music that utilizes basic elements (Plummeridge, 2006).

Although his work was not limited to and not even primarily focused on music education, some ideas of the Austrian philosopher Rudolph Steiner[49] also bear mention in this context, namely his expressionistic art form (and therapy) *Eurythmy* (not to be confused with Dalcroze's Eurhythmics, see above) in which music and poetry were expressed in specifically designed whole-body movements (Steiner, 1977, Gallegos, 2013).While Eurythmy was part of Steiner's *anthroposophical* philosophy[50], it may also be seen in the context of other expressionistic art forms involving movement including Rudolf von Laban's[51] improvisational dance theatre. Laban created a notation system of recording human movement that became known as *Labanotation* (used in the US and England) or *Kinetography Laban* (used in continental Europe) which was mainly based on spatial rather the anatomic analysis (Laban, 1975; Schwarz, 1975). It should be noted that Laban's system – though one of the most comprehensive systems of notating movement – approaches movement from a very different angle as the present study. The wide field of movement in dance in general has been felt to lie outside the focus of the present enquiry and has thus not been covered in this literature review.

Acting

A different viewpoint again is that of the actor who knows intuitively – there is no scientific research into this – that a person's body language, namely gesture and posture are the key to portraying a character (Bandelij, 2003). The attempt to come up with a workable technique to repeat meaningful characterization through body language led the French musician and teacher Delsarte[52] to create his 'System of Gestures'. On the basis of years of diligent observation and study, he created a series of elaborate pictorial

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[49] 1861 - 1925
[50] Anthroposophy postulates the existence of an objective, intellectually comprehensible spiritual world accessible to direct experience through inner development
[51] 1879 – 1958, Hungarian dancer, choreographer and dance-theorist
[52] 1811 - 1871

descriptions of gestures which – inadvertently and through misuse– turned out to be just as mechanical as those he had originally criticized (Kirby, 1972; Dasgupta, 1993).

The Russian actor Stanislavsky[53] revolutionized the acting profession by using the "the reliving of a past experience, which he called *affective memory*" (Ebert, 1989, p.25). Although he put much greater emphasis on analysis and mental work in approaching a character, he also used the method of 'physical action' to evoke emotional response (Cole, 1947). His contemporary Chekhov[54] (1953) developed a method in which close study of different ways of moving, using the whole body to express emotions such as joy, fear or anger in resulted in 'psychological gestures'; these were then in turn used to evoke the appropriate emotion and this emotion would then shape the way one spoke and moved. The method of the 'psychological gesture' gives the actor a great tool with which to access emotion at will.

It is notable that Chekhov's technique deliberately uses the connection between gesture and emotion not only to express but to access these emotions. Although his method is not always followed literally, especially Chekhov's physical exercises have become almost standard repertoire of acting classes in a more holistic approach (Citron, 1983; Balk, 1985). It is intriguing and gratifying to find recent research both in neuroscience and gesture-studies (see above) confirm the purely practice and experience-based work of the utterly unscientific Chekhov (1953).

Conclusion

The topic of gesture and body-movement as teaching and learning tools yields a huge body of literature and sometimes, as in the case of dedicated vocal pedagogy literature, it is more their absence which is notable. The long tradition of incorporating gesture and body movement into music, singing, teaching and acting rests mainly on intuition, empirical knowledge and observation. Scientific research for instance in the relatively new disciplines of neuroscience and motor-learning have confirmed some long held assumptions and hypotheses (Rosenbaum, 2010) while questioning others. Some purely practical approaches such as for instance Chekhov's are satisfyingly affirmed by proof

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[53] 1863 - 1938
[54] 1891 - 1955

that particular gestures can indeed generate particular feelings (Katz, 2002; Seitz, 1993, 2005).

Applying emerging insights regarding attentional focus in motor learning to singing and voice teaching appears to justify teaching methods that turn the singer's attention away from the bio-mechanics of voice production. Whilst gesture and body movement are integral elements of early childhood music education particularly methods related to Dalcroze' Eurhythmics, Orff Schulwerk and Kodály, they appear to be not prominently featured in general music education – at least as far as today's Australia is concerned – and are hardly ever used with adult students or in a one-on-one setting. The use of gesture and body-movement in relation to the teaching of singing is becoming more established in the context of choral singing with a number of encouraging studies in the area. Movement and gesture are here usually used to depict, describe, illustrate and communicate musical or dramatic features by both the teacher and the student with little emphasis on singing technique or vocal tone. It is notable that the Acting profession is the only discipline that makes explicit and deliberate use of gesture and body movement both as a means of expression and communication as well as a tool for evoking feelings and moods in the actor him or herself.

The large amount of literature in vocal pedagogy and voice science, yields precious little mention of gesture and body-movement as teaching and learning tools in the context of tone production although the body, namely the issue if its proper alignment is a very prominent topic. Gestures are rarely mentioned as tools for communicating singing related concepts in the teaching of singing although the author could show in a previous study that voice teachers definitely used gestures in this capacity (Nafisi, 2007, 2008, 2013). Gestures and body movement are equally rarely mentioned as learning tools and movement in the student is – apart from relaxation exercises prior to singing – generally discouraged.

There is virtually no material on the effect of gesture and body movement on the tonal quality of the adult singing voice; the idea that the well-established communicative power of gestures might actually extend to communicating with one's own body is only just beginning to take shape in other disciplines and has not yet found entry into mainstream publications on vocal pedagogy. And yet, as the following two chapters will show, gestures and body-movement are rather prevalent in the singing studio. The next chapter starts out with presenting a terminology depicting the movements found in the voice

studio which was conceived in order to facilitate the design of a survey-questionnaire. It will then proceed to report the first part of a survey undertaken in Germany and Australia to assess voice teachers' teaching practice regarding their use of gesture and body-movement.

Chapter 3: Survey: Terminology, Design and General Data

The previous chapter has provided an overview of the main areas surrounding the subject matter of this study. This chapter will give an account of the author's system of categorising the gestures and movements encountered in the teaching of singing. It will further outline the design of a survey that has been conducted Germany and Australia amongst professional voice teachers to gain information about their use of gestures and body-movements in their teaching.

In order to establish the relevance of this study, it was necessary to prove that gestures and body-movements were sufficiently prevalent tools in the teaching and learning of singing to warrant closer investigation. A survey amongst singing teachers appeared to be the most logical way to go about this task: Surveys are effective means to learn about a population's attitude towards and/or behaviour in regards to a particular issue and are thus employed for descriptive research or as a data collection method within other research designs. The survey design depends on the purpose of the survey and the research questions. A so-called 'simple descriptive survey' gathers information about one specific group only whereas a so-called 'cross sectional survey' uses sample groups who are seen to be representative for other population with similar characteristics (Mertens, 1998; Fraenkel & Wallen, 2000; Denscombe, 2003). The identification of the target group depends greatly on the research questions and is of crucial importance for the success of the survey. While some questions might be best addressed to a large and very diverse population, others are only of relevance for a specific target population. In the latter case, the target group needs to be well defined and it must be ascertained that all respondents really belong to that group.

It is vital for the success of a survey that the questions are formulated clearly and in a way that elicits meaningful answers. Yet, in order to do so, one must have a terminology that describes the subject matter unambiguously and understandably. The most immediate problem faced by this investigation was therefore the lack of pertinent terminology describing the gestures and movements encountered in the singing studio.

Terminology of movements in One-on-One Teaching

A significant amount research has been conducted into gestures and movements used in Choral Rehearsal and Music Education (see Chapter 2) but, apart from relatively well

defined conducting gestures and Sol-fa hand signs, a comprehensive description of the gestures and movements used in voice teaching was still wanting. On the other hand there is plenty of evidence (Beattie, 2003; Goldin-Meadow, 2003; Kendon, 2004) that, even in a situation of purposeful communication like teaching, people are not always completely aware of, and sometimes even perfectly oblivious to the way their body communicates – and consequently not ideally positioned to describe their own gestures accurately.

Voice lessons are traditionally a rather 'private' affair and regardless if held within a conservatory, a secondary school, a music school or in a private singing studio, they are largely shaped by the teachers' individual approach and style. Unlike classroom teaching one-on-one voice teaching (like instrumental teaching) is neither regulated nor under closer scrutiny by any authority. Teaching syllabi usually dictate only the desired lesson outcome and while there are recommendations and guidelines as to the content and structure of voice lessons (Miller, 1996; Caldwell, 2001; Schmidt, 2003; Dayme, 2006; Nair, 2007) there is surprisingly little material about how exactly the content may be communicated to a student – it seems to be simply assumed that the teacher will teach using a combination of verbal explanation and demonstration.

The majority of publications on voice pedagogy acknowledge that "body alignment affects all aspects of singing" dedicate a chapter or two to 'posture', 'body alignment' or 'postural alignment'(Callaghan, 2000, p.52) and most publications (Bunch, 1993; Miller, 1996; Davis, 1998; Hemsley, 1998; Thurman & Welch, 2000; Callaghan, 2000; Caldwell, 2001; Kayes, 2004; Chapman, 2006; Nair, 2007; Smith, 2007). Although descriptions of the ideal posture vary considerably, methods like Alexander Technique, Yoga, Tai Chi and Feldenkrais are regularly commended as helpful ways to increase body awareness (see Chapter 2).

Due to the private nature of one-on-one voice teaching little is known about actual teaching practice, and so the notion of gesture as a deliberately employed powerful tool for the communication of vocal and musical concepts in the voice lesson is still mainly based on evidence borrowed from related fields of study (like choral rehearsal, music education, motor learning, see Chapter 2) as well as empirical and anecdotal evidence.

The author's own previous research into gesture as a pedagogic tool in the singing studio (Nafisi, 2007, 2008, 2013) remains the only attempt to categorise the gestures used by singing teachers in the communication of singing related concepts. It could be shown that

gestures were deliberately and consciously used by singing teachers in a variety of ways and contexts and that they could be categorized according to their pedagogical intent into *Physiological Gestures, Sensation Related Gestures* and *Musical Gestures:*

The original study (Nafisi, 2007) had explicitly focused on the use of gesture as a tool for communication that is the *teacher's* use of gesture; subsequent viewing of the video footage recorded during the study with a focus on the *students'* use of gesture as well as further informal observations by the researcher suggested however that similar types of gestures were sometimes being carried out by students during singing. They occurred either spontaneously or upon instruction by the teachers.

The Nafisi-System of Singing Movements

Although the very nature of gestures makes them hard to describe accurately, their pedagogical intention and the context in which they occurred provided pertinent criteria for the distinction of the various gestures encountered in the singing lesson. The below introduced system is broad enough to include all deliberate movements potentially occurring in the teaching and learning of singing and specific enough to be able to categorise any such movement specifically according to its intended purpose. This system of terminology has played a pronounced role in the survey and will be employed in the thesis. The distinctions are as follows:

Physiological Gestures

Physiological gestures are gestures that visualize actual internal physiological mechanisms related to the singing process. The pedagogic intention behind these gestures is to make the depicted physiological actions known and understandable to the student or to facilitate the functioning of the visualized mechanism. They are used by teachers in explanation and/or demonstration or are carried out by students before or whilst singing. Examples of physiological gestures are:

- moving a hand palm-down downwards in front of the upper abdomen to "show" the descent of the diaphragm during inhalation
- a hand held palm down and curved next to an ear to "show" the elevated soft palate
- pushing both opened hands palm-out in chest height as if leaning against an invisible wall to illustrate 'Appoggio'

Figure 1 (Pictures 1a-c) exemplifies such a physiological gesture (here carried out by a teacher) showing three phases of a gesture whose purposes was to illustrate and demonstrate 'inhalation and high palate before onset'

1a 1b 1c
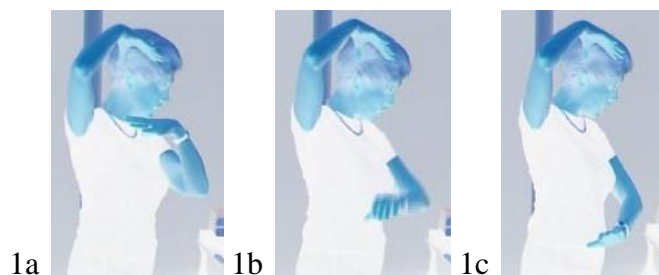
Figure 1: Physiological gesture

Context: In the warm-up phase, the teacher demonstrates a five tone scale downwards on "oo – ee" ([u] – [i]). She makes the above gesture and says "…breathe…open…" before the first onset which follows immediately after the gesture-phase depicted in 1c.The gesture recurs many times during the lesson.

Picture 1a: Both hands are used to illustrate two activities that should coincide with inhalation for singing and preparation for onset: one is the lifting of the soft palate, accomplished by two groups of muscles which simultaneously "elevate" and "pull horizontally the soft palate" through contraction (Bunch, 1993, p. 89). This action is represented by the right hand arched above the ear. Secondly there is the widening of the space inside the throat accomplished through a lowering of the larynx and a relaxed tongue and pharynx wall; this is represented by the left hand in front of the throat (with the extended thumb not visible from this perspective).

Picture 1b: The soft palate, illustrated through the right hand, has reached its highest position and the descending left hand shows the descent of the diaphragm effecting inhalation (Bunch, 1993).

Picture 1c: The right hand is still elevated so as to 'keep the palate in its high position' whilst the left hand moves further down to illustrate the *perceived* ongoing descent of the diaphragm. This is the moment directly preceding the onset of tone.

Comment: The posture of the teacher is very much part of the gesture, head and neck are in alignment with the back although it may be noted that the head is tilted forward-downward to a position which would not be considered ideal for singing. In this context

however, it is a deliberate means to further emphasize the stretch of the neck and the sensation of an 'inner and upward space' which is being illustrated by the right hand.

Sensation Related Gestures

Sensation related gestures are gestures that illustrate singing metaphors, imagery and/or acoustic phenomena. They visualize subjective thoughts and/or sensations connected to a desired vocal sound but do not reflect actual physiological occurrences. Examples of sensation related gestures are:

- fingers pointing forward to illustrate 'forward placement' of a vocal tone

- touching one's forehead and eye sockets with the fingertips to illustrate resonance in the "mask"

- all hand gestures that visualize the "shape" of a vocal tone (e.g. "open", "round", "pointed", "focused")

Figure 2 (Pictures2a and b) exemplifies a sensation related gesture whose purposes was to illustrate 'tone placement and forward resonance'

2a   2b

Figure 2: Sensation related gesture

Context: in the warm up phase, the teacher demonstrates a five tone scale downwards on "oo – ee" ([u] – [i]) - the same scale for the preparation of which we have seen the gesture in Fig.1a-c. The above gesture is made as the phrase is being demonstrated.

Picture 2a: Both hands at cheek bone level with rounded palms represent the elevated soft palate whilst the forward-pointing fingers illustrate the intended forward direction of the tone. 'Forward direction' refers to both the sensations felt in the facial bones and the movement of airflow.

Picture 2b: the right hand starts moving forward as the phrase progresses. The teacher explicitly uses this gesture to emphasize the forward flow of air and the perceived 'direction' of the phrase.

Comment: 'Forward' placement or 'forward' positioning of a tone is a commonly used concept in singing. The above gesture gives this concept a visible form

Musical Gestures

Musical gestures are gestures in which the hands are used to give a visible form to musical phenomena. Music being an inherently immaterial, abstract matter, these gestures have no reference point in the 'bodily world' but symbolize pure thought-images. Examples of musical gestures are

- conducting gestures

- a hand describing a horizontal line to depict "legato"

- showing the inflexion of a phrase with the hands

- beating a rhythm in the air

- hand-signs used in the Curwen, Kodàly or related methods

Figure 3 (Pictures 3a-c) exemplifies a *musical gesture* whose purpose was to illustrate 'legato'[55]

3a   3b   3c

Figure 3: Musical gesture

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[55] Ital. = tied together, indicates that notes are to be played or sung smoothly joined together. Considering the somewhat competing demands of crisp articulation, this is one of the great challenges in singing.

Context: The student sings a phrase of an *Early Italian aria*. The teacher criticizes a tendency to 'drop' parts of the phrase and says "Why don't you just continue like…" finishing the sentence with the above gesture.

Pictures 3a – c: The right hand is half open as if fingers and thumbs were holding or shaping some delicate matter whilst it describes a continuous horizontal movement.

Comment: This gesture is as expressive as it is multi-functional. It captures the idea of an even line which in this context refers to both a musical and a vocal concept: evenness of tone and continuity of vowels relate to the musical concept of *legato* (Nafisi, 2007, 2008, 2013).

It should be noted that some gestures appear to belong to more than one gesture-type – the above example of a musical gesture ('legato') can for instance also be interpreted as referring to and illustrating even airflow, a physiological prerequisite for any legato line. This reflects the fact that physiological, sensation-related and musical concepts often intertwine in singing but does not devalue the system's underlying truth.

Body-Movements

It has been argued above that many of the movements recommended and encouraged by voice teachers to their students are gestures similar to the ones described above: Physiological gestures that mime an inner mechanism can be carried out to aid the functioning and coordination of those same mechanisms. Sensation-related gestures that encapsulate a thought or sensation can be carried out to help the student focus on that sensation, thereby facilitating the necessary underlying mechanism. Musical gestures that epitomise musical concepts can be carried out to understand and realise these concept and again facilitate the necessary underlying mechanisms.

But there are also movements encouraged by voice teachers that are of an altogether different type: walking, swinging of arms or lying on the ground for instance might well be found beneficial for voice students, but they cannot be called gestures as they do not express any real or abstract concept, that is they have no intentional expressive component. These movements have been called *body-movements*. While one can doubtlessly put a lot of expression into any movement, the point of distinction between gestures and body-movements is that gestures can be both a tool of communication (used by the teacher in explanation and/or demonstration) and a learning tool for the student

when carried out while singing. Conversely body-movements cannot be used as a tool of communication in teaching and make only sense when carried out by the student while singing: Body-movements are used as learning-tools for the singing-student. Examples are:

- walking

- swinging arms

- bending knees

- any posture that deviates from the default upright standing

This categorisation system allowed the distinction of all gestures and movements potentially occurring in the teaching and learning of singing and has been named after its author: *Nafisi-system of singing movements* or just *Nafisi-system*. This terminology facilitated the conception of a survey-questionnaire designed to investigate the prevalence of gesture and body-movement in the singing studio while this survey was also precisely the tool to test the system's validity.

Survey design

After gaining approval from the Monash University Human Research Ethics Committee (MUHREC (see Appendix A), this survey was conducted to investigate the status quo of the use of gesture and body-movement as teaching and learning tools in the teaching of Western classical singing. The target group of the survey was clearly defined as professional voice teachers and their status was assured by inviting only members of two voice teacher associations. Facilitated by the author's bilingualism, the survey was conducted in Germany (in German) amongst members of the Federal Association of German Singing-Pedagogues, BDG (*Bundesverband Deutscher Gesangspädagogen*) and in Australia (in English) amongst members of the Australian National Association of Teachers of Singing (ANATS). The best way to reach a large number of respondents was by e-mail invitation.

BDG-members were sourced through the association's public teachers' register and invited to partake in the survey by the researcher via personal e-mail invitation. Having gained the approval of the association's national council, members of ANATS received

e-mail invitations through the organisation's national secretary. The subject line of the invitation read "Survey: gesture and movement in the voice lesson" – respectively its German equivalent. The body of the email explained briefly who the researcher was and outlined the purpose of the study. Recipients were invited to take part in the anonymous survey by clicking on a link which opened the survey page on the web based survey site *Survey Monkey*.

The questionnaire consisted of 30 'close-ended' questions, a type of question that requires the respondent to tick one or more boxes next to answer options (multiple choice) or to mark their answers on a rating scale. While close-ended questions allow for relatively quick analysis and comparison, the formulation of these questions can be tricky and there is always the possibility that an individual's true response is not present among the options given. Provision of an 'other' choice where respondents can couch their own answers (Wiersma, 1995), circumnavigates this potential problem and this option was given in 17 of this survey's questions. While some of these individual answers are given below with each question, a comprehensive list of all respondents' answers – with translation where applicable – can be found in Appendix B.

The first six questions served to establish some statistical background and the very last invited general comments. All other questions dealt with respondents' use and attitudes towards gesture and body-movement in their personal teaching. In the absence of another nomenclature, the Nafisi-system of gesture classification (Nafisi, 2007, 2008, 2013) was explained in detail to ascertain proper understanding and was then used where appropriate. The completed German (BDG) and Australian (ANATS) surveys were compared and analysed in regards to the first contention and its sub-contentions that is the hypotheses arising from the inquiry into the status quo of the use of gestures and body-movements in current voice-teaching practice that have been outlined in Chapter 1.

1. Gestures and body-movements are widely used tools in the teaching and learning of singing;
    a. The various gestures and movements encountered in the context of teaching and learning singing can be identified and categorized in a way that will be accepted by a significant number of voice teachers;
    b. A significant number of voice teachers use gestures to enhance explanation and/or demonstration;

c. A significant number of voice teachers encourage their students to carry out gestures as well as body-movements whilst singing to enhance their learning experience;

d. There are some universally accepted and used gestures and body-movements in voice teaching;

e. There is a shared rationale for using gestures and body-movements in voice teaching;

The survey produced a large body of data with at times considerable differences between the two respondent groups. In the following members of the Australian National Association of Teachers of Singing are referred to as ANATS-respondents and members of the *Bundesverband Deutscher Gesangspädagogen (*Federal Association of German Singing Pedagogues) are referred to as BDG-respondents. The answers of ANATS and BDG- respondents have been presented in juxtaposition to allow for easy comparison. Responses are presented in tables as a percentage and with absolute numbers given in parentheses, summarized and interpreted.

General and statistical information

In Australia, an invitation to complete the survey went out to 550 members of ANATS and 76 responded, bringing the response rate to 13.9%. In Germany an invitation went to 301 members of the BDG and 72 responded, bringing the response rate to just over 24%.

Table 3

Response rate

Respondent Groups	ANATS	BDG
Number of E-mail invitations	550	301
Responses	76	72
Response Rate	13.9%	24%

There is a notable discrepancy between the 13.9% response rate of ANATS members and 24% of BDG members. This suggests that bulk send-outs of invitations using a members' mailing list as done in the case of ANATS members may have less appeal than personalised e-mail invitations as used for BDG-members. However, the relatively low response rate of both respondent groups might also be ascribed to an understandable reluctance of busy professionals to spend 20minutes on a survey. And, more importantly, as the subject line of the email invitation read *"survey: gesture and movement in the voice lesson"* one might infer that only teachers with particular interest in this subject were likely to be inclined to respond.

The questionnaire started out seeking some statistical and general information about respondents.

1. The first question asked participants to indicate their gender

Table 4

Gender distribution

Respondents' gender	ANATS	BDG
Male	10.5% (8)	20.8% (15)
Female	89.5% (68)	79.2% (57)
Skipped Question	0	0

In both countries there were significantly more female than male respondents with this trend being even more pronounced amongst ANATS respondents. As it was not possible to access statistics about the gender distribution amongst the membership of ANATS or BDG, no further conclusion can be drawn from these numbers.

2. Next respondents were asked to indicate their age in years; the table shows the range (youngest and oldest) as well as the mean age in both respondent groups

Table 5

Age distribution

Respondents' age	ANATS	BDG
Min (youngest)	22	25
Max (oldest)	81	88
Average/Mean	45.9	48.4
Skipped Question	1	0

It is noticeable that BDG-members' numbers are higher in all three measures (minimum, maximum and mean) with the greatest discrepancy in the maximum age. Both respondent groups had seven respondents over 65 and one over 80 but the seven year difference between the oldest ANATS respondent and oldest BDG respondent would have also impacted on the averaged measure. The higher minimum age of BDG respondents on the other hand points to the generally longer lasting training in Germany compared with Australia.

3. This question asked for how many years respondents had been teaching singing; the table shows the shortest and longest time of teaching experience in years as well as the mean:

Table 6

Teaching experience

Respondent's teaching experience	ANATS	BDG
Min	0.5	3
Max	50	63
Average/Mean	16.6	20
Skipped Question	0	1

Whilst the numbers given by BDG-members are again higher in all three measures (minimum, maximum and mean), this difference is most notable in the maximum years indicated. The 63 years of teaching experience were given by the 88 year old BDG-member who added the endearing comment "I still sing and indeed surprisingly well".

4. Next it was asked if respondents had trained primarily as performing artists (singers) or as teachers/voice pedagogues or if they had trained to an equal level in both disciplines.

Table 7

Focus of training

Answer Options	ANATS	BDG
I have trained primarily as a performing artist (singer)	17.8% (13)	9.7% (7)
I have trained primarily as a singing teacher/voice pedagogue	8.2% (6)	6.9% (5)
I have trained to an equal level as a performing artist (singer) and a singing teacher/voice pedagogue	74.0% (54)	83.3% (60)
Other – Please specify (see below and Appendix B)	10	12
Skipped Question	3	0

A great majority of both respondent groups identified as "trained to an equal level as performer and teacher" with this majority even more pronounced for the BDG-group (83.3% versus 74.0%). It also notable that a significantly higher percentage of ANATS-respondents compared with BDG-respondents identified as primarily performing artists (17.8% versus 9.7%).

Respondents had the opportunity to point out additional fields of training ("other"); ANATS respondents additions included "professional training in piano, composition, choral conducting, Jaques-Dalcroze, class room music, Tomatis Audio Vocal Training[56], current training in speech pathology". BDG respondents named for instance "professional training in speech pathology and training towards being a Certified Rabine Teacher[57],

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[56] A "pedagogy of listening" also known as Audio-Psycho-Phonology founded by the French ear-nose-throat specialist A. Tomatis (1920 – 2001).

[57] Named after Prof Eugen H. Rabine, a US born, since 1972 Germany based singer, pedagogue and voice specialist. His method "function-based voice training" (*funktionelles Stimmtraining*) is used both by speech pathologists and singers.

NLP[58], church-music (*Kirchenmusik*)[59], repetiteur". Please refer to Appendix B for a complete list of respondents' answers.

5. Next respondents were asked to indicate their level of professional training with multiple answers being possible

Table 8

Level of training

Answer Options	ANATS	BDG
Doctorate	6.8% (5)	1.5% (1)
Master	23.3% (17)	7.4% (5)
Magister (option only offered in Germany)	N/A	8.8% (6)
Diplom (option offered only in Germany as this degree is distinct from the Australian Graduate Diploma)	N/A	77.9% (53)
Honours	8.2% (6)	0.0% (0)
Graduate Diploma (option only offered in Australia as this degree is non-existent in Germany)	39.7% (29)	N/A
Bachelor	30.1% (22)	2.9% (2)
Privately trained	35.6% (26)	25.0% (17)
Self-taught	5.5% (4)	5.9% (4)
Other – Please specify (see below and Appendix B)	12	13
Skipped Question	3	4

These responses reflect the profound differences in the professional training of musicians/singers and instrumental/voice teachers in the two surveyed countries. It should be pointed out that the German *Diplom* (diploma) which was, with 77.9%, the by far most common degree amongst BDG-respondents is a degree awarded after a 4 year full-time university course in a dedicated music university/academy or conservatorium.

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[58] Neuro Linguistic Programming is an approach to communication and personal development founded in the 1970s.

[59]*Kirchenmusik* is a complete 4-6year university course in Germany aimed to train highly qualified musicians who carry on with the rich tradition of music in churches.

In 1999 began a gradual introduction of Bachelor and Master degrees in Germany which have since 2010 replaced the old '*Diplom*' and '*Magister*'. The low numbers of Bachelors and Masters amongst German respondents suggests that the majority of these respondents finished their professional education before 1999. The fact that the pathway to becoming a performing artist and/or teacher of singing is less unified in Australia is reflected in the more diverse responses of ANATS-members. It is also notable that five ANATS-respondents had doctorates compared with just one amongst BDG-respondents. Bearing in mind that this question allowed multiple answers, the relatively high number of privately trained respondents in both groups testifies to an important role of private teaching in singer/teacher education in addition to institutionalized training in both countries. Taking the opportunity to add more qualifications, ANATS-members named for instance "AMusA[60], LMusA[61], Speech Level Singing[62]". Reflecting a greatly different structure of university degrees which, in many cases have no Australian equivalent, BDG-members specified for instance: "State certified examination for music teachers, artistic maturity graduation examination, and artistic maturity". Please refer to Appendix B for a full list of qualifications given, including their German name.

6. The next question concerned respondent's current professional status:

Table 9

Professional status

Answer Options	ANATS	BDG
I am currently singing professionally in opera/oratorio/concert	14.7% (11)	16.4% (11)
I am currently singing professionally in music theatre	10.7% (8)	0.0% (0)
I am currently singing professionally in contemporary popular music (e.g. Rock, Pop, Jazz, R&B)	20.0% (15)	9.0% (6)
I am a professional opera/concert singer but not currently active as such	18.7% (14)	35.8% (24)

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[60] Associate Diploma awarded by the Australian Music Examination Board (AMEB)
[61] Licentiate Diploma awarded by the Australian Music Examination Board (AMEB)
[62] SLS is a singing technique founded by the US American vocal coach Seth Riggs

I am a professional music theatre singer but not currently active as such	13.3% (10)	3.0% (2)
I am a professional singer of contemporary popular music but not currently active as such	5.3% (4)	0.0% (0)
I am teaching singing in a tertiary institute	12.0% (9)	41.8% (28)
I am teaching singing in a secondary school	33.3% (25)	13.4% (9)
I am teaching singing in a music school	12.0% (9)	38.8% (26)
I am teaching singing privately on a professional level	57.3% (43)	46.3% (31)
I am teaching singing privately to beginners and amateurs	70.7% (53)	50.7% (34)
Other - Please specify (see below and Appendix B)	12	22
Skipped Question	1	5

The most notable differences between the responses of ANATS members and BDG members is that nearly half of all ANATS respondents (45.4%) indicated to be currently employed as professional singers of various genres compared with only a quarter of BDG-respondents (25.4%) currently singing professionally. Similar percentages of both respondent groups (ANATS 37.3%, BDG 38.8%) indicated that they were professional singers not currently employed as such. In Question (4), however 91.8% of ANATS-respondents had indicated that they had trained to a high level as performing artists/singers (74% to the same level as teachers/singing pedagogues and 17.8% predominantly as performing artists/singers). These numbers suggest that just under 10% of ANATS respondents, though trained to a high level of artistry have never actually performed professionally. This phenomenon is even more pronounced amongst BDG-respondents 93% of which had indicated to have trained as performing artists/singers (83.3% to the same level as teachers/singing pedagogues and 9.7% predominantly as performing artists/singers) suggesting that almost 30% of BDG respondents, though trained to a high level of artistry have never actually performed professionally.

There is a clear bias towards classical singing evident in 52.2% professional classical singers (opera/concert) amongst BDG-members compared with 33.4% amongst ANATS-members. Significantly more BDG-members than ANATS-members teach in tertiary institutions (41.8% versus 12%) but significantly more ANATS-members than BDG-members teach in secondary schools (33.3% versus 13.4%). While private teaching plays

a great role for both respondent groups, significantly more ANATS-members than BDG-members teach privately beginners and amateurs (70.7% versus 50.7%). A noteworthy similarity between the respondent groups is the important role of teaching in a private studio. This also ties in with the importance given to private teaching in respondents' own training (see Question 5).

A number of respondents of both groups took the opportunity to clarify their current professional status; ANATS members were for instance also "leading a community choir", "teaching in a primary school", "teaching composition, aural study and theory", "performing in amateur productions". BDG members added an even wider field of professional expertise with "director of music productions on television", "lecturer of *Atem-Tonus-Ton*[63] (breath– muscle-tone – vocal-tone)", "lecturer for voice physiology and pedagogy", "own speech pathological practice". Please refer to Appendix B for a full list of respondents' responses.

This chapter has detailed the terminology that needed to be defined before a survey could be undertaken. It has further presented the first part of the survey that dealt with statistical and general information concerning the target group. The next chapter will report the actual core part of the survey that is the surveyed teachers' use of gesture and body-movement in their teaching.

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[63] Body oriented approach to voice building founded by the physio therapist Maria Höller-Zangenfeind.

Chapter 4: Survey: Gesture and Body-Movement in the Singing Studio. Responses and Results

The last chapter has provided an overview of the survey design and reported the statistical information gathered through its first part. It has also introduced the terminology that has been used in the main part of the survey that is the part that dealt with respondents' use of gesture and body-movement in their teaching. The core part of the survey started out by explaining the key terms used in the questionnaire:

The term *gesture* is used here to describe particular movements of hands and arms with head and torso as reference points. The gestures relevant in this context are deliberately carried out to illustrate and/or visualise mechanisms, thoughts or concepts related to the singing process. Gestures can be employed by the teacher to intensify explanations and illustrate demonstrations. Gestures can also be carried out by the student to enhance understanding and facilitate the functioning of certain mechanisms.

Based on their pedagogical intention gestures used in the singing lesson have been distinguished as *musical gestures, physiological gestures* and *sensation related gestures* (Nafisi, 2007, 2008, 2013).

Musical gestures visualize musical concepts. Examples of musical gestures are

- conducting gestures
- a hand describing a horizontal line to depict "legato"
- showing the inflection of a phrase with the hands
- beating a rhythm in the air
- hand-signs used in the Curwen, Kodàly or related methods

Physiological gestures visualize actual internal physiological mechanisms. Examples of physiological gestures are:

- moving a hand palm-down downwards in front of the upper abdomen to 'show' the descent of the diaphragm during inhalation
- a hand held palm down and curved next to an ear to 'show' the elevated soft palate

- pushing both opened hands palm-out in chest height as if leaning against an invisible wall to illustrate 'Appoggio'

Sensation related gestures illustrate singing metaphors, imagery and/or acoustic phenomena. They visualize subjective thoughts and/or sensations connected to a desired vocal sound but do not reflect actual physiological occurrences. Examples of sensation related gestures are:

- fingers pointing forward to illustrate 'forward placement' of a vocal tone
- touching one's forehead and eye sockets with the fingertips to illustrate resonance in the 'mask'
- all hand gestures that visualize the 'shape' of a vocal tone (e.g. 'open', 'round', 'pointed', 'focused')

Body-movements are in this context distinguished from gestures in that they do not have an intended 'expressive' component and cannot be employed by the teacher as a means to enhance explanation or demonstration. Body-movements are used as learning-tools for the singing-student. Examples are:

- walking

- swinging arms

- bending knees

- any posture that deviates from the default upright standing position

The thus defined movements will henceforth be referred to as gestures (musical, sensation-related or physiological respectively) and body-movements.

Gesture as a Tool of Communication

The numbering of the survey questions continued through on the actual questionnaire so that the main section started with question number 7

7. This section started out enquiring into the use of gestures as a tool for communication

Table 10

Use of gestures in communication

Do you use musical, physiological and/or sensation related gestures to enhance and/or illustrate their explanations and/or demonstrations?		
Answer Options	ANATS	BDG
Yes	94.7% (72)	100.0% (75)
No (I consciously abstain from "talking with my hands" - please go to question 13)	0.0%	0.0%
No (I am not really aware of my hands when I am talking or demonstrating but certainly do not use them deliberately - please go to question 13)	5.3% (4)	0.0%
Skipped Question	0	1

This response shows that a significant number of voice teachers in both Australia and Germany use gestures actively as a tool for communication confirming sub-contention 1b ("A significant number of voice teachers use gestures to enhance explanation and/or demonstration") of this study. The surprisingly unified response also supports the already mentioned supposition that invitees who were adverse to gesture-use tended to simply not respond.

8. Leaning on the above distinction between musical, physiological and sensation related gestures, it was then asked specifically to which extent respondents used the respective gestures, starting with musical gestures

Table 11

Use of musical gestures in communication

To what extent do you use musical gestures to communicate musical concepts?					
I use musical gestures	Not at all	Rarely (every once in a while, in special cases)	Sometimes (once or twice in every 2nd or 3rd lesson)	Regularly several times in most lessons)	Skipped Question
ANATS	0%	8.2% (6)	23% (17)	69% (51)	2
BDG	2.8% (2)	13.9% (10)	30.6% (22)	52.8% (38)	0

9. Use of physiological gestures

Table 12

Use of physiological gestures in communication

To what extent do you use physiological gestures in the explanation of mechanisms relevant to voice production?					
I use physiological gestures	Not at all	Rarely	Sometimes	Regularly	Skipped Question
ANATS	0%	6.8% (5)	17.6% (13)	75.7% (56)	2
BDG	4.3% (3)	2.9% (2)	21.5% (15)	71.5% (50)	2

10. Use of sensation related gestures

Table 13

Use of sensation related gestures in communication

To what extent do you use sensation related gestures to illustrate singing related metaphors and/or acoustic phenomena?					
I use sensation related gestures	Not at all	Rarely	Sometimes	Regularly	Skipped Question
ANATS	2.8% (2)	9.5% (7)	27.1% (20)	60.9% (45)	2
BDG	4.3% (3)	9.9% (7)	32.4% (23)	53.6% (38)	1

Whilst all three gesture-types appear to feature prominently in the respondents' explanations and/or demonstrations, it is notable that physiological gestures have by far the highest number of regular users in both respondents groups (ANATS 75.7%, BDG 71.5%), a result which ties in with Hostetter's (2011, p. 297) finding that "gestures that depict motor actions are more communicative than those that depict abstract topics". The differentiated responses regarding the gesture-types suggest that respondents did indeed recognize and accept the distinction of gestures based on Nafisi (2013) – which appears to affirm sub-contention 1a ("The various gestures and movements encountered in the context of teaching and learning singing can be identified and categorized in a way that

will be accepted by a significant number of voice teachers"). Proper confirmation of this contention will however have to wait until all survey results have been analysed.

11. The next question aimed to gain information which gestures respondents used and if there were specific gestures used predominantly. The table shows the responses of the ANATS-group and BDG-group respectively

Table 14

Examples of gestures in communication

Here are some examples of musical, physiological, and sensation related gestures. Please indicate to what extent you use any of the below in your teaching. Please also describe any others you might use.

Examples of gestures	Surveyed Group	Not at all	Rarely	Some times	Regularly	Resp. Count
Conducting gestures	ANATS	8.1% (6)	20.3% (15)	41.9% (31)	29.7% (22)	74
	BDG	13.2% (9)	38.2% (26)	36.8% (25)	11.8% (8)	68
One hand moving horizontally in a smooth line, usually in chest height, depicting "legato"	ANATS	9.6% (7)	9.6% (7)	28.8% (21)	52.1% (38)	73
	BDG	4.3% (3)	11.4% (8)	32.9% (23)	51.4% (36)	70
One or both hand(s) at eyes' height, fingers pointing towards and/or touching forehead, eye-sockets and cheek bones, depicting resonance in the "mask"	ANATS	21.3% (16)	22.7% (17)	25.3% (19)	30.7% (23)	75
	BDG	20.3% (14)	23.2% (16)	23.2% (16)	33.3% (23)	69
One or more fingers point forward, usually in face height, depicting "forward placement/direction"	ANATS	18.9% (14)	17.6% (13)	25.7% (19)	37.8% (28)	74
	BDG	20.3% (14)	20.3% (14)	31.9% (22)	27.5% (19)	69

One hand next to head usually in ear-height with a downward facing rounded palm illustrating the "elevated soft palate".	ANATS	12.2% (9)	18.9% (14)	36.5% (27)	32.4% (24)	74
	BDG	33.3% (24)	22.2% (16)	20.8% (15)	23.6% (17)	72
One hand in front of the body, about halfway between the sternum and the navel, palm down, moving downwards illustrating the "descent of the diaphragm"	ANATS	24.7% (18)	19.2% (14)	26.0% (19)	30.1% (22)	73
	BDG	17.1% (12)	24.3% (17)	41.4% (29)	17.1% (12)	70
Holding one hand palm down and curved describing a "covered" tone	ANATS	47.3% (35)	27.0% (20)	16.2% (12)	9.5% (7)	74
	BDG	57.7% (41)	19.7% (14)	14.1% (10)	8.5% (6)	71
Other – Please specify (see below and Appendix B)	ANATS	29				
	BDG	22				
Skipped Question	ANATS	1				
	BDG	0				

The great spread of answers points to the potential for controversy palpable in this context; this is also reflected in the relatively large number of respondents from both groups who took the opportunity to describe their own gestures; ANATS-respondents suggested, amongst others: "Drawing up hand from low in front of torso, as if stretching up a tapering, elastic substance to depict the sensation of engagement of core muscles through the musical phrase". On respondent gave a detailed description:

> Elevated soft palate - describe as a jellyfish in propulsion using both hands, rounded, palms facing down, hands pulsing upwards and outwards together, sometimes followed by taking left hand above head, fingers to the rear, palm facing down, large opening between thumb and forefinger, travelling up from the crown of the head and described as a funnel.

Another added: "Fingers laced so arms form dome shape of diaphragm. Fingers laced, body represents backbone, arms showing rib positions in relation to posture." BDG-responses included: "one hand held at mouth-height moves from front to back in order to demonstrate the opening of the backward pharynx/resonance chamber", "Hand signs spell out the functions of the larynx" and "A rounded hand, palm down moves upward-forward in an upward scale; going down the hand opens and starches upwards, palm up in the Passagio[64]". The full list of respondents' answers can be found in Appendix B.

Both the gestures presented for choice as well as those suggested by the respondents represent a mix of musical (the horizontal 'legato'-arm movement), Sensation-Related (fingers pointing to 'mask') and physiological gestures ("thumbs and index fingers of both hands form a big circle illustrating a wide pipe (open throat)", "hand signs illustrating the larynx").

These numbers and added gestures-samples show that there is a great variance in responses generally as well as are some significant differences between ANATS and BDG responses. Although there appear to be some common physiological gestures used to illustrate and demonstrate some of the core concepts and mechanisms of voice production (e.g. the descending diaphragm, wide ribcage, elevated palate, relatively low larynx) the great variance in responses suggests that it would be difficult to agree on a specific form of gesture; and even to a large degree the same is true for sensation related gestures. Apart from well-established gestures like conducting gestures, it will prove difficult to name and describe specific gestures which would be regularly used by a majority of teachers.

12. The next question concerned the rationale behind gesture use.

Table 15

Reasons for using gestures in communication

Why do you use musical, physiological or sensation related gestures to enhance and/or illustrate your explanations and/or demonstrations? Please indicate your level of agreement with the reasons given below and/or state your own reasons.

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[64]Italian term from the bel canto school: transition from one register to another

Choice of reasons	Surveyed Group	Disagree	Agree partly	Agree mostly	Agree completely	Response Count
A gesture can simplify a complex mechanism/concept	ANATS	0.0%	13.3% (10)	45.3% (34)	41.3% (31)	75
	BDG	1.4% (1)	9.9% (7)	45.1% (32)	43.7% (31)	71
A gesture can encapsulate and bring across a point much clearer than words	ANATS	4.0% (3)	16.0% (120	44.0% (33)	36.0% (27)	75
	BDG	1.4% (1)	32.9% (23)	32.9% (23)	32.9% (23)	70
One can communicate through gestures whilst singing/demonstrating	ANATS	2.7% (2)	8.0% (6)	33.3% (25)	56.0% (42)	75
	BDG	2.8% (2)	7.0% (5)	26.8% (19)	63.4% (45)	71
One can communicate through gestures whilst a student is singing	ANATS	1.4% (1)	6.8% (5)	25.7% (19)	66.2% (49)	74
	BDG	1.4% (1)	5.6% (4)	26.4% (19)	66.7% (48)	72
It is natural for you to "talk with your hands"	ANATS	5.3% (4)	22.7% (17)	29.3% (22)	42.7% (32)	75
	BDG	4.3% (3)	17.4% (12)	21.7% (15)	56.5% (39)	69
Other – Please specify (see below and Appendix B)	ANATS	20				
	BDG	15				
Skipped Question	ANATS	1				
	BDG	0				

These answers suggest a certain agreement amongst respondents as to the reasons behind using Gestures as a tool of communication. ANATS-respondents additional reasons included: "A gesture can illuminate a mechanism, making it physical and real to the student. I feel gesture should be used in conjunction with and after a lucid verbal explanation. It can later be used as shorthand but one must check regularly that the student continues to identify the correct sensation with the gesture", "Gesture can allow 'doing' without or before explanation" and "musical rhythms are based on dance and gestures can indicate the dance-like nature of the music in a way that words do not". BDG-respondents additional reasons included: "A gesture supports and illustrates the spoken word and thus can help avoid misunderstandings. Gestures are a natural part of language that also precede the advent of (spoken) language" and "Nonverbal communication is communication on an additional channel". Some respondents overlooked the distinction

between using gesture as a tool of communication (as a teacher) and using gesture as a tool of learning (as a student)– which was going to be addressed later in the survey–and anticipated the latter as did this respondent who wrote:

> A gesture gives very good feedback about a student's thoughts about a phrase, his/her sensation for voice positioning, breath, etc. Hand and body show a student's unconscious thoughts, with which inner image he guides his voice. Adjusting a movement to a desired gesture also alters voice positioning and breath. The causal connection between brain and hand never ceases to astonish.

Others stated: "Gestures are stored in the brain alongside other parameters of motor-learning, leading to a greater learn effect than without gesture use (psychology of learning, psycho-motoric learning)"; some referred to "Gardener's multiple intelligences" and different learning types. Please refer to Appendix B for a full list of respondents' answers.

The diversity of answers shows that, apart from the common ground demonstrated in the above table, there are many more reasons leading to gesture-use and sheer endless nuances in their formulation.

13. The next question sought to establish dominant reasons for being opposed to gesture-use.

Table 16

Reasons against using gestures in communication

If you are sceptical/opposed to the use of gestures as a communication tool in voice teaching, please tell us why by indicating your level of agreement with the reasons given below and/or by stating your own reasons.						
Choice of reasons	Surveyed group	Dis-agree	Agree partly	Agree mostly	Agree completely	Resp. count
I do not like "talking with my hands"	ANATS	94.6% (53)	3.6% (2)	0.0% (0)	1.8% (1)	56
	BDG	85.3% (29)	11.8% (4)	2.9% (1)	0.0% (0)	34
I do not believe it has any validity	ANATS	96.3% (52)	1.9% (1)	1.9% (1)	0.0% (0)	54
	BDG	88.2% (30)	8.8% (3)	2.9% (1)	0.0% (0)	34

I feel un-comfortable demonstrating movement	ANATS	96.4% (53)	3.6% (2)	0.0% (0)	0.0% (0)	55
	BDG	100.0% (34)	0.0% (0)	0.0% (0)	0.0% (0)	34
I can express everything I want to say in words	ANATS	72.7% (40)	21.8% (12)	3.6% (2)	1.8% (1)	55
	BDG	52.9% (18)	26.5% (9)	14.7% (5)	5.9% (2)	34
I find gesturing distracts from what is being said	ANATS	87.3% (48)	10.9% (6)	1.8% (1)	0.0% (0)	55
	BDG	82.4% (28)	11.8% (4)	5.9% (2)	0.0% (0)	34
Other – Please specify (see below and Appendix B)	ANATS	12				
	BDG	7				
Skipped Question	ANATS	20				
	BDG	38				

Being explicitly addressed to those who were sceptical or adverse to gesture-use, this question was skipped by a large number of respondents, particularly from the BDG-group. The great majority of those who did complete the question disagreed with most of the suggested reasons. The relative greatest agreement was given to the statement "I can explain everything I want to say in words". Additional reasons for scepticism given by ANATS-respondents included: "I do feel that gesture can be unnecessary at times and I feel that too much gesture creates distraction from the actual purpose of a vocal activity" or "not all people learn the same way". BDG-responses included: "There are students who do not want to move and rather just 'stand'"and "the more a voice teacher 'does something', the more he shows that he has never experienced proper, correct singing". Please refer to Appendix B for a full list of respondents' answers.

14. Having named and weighed the pros and cons of the use of gesture as a tool of communication in Questions 11 and 12, this question sought to pinpoint predominant attitudes towards this kind of gesture use.

Table 17

Statements regarding gestures in communication

Please consider the following statements regarding the use of gestures as a tool of communication in the teaching of singing. Please indicate your level of agreement with the statements given below and/or give us your own perspective.

Answer Options	Surveyed group	Disagree	Agree partly	Agree mostly	Agree completely	Resp. Count
1.Gestures can visualize abstract concepts, hidden physiological mechanisms and/or acoustic phenomena in a way that is superior to words in both clarity and precision	ANATS	3.9% (3)	26.3% (20)	28.9% (22)	40.8% (31)	76
	BDG	4.2% (3)	25.0% (18)	40.3% (29)	30.6% (22)	72
2. As music often transcends the spoken word, Gesture is an indispensable tool of communication in this area	ANATS	2.6% (2)	18.4% (14)	28.9% (22)	50.0% (38)	76
	BDG	6.9% (5)	34.7% (25)	33.3% (24)	25.0% (18)	72
3. A speaker who uses his/her hands to underline his/her speech is more convincing	ANATS	6.6% (5)	28.9% (22)	40.8% (31)	23.7% (18)	76
	BDG	2.8% (2)	36.6% (26)	33.8% (24)	26.8% (19)	71
4. A speaker who uses his/her hands to underline his/her speech is less convincing	ANATS	68.0% (51)	25.3% (19)	5.3% (4)	1.3% (1)	75
	BDG	55.1% (38)	34.8% (24)	5.8% (4)	4.3% (3)	69
5. Gestures are less open to mis-understandings than words	ANATS	33.3% (25)	33.3% (25)	22.7% (17)	10.7% (8)	75
	BDG	20.0% (14)	42.9% (30)	28.6% (20)	8.6% (6)	70

6. Gestures are more open to misunderstandings than words	ANATS	50.7% (38)	38.7% (29)	9.3% (7)	1.3% (1)	75
	BDG	35.3% (24)	51.5% (35)	8.8% (6)	4.4% (3)	68
7. Gestures are mainly a distraction from the spoken word.	ANATS	68.0% (51)	25.3% (19)	5.3% (4)	1.3% (1)	75
	BDG	35.2% (25)	59.2% (42)	2.8% (2)	2.8% (2)	71
8. A good verbal explanation can very well stand on its own and is more convincing delivered without gesticulation.	ANATS	37.8% (28)	48.6% (36)	12.2% (9)	1.4% (1)	74
	BDG	41.4% (29)	44.3% (31)	10.0% (7)	4.3% (3	70
9. I do not like people "talking with their hands"	ANATS	80.0% (60)	14.7% (11)	4.0% (3)	1.3% (1)	75
	BDG	69.6% (48)	23.2% (16)	5.8% (4)	1.4% (1)	69
Other – Please specify (See below and Appendix B)	ANATS	9				
	BDG	12				
Skipped question	ANATS	0				
	BDG	0				

Discrepancies between the two respondent groups are relatively pronounced in this question. The first two statements were more strongly agreed with by the ANATS-group compared to the BDG-group and statements 4, 5, 7 and 9 were disagreed with by a significantly higher percentage of ANATS-respondents than their BDG counterparts. The spread of responses suggests that it would be very difficult to formulate a rationale or statement regarding the use of Gesture in communication that would satisfy an international majority of voice teachers. Additional statements by ANATS-respondents included "The quality of the gesture is of the utmost importance in conveying the idea. Also the ability of the teacher to modify gestures and or balance of gesture/verbal explanation to individual students is crucial" and "Depends on the gesture. Too much or inappropriate gestures distract, but natural and appropriate ones enhance. Also, depends on the type of song".

Some BDG-respondents exposed a certain – albeit unavoidable – weakness inherent in describing complex phenomena in words and wrote: "This question is tricky in the way the questions are put and the only possible answer is in most cases 'it depends'. Gestures can be helpful and convincing but also confused and distracting" and one respondent said: "The wording is too rigid. It would for instance be better to say: 'Gestures and gesticulation can distract from the spoken word'. It all depends always on how much and how extensively I gesture". Another wrote:

> Non-verbal communication, experiencing the musical world in the whole expression of a person that is physically liberated in his/her gestures, is a great enrichment for the teacher-student relationship. If a gesture stands in connection to the music and the physical perception and is precise, then it contains a whole musical world, a world of expression and passion for the phrase, connected with the physiological function. If one also pours emotions into the gesture, breathing and voice, then voice and expression will be multiplied. Obviously within limits. Not in exaggeration,

Please refer to Appendix B for a full list of respondents' answers. It is notable that the term 'it depends' keeps coming up. Although respondents of both groups highlight the merits of appropriate gesture-use, the necessity of assessing each teaching situation anew and adapting one's approach is consistently emphasized.

Gesture as a Learning Tool

15. The next part of the survey dealt with the employment of gestures as learning tools when carried out whilst singing.

Table 18

Encouraging students' use of gestures

Do you instruct/encourage your students to carry out gestures (musical, physiological or sensation related to enhance their understanding and/or facilitate the functioning of certain singing related mechanisms?		
Answer Options	ANATS	BDG
Yes	90.8.% (69)	88.7% (63)

No	9.2% (7)	11.3% (8)
Skipped Question	0	1

Responses from both the ANATS-group as well as the BDG-group confirm sub-contention 1c ("A significant number of voice teachers encourage their students to carry out gestures as well as body-movements whilst singing to enhance their learning experience") of this study – as far as gestures are concerned. The result is however not as emphatic as is was in regards to gesture as teaching/communication tool with a still significant 9.3% of the ANATS-group and 11.3% of the BDG not encouraging gesture in their students.

16. More specifically, which type of gestures is being encouraged and to which extend.
    First musical gestures:

Table 19

Encouraging musical gestures

To what extent do you encourage your students to use musical gestures whilst singing to enhance their musical understanding?					
I encourage the use of musical gestures	Not at all	Rarely	Sometimes	Regularly	Skipped Question
ANATS	4.3% (3)	15.9% (11)	52.2% (36)	27.5% (19)	7
BDG	1.5% (1)	15.2% (10)	57.6% (38)	25.8% (17)	6

17. Encouragement to carry out physiological gestures

Table 20

Encouraging physiological gestures

To what extent do you encourage your students to use physiological gestures whilst singing to facilitate learning of physiological mechanisms?					
I encourage the use of physiological gestures	Not at all	Rarely	Sometimes	Regularly	Skipped Question

ANATS	1.4% (1)	8.6% (6)	57.1% (40)	32.9% (23)	6
BDG	6.1% (4)	9.1% (6)	39.4% (26)	45.5% (30)	6

18. Encouragement to carry out sensation related gestures

Table 21

Encouraging sensation related gestures

To what extent do you instruct/encourage your students to use sensation related gestures whilst singing to enhance their experience of sensations conducive to good vocal tone production?

I encourage the use of sensation related gestures	Not at all	Rarely	Sometimes	Regularly	Skipped Question
ANATS	2.9% (2)	18.8% (13)	50.7% (35)	27.5% (19)	7
BDG	7.7% (5)	18.5% (12)	40.0% (26)	33.8% (22)	7

It is notable that, as was the case with 'gestures as a tool for communication' (see questions 8 – 10) physiological gestures have the highest number of frequent ('regular' or 'sometimes') users in both respondent groups. This suggests that the capacity of gestures to illustrate, visualize and demonstrate internal physiological mechanisms makes for their primary use.

19. The next question aimed to gain information which gestures respondents encouraged and if there were specific gestures encouraged predominantly

Table 22

Examples of gestures in learning

Here are some examples of musical, physiological and sensation related gestures that can be carried out by students whilst singing. Please indicate to what extent you instruct/encourage your students to carry any of these gestures and/or describe any other gestures you might be using.

Examples of gestures	Surveyed Group	Not at all	Rarely	Sometimes	Regularly	Resp. count

Con-ducting gestures	ANATS	20.0% (14)	35.7% (25)	31.4% (22)	12.9% (9)	70
	BDG	31.8% (21)	37.9% (25)	22.7% (15)	7.6% (5)	66
Clapping or tapping out a beat	ANATS	20.0% (14)	35.7% (25)	31.4% (22)	12.9% (9)	70
	BDG	13.6% (9)	30.3% (20)	43.9% (29)	12.1% (8)	66
Pointing forwards with one or both hand(s)	ANATS	20.0% (14)	28.6% (20)	35.7% (25)	15.7% (11)	70
	BDG	26.2% (17)	30.8% (20)	32.3% (21)	10.8% (7)	65
Describing a horizontal line with one or both hand(s)	ANATS	10.0% (7)	15.7% (11)	45.7% (32)	28.6% (20)	70
	BDG	6.1% (4)	15.2% (10)	53.0% (35)	25.8% (17)	66
Mimicking a tone shape with one's hands (e.g. "round", "focused")	ANATS	27.5% (19)	23.2% (16)	34.8% (24)	14.5% (10)	69
	BDG	40.9% (27)	18.2% (12)	30.3% (20)	10.6% (7)	66
Tapping with fingertips of one hand into the open palm of the other to learn "staccato"	ANATS	40.0% (28)	28.6% (20)	24.3% (17)	7.1% (5)	70
	BDG	49.3% (33)	26.9% (18)	16.4% (11)	7.5% (5)	67
Mimicking a throwing movement to learn "staccato"	ANATS	52.9% (37)	22.9% (16)	15.7% (11)	8.6% (6)	70
	BDG	32.3% (21)	24.6% (16)	33.8% (22)	9.2% (6)	65
Other – Please specify (see below and Appendix B)	ANATS	15				
	BDG	17				
	ANATS	6				

Skipped Question	BDG	5

Similarly to the response to Question 11, the discord visible in the wide spread of answers points to the difficulty of finding and describing universally applicable gestures and is further highlighted by the relatively large number of respondents who added their own gestures/comments. Suggestions from ANATS-members included "painting with a large flat brush along an invisible wall to show the legato line making curves in air to show full phrase bowling the sound by lunging and singing at the same time to get air flowing freely" and "'Throwing darts' - to get a sense of precise onset; 'Picking up heavy buckets of water' to get a sense of being grounded when breathing; 'Bouncing a ball' – staccato; 'Spinning hands' around each other - constant airflow". BDG-respondents' suggestions included "A lying 'eight' and other kinesiological gestures", "Moving one or both hands in opposite direction as the pitch, like a 'lift and its weight', "What is high, becomes low and vice versa to unify registers and prepare leaps", "No horizontal lines but rather round ones in front of the body (sow-man)". Please refer to Appendix B for a full list of respondents' answers.

It appears that the choice of gesture is limited only by the teacher's inventiveness and depends to a large part on both the students' and the teachers' individuality as well as the situation at hand. Teachers might have a certain 'repertoire' of possible gestures whose efficacy has been proven in similar situations, but an obviously high degree of individual preference indicates that it would be difficult to define specific gestures which would be regularly used and encouraged in students by a majority of voice teachers.

20. The next question inquired into the rationale behind encouraging gestures as a learning tool

Table 23

Reasons for encouraging gestures

Why do you instruct/encourage your students to carry out gestures (musical, physiological or sensation related)? Please indicate your level of agreement with the reasons given below and/or state your own reasons.						
Choice of reasons: Carrying out	Surveyed Group	Disagree	Agree partly	Agree mostly	Agree completely	Response count

specific
gestures...

...enhances understanding of musical phrasing by giving it a visible form	ANATS	0.0% (0)	14.1% (10)	49.3% (35)	36.6% (26)	71
	BDG	0.0% (0)	12.3% (8)	40.0% (26)	47.7% (31)	65
... aids the invisible process of singing by connecting it to a visible action	ANATS	1.4% (1)	8.5% (6)	33.8% (24)	56.3% (40)	71
	BDG	1.5% (1)	7.6% (5)	36.4% (24)	54.5% (36)	66
... improves the invisible vocal tone by connecting it to a visible form	ANATS	2.8% (2)	14.1% (10)	q	40.8% (29)	71
	BDG	6.2% (4)	16.9% (11)	33.8% (22)	43.1% (28)	65
... provides an external attention focus	ANATS	8.5% (6)	7.0% (5)	36.6% (26)	47.9% (34)	71
	BDG	4.5% (3)	24.2% (16)	33.3% (22)	37.9% (25)	66
... achieves greater expressiveness	ANATS	12.9% (9)	12.9% (9)	37.1% (26)	37.1% (26)	70
	BDG	15.4% (10)	29.2% (19)	38.5% (25)	16.9% (11)	65
... achieves greater focus, better concentration	ANATS	7.1% (5)	21.4% (15)	42.9% (30)	28.6% (20)	70
	BDG	6.1% (4)	33.3% (22)	37.9% (25)	22.7% (15)	66
... distracts from the actual singing process	ANATS	29.6% (21)	36.6% (26)	23.9% (17)	9.9% (7)	71
	BDG	11.1% (7)	36.5% (23)	25.4% (16)	27.0% (17)	63
... achieves better timing/rhythm	ANATS	1.4% (1)	25.4% (18)	42.3% (30)	31.0% (22)	71
	BDG	4.7% (3)	32.8% (21)	32.8% (21)	29.7% (19)	64
Other – Please specify (see below and Appendix B)	ANATS	17				
	BDG	9				
Skipped question	ANATS	5				
	BDG	6				

The two respondent groups appear to be in relative agreement with each other regarding their rating of the suggested reasons and most reasons given found wide agreement. The most controversial statement given was "Carrying out specific gestures distracts from the actual singing process" which was disagreed with by 29.6% of ANATS respondents but only with 11.1% of BDG respondents and completely agreed with by just 9.9% of ANATS-respondents but 27.0% of BDG respondents. Reasons added by ANATS-respondents included: "Carrying out specific gestures enhances understanding of musical phrasing by giving it a corresponding physical sensation" and another respondent stated;

> Externalising rhythm can help singers to feel a beat. Singers can show me what they are trying to do internally through gesture. Muscle association is useful for learning soft palate elevation - I've seen an improvement in students' fine muscular control when they make a similar external movement with their hands. A lot of these answers above use the word "visual"... but rather than see it, I think the most important aspect for a singer, is that they learn to feel it.

Additional reasons given by BDG-respondents included: "Carrying out specific gesture makes singing more precise, creating greater awareness for the singing process" and also:

> A gesture can help to commit a voice-technical mechanism to the physiological/kinesthetic part of the brain so that it can later be called upon. Also – very importantly – a gesture can (particularly when used to replace useless, tense, habitual gestures) help to get rid of faulty old habits.

Please refer to Appendix B for a full list of respondents' answers. These answers testify to the great importance ascribed to gestures as learning tools by the responding vocal teachers and tie in with findings in the field of neurology and motor-learning (Seitz, 1993; Wulf, 2007) and also reflect the advantages of gesture-use in the choral rehearsal as reported by Wis (1993), Chagnon (2001) and Bailey (2007). This suggests that respondents were either aware of the relevant science or, more likely, their experience and intuition told them what is only recently being reconfirmed by research.

21. The next question sought to establish dominant reasons for being opposed to students using gestures as learning tools

Table 24

Reasons against encouraging gestures

If you are sceptical/opposed to your students' carrying out musical, physiological and/or sensation related gestures whilst singing, please tell us why by indicating your level of agreement with the reasons given below and/or by stating your own reasons.

Choice of reasons	Surveyed Group	Disagree	Agree partly	Agree mostly	Agree completely	Response count
I do not believe carrying out gestures whilst singing has any validity	ANATS	86.4% (51)	8.5% (5)	5.1% (3)	0.0% (0)	59
	BDG	80.6% (29)	16.7% (6)	2.8% (1)	0.0% (0)	36
I feel uncomfortable demonstrating gestures	ANATS	98.3% (57)	1.7% (1)	0.0% (0)	0.0% (0)	58
	BDG	94.4% (34)	2.8% (1)	2.8% (1)	0.0% (0)	36
I believe my students would feel uncomfortable/embarrassed if I asked them to gesture whilst singing	ANATS	70.7% (41)	27.6% (16)	1.7% (1)	0.0% (0)	58
	BDG	63.9% (23)	30.6% (11)	2.8% (1)	2.8% (1)	36
I do not want to establish a habit of gesturing whilst singing as it will be hard to get rid of	ANATS	58.6% (34)	27.6% (16)	5.2% (3)	8.6% (5)	58
	BDG	43.2% (16)	32.4% (12)	8.1% (3)	16.2% (6	37
Other – Please specify (see below and Appendix B)	ANATS	8				
	BDG	4				
Skipped question	ANATS	17				
	BDG	34				

Similarly to question 13, this question has been skipped by a large number of respondents. Of those who did respond, the great majority disagreed with most of the suggested reasons. But one suggested reason, namely not wanting "to establish a habit of gesturing

whilst singing as it will be hard to get rid of" was at least partly endorsed by a significant number of both respondent groups (ANATS 27.6%, BDG 32.4%). This suggests that even advocates of gesture use are wary of the potential danger of creating bad habits, a notion which is also reflected in additional reasons given by ANATS-respondents: "I want the student to sing on internal sensation and to have no external props which they may come to rely on and substitute in a rote manner for focussed practice" and "Teaching gestures can help a student to focus on a particular aspect of technique, but should be absent in performance". BDG respondents on the other hand were more concerned with finding the right Gesture: "Not every movement fits every student", "Spontaneous, not-deliberate gestures: great, but all that is manufactured, deliberate is mostly insincere". This last remark however points more to the expressive aspect of gestures and the incorporation of gestures into performance which was actually not the subject of this question but was dealt with later in the questionnaire. Please refer to Appendix B for a full list of respondents' answers.

Body-Movement as a Learning Tool

22. This part of the survey was concerned with the implementation of body-movement as a learning tool.

Table 25

Encouraging students to use body-movement

Do you instruct/encourage your students to carry out body-movements whilst singing?		
Answer Options	ANATS	BDG
Yes	93.2% (69)	98.6% (70)
No	6.8% (5)	1.4% (1)
Skipped Question	2	1

Together with responses to question 15, these confirm the third hypothesis (sub-contention 1c) of this study, showing clearly that a significant number of voice teachers encourage and/or instruct their students to carry out body-movements whilst singing. Comparing the numbers to the responses to Question No 15 (Do you instruct/encourage your students to carry out gestures (musical, physiological or sensation related to enhance

their understanding and/or facilitate the functioning of certain singing related mechanisms?) it is notable that body-movements were used slightly more by ANATS-respondents (93.2% versus 90.8%) and significantly more by BDG respondents (98.6% versus 88.7%) than gestures.

The differentiated responses to questions 8, 9, 10 (three gesture-types in communication) and 16, 17 18 (three gesture-types as learning tools) together with responses to question 22 suggest that the terminology of the Nafisi-system has indeed been understood and accepted, both where gestures in communication and gestures and body-movement as learning tools are concerned. The first hypothesis (sub-contention 1a: Gestures and body-movements are widely used tools in the teaching and learning of singing; The various gestures and movements encountered in the context of teaching and learning singing can be identified and categorized in a way that will be accepted by a significant number of voice teachers) can therefore be taken as resoundingly affirmed.

23. This question sought information about the frequency of the employment of body-movements as a learning tool. As, according to the here used nomenclature, there is only one type of body-movement (as opposed to three different types of gestures) the "No" option in Question 22 made at "Not at all" option in this question unnecessary.

Table 26

Extent of encouraging body-movement

To what extent do you instruct/encourage your students to use body-movement whilst singing?					
I encourage the use of body-movement	Rarely	Sometimes	Regularly	Skipped Question	Response count
ANATS	5.8% (4)	42.0% (29)	52.2% (36)	7	69
BDG	14.3% (10)	44.3% (31)	41.4% (29)	2	70

A comparison between responses Questions 16, 17 and 18 (encouragement of use of the three gesture-types) and encouragement of use of body-movement suggests that the latter is being employed slightly more frequently than either of the gesture types.

24. The next question aimed to gain information which body-movements respondents encouraged and if there were specific movements encouraged predominantly

Table 27

Examples of body-movements

Examples of body movements	Sur-veyed Group	Not at all	Rarely	Some-times	Regular-ly	Resp. count
Here are some examples of body-movements that can be carried out by students whilst singing. Please indicate to what extent you instruct/encourage your students to carry any of these body-movements and /or describe any others you might be using.						
1.Walking	ANATS	1.4% (1)	27.1% (19)	51.4% (36)	20.0% (14)	70
	BDG	0.0% (0)	22.2% (16)	54.2% (39)	23.6% (17)	72
2.Bending the knees	ANATS	1.4% (1)	9.9% (7)	56.3% (40)	32.4% (23)	71
	BDG	11.1% (8)	23.6% (17)	31.9% (23)	33.3% (24)	72
3.Spreading of arms	ANATS	8.6% (6)	17.1% (12)	44.3% (31)	30.0% (21)	70
	BDG	0.0% (0)	11.1% (8)	36.1% (26)	52.8% (38)	72
4.Swinging of arms	ANATS	7.1% (5)	32.9% (23)	38.6% (27)	21.4% (15)	70
	BDG	11.3% (8)	21.1% (15)	40.8% (29)	26.8% (19)	71
5.Turning/rolling of head	ANATS	21.7% (15)	30.4% (21)	33.3% (23)	14.5% (10)	69
	BDG	18.3% (13)	29.6% (21)	25.4% (18)	26.8% (19	71
6. Letting the tongue hang out	ANATS	14.5% (10)	21.7% (15)	42.0% (29)	21.7% (15)	69
	BDG	20.8% (15)	27.8% (20)	34.7% (25)	16.7% (12)	72

7. Leaning against a wall	ANATS	10.0% (7)	25.7% (18)	48.6% (34)	15.7% (11)	70
	BDG	5.6% (4)	18.1% (13)	54.2% (39)	22.2% (16	72
8. Lying on the ground	ANATS	8.6% (6)	27.1% (19)	47.1% (33)	17.1% (12)	70
	DBG	19.7% (14)	28.2% (20)	38.0% (27)	14.1% (10	71
9. Assuming the "monkey" position (feet hip-wide apart, slightly bent knees, the upper body tilts slightly forwards from the pelvis, arms hang freely)	ANATS	25.7% (18)	22.9% (16)	31.4% (22)	20.0% (14)	70
	BDG	30.4% (21)	30.4% (21)	24.6% (17)	14.5% (10)	69
10. Placing hands on various parts of the body (e.g. the epigastrium, abdomen, rib cage, lower back) to sense internal mechanisms (e.g. breathing and support)	ANATS	0.0% (0)	0.0% (0)	36.6% (26)	63.4% (45)	71
	BDG	8.6% (6)	14.3% (10)	31.4% (22)	45.7% (32)	
Other – Please specify (see below and Appendix B)	ANATS	8				
	BDG	14				
Skipped question	ANATS	5				
	BDG	0				

There is a wide spread of responses indicating how potentially controversial this subject is. The difference between ANATS and BDG respondents is most notable where a suggested body-movement was 'never' used by a significant number of one respondent group whilst attracting only positive ratings from the other like examples (3) and (10). Most controversial was example (9) which was rejected by more than a quarter of all respondents but had at the same time still significant numbers of regular users. Other Body-Movements added by ANATS-respondents included: "Swaying and 'hula'-movements sparkler circles", "Plus balance-board, Swiss ball, etc. and 8s spray gun laser beam". BDG-respondents' recommendations included: "dance movements" and repeatedly referred to postural adjustments like "putting one foot behind the other and distributing one's weight equally between both legs helps to feel a diagonal (forwards upwards- backwards-downwards) in the body and the tone is better connected with the

body" and "energetic/dynamic standing, shifting one's weight from one leg to the other similar to awaiting a serve in tennis – high energy, elasticity, flexibility". These descriptions correlate to the notion that "posture is not a static or fixed position, rather it is an active stillness or a physically quiet attitude" (Sell, 2005. p.71) also mirrored in the dynamic posture mentioned by Bunch (1993) or Chapman (2006). Please refer to Appendix B for a full list of respondents' answers.

Similarly to Question 18, the sheer choice of possible body-movements means that preference depends again mainly on both the students' and the teachers' idiosyncrasies as well as the situation at hand. The high degree of individuality suggests that, apart from more generic movements like 'walking' or 'swinging of arms', it would be difficult to define specific body-movements which would be regularly used and encouraged in students by a majority of voice teachers.

Responses to Questions 11, 19 and 24 mean that sub-contention 1d ('there are some universally accepted and used gestures and body-movements in voice teaching') could only be confirmed on a very basic level: Whilst what could be called 'obvious' gestures (like some conducting gestures) and body-movements (like walking) are widely known and used it seems to be rather difficult to pinpoint a greater number of more specific gestures and body-movements which would find acceptance by a majority of voice teachers. The difficulty appears to lie in the high number of possibilities and the dependence of any gesture's or body-movement's efficacy on the individual case.

25. The next question inquired into the rationale behind encouraging body-movements as a learning tool

Table 28

Reasons for encouraging body-movement

Why do you instruct/encourage your students to carry out body-movements whilst singing? Please indicate your level of agreement with the reasons given below and/or state your own reasons.						
Choice of reasons: Carrying out body-movements whilst singing …	Surveyed Group	Disagree	Agree partly	Agree mostly	Agree completely	Resp. count
…raises body awareness	ANATS	0.0% (0)	15.5% (11)	32.4% (23)	52.1% (37)	71

	BDG	0.0% (0)	14.3% (10)	40.0% (28)	45.7% (32)	70
… helps to release tension, achieve relaxation	ANATS	0.0% (0)	8.3% (6)	34.7% (25)	56.9% (41)	72
	BDG	0.0% (0)	12.5% (9)	40.3% (29)	47.2% (34	72
… helps achieve better concentration	ANATS	5.6% (4)	22.5% (16)	49.3% (35)	22.5% (16)	71
	BDG	4.2% (3)	50.7% (36)	23.9% (17)	21.1% (15)	71
… distracts from the actual singing process	ANATS	28.6% (20)	35.7% (25)	17.1% (12)	18.6% (13)	70
	BDG	8.3% (6)	37.5% (27)	29.2% (21)	25.0% (18)	72
… helps to bring the body into a position that is conducive to tone production	ANATS	1.4% (1)	16.7% (12)	44.4% (32)	37.5% (27)	72
	BDG	1.4% (1)	26.8% (19)	38.0% (27)	33.8% (24)	71
… energizes the body	ANATS	1.4% (1)	11.3% (8)	35.2% (25)	52.1% (37)	71
	BDG	2.8% (2)	15.5% (11)	35.2% (25)	46.5% (33)	71
… enhances learning	ANATS	1.4% (1)	16.7% (12)	27.8% (20)	54.2% (39)	72
	BDG	4.2% (3)	30.6% (22)	33.3% (24)	31.9% (23)	72
Other – Please specify (see below and Appendix B)	ANATS	11				
	BDG	9				
Skipped question	ANATS	4				
	BDG	0				

There appears to be a certain level of agreement regarding the rationale of body-movement-use and it is notable that no-one in both respondent groups disputes that 'Carrying out body-movements whilst singing raises body-awareness' and 'helps to release tension'. Additional reasons given by ANATS respondents include "Assists recruitment of 'support' musculature with optimal body freedom", "Distracting students who think too much about how they sing is a good idea. It enables singing to happen in a more natural way" and also: "I believe it is more natural to move when you sing than to stand still". Reasons suggested by BDG respondents included: "(body-movement) releases external tensions and blockages as well as bad habits; affects, depending on the

respective movement posture, breathing, Appoggio, neck muscles and secondary breathing muscles etc., generally a liberating effect on tone and timbre". One BDG respondent commented:

> Problematic: the absolute wording. Obviously everything always depends on which specific body-movements are being carried out and how they are being instructed. In addition to that the perception of the individual student needs to be taken into account. Correct wording would be: Carrying out certain body-movements can, under certain circumstances increase body-awareness. The same applies to all other questions.

The observation that "absolute" wording is problematic is doubtlessly correct. Giving respondents the option to indicate the extent of their agreement allowed however for shades of grey in the black and white wording. Please refer to Appendix B for a full list of respondents' answers.

Generally it can be said that respondents' reasons for encouraging body-movements in their singing students reflect the advantages also found in body-movement – use in choral rehearsal (Wis, 1993; Chagnon, 2001; Bailey, 2007). Responses to Questions 13, 20 and 25 mean that sub-contention 1e could be confirmed: There exists a certain level of agreement regarding the rationale of employing gestures and body-movements in the teaching of singing.

26. The next question sought to establish dominant reasons for being opposed to students using body-movements as learning tools

Table 29

Reasons against encouraging body-movement

If you are sceptical/opposed to your students' carrying out body-movements whilst singing, please tell us why by indicating your level of agreement with the reasons given below and/or by stating your own reasons.						
Choice of reasons	Sur-veyed Group	Dis-agree	Agree partly	Agree mostly	Agree completely	Resp. count
I do not believe carrying out body-movements whilst	ANATS	91.2% (52)	3.5% (2)	5.3% (3)	0.0% (0	57
	BDG	87.9% (29)	9.1% (3)	3.0% (1)	0.0% (0	33

singing has any validity						
I feel uncomfortable demonstrating movement	ANATS	100.0 % (57)	0.0% (0)	0.0% (0)	0.0% (0)	57
	BDG	96.9% (31)	0.0% (0)	0.0% (0)	3.1% (1)	32
I believe my students would feel uncomfortable/embarrassed if I asked them to move whilst singing	ANATS	75.4% (43)	22.8% (13)	1.8% (1)	0.0% (0	57
	BDG	63.6% (21)	30.3% (10)	3.0% (1)	3.0% (1)	33
I do not want to establish a habit of moving whilst singing as it will be hard to get rid of	ANATS	71.9% (41)	21.1% (12)	5.3% (3)	1.8% (1)	57
	BDG	47.1% (16)	29.4% (10)	11.8% (4)	11.8% (4)	34
Other – Please specify (see below and Appendix B)	ANATS	7				
	BDG	4				
Skipped question	ANATS	19				
	BDG	38				

Similar to Questions 13 and 21, this question has been skipped by a large number of respondents, particularly of the BDG-group. The great majority of those who did respond disagreed with the suggested reasons for opposing body-movement use. Reflecting a similar notion as mentioned in Question 21 the greatest potential disadvantage of body-movement-use is seen in its becoming habitual. This was confirmed in ANATS-respondents' comments which included: "I am trying to establish a neutral body with no 'ticks'" and also:

> In my experience, students struggle to make these actions applicable. Even if they are able to achieve a better/more energised sound, they are unable to recreate this feeling without complete the full gesture again, making it inapplicable for the actual performance.

A BDG-respondent however suggested:

> In regards to the last question: using these exercises very consciously and with a specific objective means that they can hardly become habitual – but "habitually

> congruent" is how the body functions if it has, through movement, become used to being free and relaxed and to produce free and relaxed tones.

Please refer to Appendix B for a full list of respondents' answers.

27. Having named and weighed the pros and cons of the use of gestures and body-movements as learning tools in Questions 120, 21, 25 and 26, this question sought to pinpoint predominant attitudes towards this kind of gesture and body-movement use.

Table 30

Statements regarding encouraging gestures and/or body-movement

Please consider the following statements regarding the active use of gesture and/or body-movement by the voice student. Please indicate your level of agreement with the statements given below and/or give us your own perspective.

Answer Options	Sur-veyed Group	Dis-agree	Agree partly	Agree mostly	Agree completely	Resp. Count
1. Gesture can be a valid learning tool	ANATS	0.0% (0)	9.3% (7)	21.3% (16)	69.3% (52)	75
	BDG	1.4% (1)	15.5% (11)	29.6% (21)	53.5% (38)	71
2. Body-movement can be a valid learning tool	ANATS	1.3% (1)	8.0% (6)	20.0% (15)	70.7% (53)	75
	BDG	0.0% (0)	12.7% (9)	22.5% (16)	64.8% (46)	71
3. Gestures and/or body-movements potentially have the capacity of bridging the gap between intellectual understanding and physical ability	ANATS	0.0% (0)	8.1% (6)	32.4% (24)	59.5% (44)	74
	BDG	0.0% (0)	25.0% (18)	29.2% (21)	45.8% (33)	72
4. By carrying out specific gestures and/or body-movements one can "show one's body what one wants it to do"	ANATS	1.3% (1)	13.3% (10)	37.3% (28)	48.0% (36	75
	BDG	1.4% (1)	21.1% (15)	23.9% (17)	53.5% (38	71
5. Active use of gesture and/or body-movement provide an excellent external focus and are	ANATS	2.7% (2)	14.9% (11)	31.1% (23)	51.4% (38)	74
	BDG	2.8% (2)	21.1% (15)	39.4% (28)	36.6% (26)	71

therefore good learning tools						
6.Some singing students find the notion of moving whilst singing extremely daunting	ANATS	5.4% (4)	39.2% (29)	29.7% (22)	25.7% (19)	74
	BDG	8.3% (6)	38.9% (28)	23.6% (17)	29.2% (21)	72
7.Some students are so inhibited when it comes to movement that it would be counter-productive to ask them to carry out gestures and/or body-movements	ANATS	36.5% (27)	43.2% (32)	12.2% (9)	8.1% (6	74
	BDG	13.9% (10)	33.3% (24)	31.9% (23)	20.8% (15)	72
8.Carrying out gestures and/or body-movements whilst singing makes misconceptions and tensions visible	ANATS	5.4% (4)	36.5% (27)	32.4% (24)	25.7% (19)	74
	BDG	8.3% (6)	20.8% (15)	31.9% (23)	38.9% (28)	72
9.Every voice student should be able to carry out certain gestures and/or body-movements whilst singing to make sure he/she has understood relevant concepts	ANATS	18.9% (14)	29.7% (22)	39.2% (29)	12.2% (9)	74
	BDG	11.1% (8)	36.1% (26)	26.4% (19)	26.4% (19	72
10.the positive effect of learning with a gesture and/or body-movement stays with the singer even when he/she later sings without carrying out the gesture and/or body-movement	ANATS	1.4% (1)	9.6% (7)	42.5% (31)	46.6% (34)	73
	BDG	1.4% (1)	12.5% (9)	36.1% (26)	50.0% (36)	72
11.Gesture and/or body-movement can at times be valuable tools, particularly when it comes to relaxing and energising the body	ANATS	0.0% (0)	6.8% (5)	19.2% (14)	74.0% (54)	73
	BDG	2.8% (2)	12.5% (9)	31.9% (23)	52.8% (38)	72
12.The regular use of gesture and/or	ANATS	50.0% (37)	35.1% (26)	1.4% (1)	13.5% (10)	74

body-movement is likely to lead to a situation where a singer will not be able to replicate the same vocal quality when singing without any movement	BDG	23.6% (17)	37.5% (27)	23.6% (17)	15.3% (11	72
13.Linking movement with tone production leads to singers who cannot sing unless they flap their arms or do something similarly unattractive	ANATS	86.5% (64)	10.8% (8)	1.4% (1)	1.4% (1)	74
	BDG	48.6% (35)	34.7% (25)	11.1% (8)	5.6% (4)	72
Other - Please specify (see below and Appendix B)	ANATS	8				
	BDG	13				
Skipped Question	ANATS	1				
	BDG	0				

The table shows a few interesting differences in attitudes between the two respondents groups. Statements 7, 12 and 13 (which highlighted aspects that might put one off using gesture and/or body-movement) got a much higher levels of agreement from BDG-respondents than ANATS-respondents. It had been shown above that BDG respondents were similarly enthusiastic users of gesture (Question 15) and even more enthusiastic users of body-movements (Question 22)as their ANATS counterparts; responses to question 27 suggest however a particularly high level of wariness regarding the pitfalls of gesture and body-movement use amongst BDG-respondents. It is also notable that only the carefully worded statement No. 3 achieved (some level of) agreement from all respondents. Again a number of respondents took the opportunity to add their own statements or comments; those of the ANATS-group included:

> To use gesture and body movements to clarify and enhance production of good tone and musicality, especially in the initial stages of learning technique and specific songs helps the student to internalise the correct sensations for the desired vocal outcome. As these become familiar and habitual, the gestures can be "internalised" so that the tone and musicality are achieved by the thoughts, emotions and physical memories of those sensations.

Another stated "The key here is 'whilst singing' – I prefer to give movements to allow them to feel & to understand each concept THEN they will feel it whilst singing".

BDG respondents contributed a whole list of thoughts, including "Just like a gesture needs practice, one must also practice reducing (omitting) the gesture to a mere thought that controls the mechanism. In singing, the body is always supple and never rigid". Another added:

> Some gestures are part of an interpretation, other gestures and movements (not staged) are part of the teaching process to achieve better understanding, relaxation etc., but these should be reduced after a certain point to avoid the student depending on them. A defining experience in my first year at Uni was that I was supposed to bend my knees with every high note. Unfortunately the professor had forgotten to point out to not do this in my public performance examination – and so I must have looked like a chicken.

This little anecdote and other comments suggest that the imperative to be able to stand still in performance is a very important point for all respondents. Please refer to Appendix B for a full list of respondents' answers.

28. This question sought to gain information which (if any) body-awareness and/or breathing schools and/or methods were most influential to voice teaching

Table 31

Schools of body-awareness

Below is listed a number of body-awareness/breathing approaches. Please rate to which extent each of them influences your own teaching practice and/or indicate any other approaches you might refer to in your teaching

Answer Options	Sur-veyed Group	Not at all	Super-ficially	Palpably	Strongly	Response Count
Felden-krais	ANATS	36.6% (26)	32.4% (23)	16.9% (12)	14.1% (10)	71
	BDG	21.2% (14)	36.4% (24)	34.8% (23)	7.6% (5)	66
Alexander Technique	ANATS	8.3% (6)	30.6% (22)	27.8% (20)	33.3%	72
	BDG	25.8% (16)	37.1% (23)	33.9% (21)	3.2% (2)	62

Yoga	ANATS	28.2% (20)	28.2% (20)	31.0% (22)	12.7%	71
	BDG	31.7% (20)	31.7% (20)	28.6% (18)	7.9% (5)	63
Tai Chi	ANATS	52.9% (36)	30.9% (21)	8.8% (6)	7.4% (5)	68
	BDG	51.7% (31)	23.3% (14)	18.3% (11)	6.7% (4)	60
Midden-dorf[65]	ANATS	89.4% (59)	7.6% (5)	3.0% (2)	0.0% (0	66
	BDG	61.4% (35)	17.5% (10)	14.0% (8)	7.0% (4)	57
Accent-method	ANATS	30.4% (21)	23.2% (16)	20.3% (14)	26.1%	69
	BDG	88.5% (46)	3.8% (2)	7.7% (4)	0.0% (0)	52
Other-Please specify (see below and Appendix B)	ANATS	16				
	BDG	27				
Skipped Question	ANATS	3				
	BDG	2				

There is a particularly pronounced discrepancy between the two respondent groups. Amongst ANATS-respondents the Alexander Technique appears to be the by far most popular - with 91.7% reporting some degree of influence by the method – followed by Yoga and the Accent-method. BGD-respondents rated Feldenkrais highest followed by the Alexander Technique and Yoga. One might hypothesize that the extremely low rating of the Accent-method amongst BDG-respondents suggests that this method is still being very much perceived as belonging to speech pathology and is only slowly taking hold within the singing and voice teaching community. A large number of respondents named other methods which included on the ANATS-side "Speech Level Singing", "Estill Voice

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[65] Ilse Middendorf (1910 – 2009) developed her work, *Der Erfahrbare Atem*, known in English as the 'Perceptible Breath', over a lifetime of working with breath. The work encompasses many different areas of health, well-being, sports, creative, and spiritual practice.

Training", "Dalcroze Eurythmics", "Orff Schulwerk"[66] and "Pilates". And many more were added by BDG-respondents, including "Qigong"[67], "Kinesiology"[68] – "Eutonic[69] physical exercises", "Kristin Linklater"[70], "Tomatis", "Breathing – (muscle)tone – (vocal)tone after Maria Höller-Zangenfeind", "Rabine-Method", "Michael Heptner", "Music-kinesiology and creative dancing", "In a non-dogmatic format: solar – lunar and Julius Parow[71], in connection with singing: craniosacral therapy"[72], "Continuum movement"[73],"Coblenzer-Muhar [74] (Intentional singing)"[75], "Rohmert[76]-exercises", "Exercises from the Schlaffhorst-Andersen[77] speech-pedagogy", "Autogenic training"[78] and "Catienica-method"[79]. One respondent identified as "strongly influenced by Terlusollogie[80], which offers a wonderfully differentiated instrument for voice, humans, posture, movement and imagery", whereas another respondent commented "Recently there is a lot of talk about breathing-types according to Terlusologie – unproven nonsense. I only use methods that can be physiologically explained".

It is notable that many of the influences and methods named by BDG-respondents are little known in Australia, the most esoteric of which being *Terlusollogie,* a school which has nonetheless a number of ardent followers. Please refer to Appendix B for a full list of respondents' answers. The fact that so many different approaches to body-awareness and

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[66] Founded by the German composer and music educator Carl Orff (1895 – 1982), Schulwerk combines music, movement, drama and speech into a - predominantly but not exclusively - early music education concept.

[67] A practice of aligning breath, movement, and awareness for exercise, healing, and meditation with roots in Chinese medicine, martial arts and philosophy.

[68] An alternative and holistic therapy that involves the study of movement.

[69] Eutony is a body-awareness methodology founded by the German dancer, choreographer and pedagogue Gerda Alexander (1908 – 1994).

[70] Scottish (later USA) actor and voice coach, founder of the Linklater Voice/Freeing the Natural Voice methodology.

[71] German medical doctor (1901 – 1985), founder of a function-based breathing therapy.

[72] Alternative medicine therapy used by osteopaths, massage therapists and naturopaths

[73] Movement education founded by the US American Emilie Conrad.

[74] Viennese Professor of acting H.Coblenzer and respiratory specialist Dr F.Muhar created a therapeutic breathing method to treat dysphonia. Core principle is the replenishing of breath by reflex action.

[75] Part of Coblenzer/Muhar's method, refers to the importance of connecting content with technique.

[76] German singer and voice pedagogue, founder of the 'Lichtenberger Institute of Applied Voice Physiology.'

[77] Oldest (early 19th century) in Germany developed breathing, voice and speech therapy.

[78] Relaxation technique developed in the 1930s by the German psychiatrist J.H.Schultz. Parallels in yoga and meditation.

[79] Body-shape, posture and movement concept developed by the Swiss B.Catieni.

[80] The term is made up of the Latin words terra = earth, luna = moon and sol = sun plus the Greek word λόγος (logos) = science/theory; an alternative-medical school founded by the German medical doctors Charlotte and Christian Hagena which differentiates between two breathing types, lunar 'inhalers' and solar 'exhalers'.

breathing technique are named and that none of the more established ones is embraced by a clear majority puts a question mark to the dogmatism often displayed by disciples of certain schools and gives rise to the suggestion that most, if not all 'methods' might indeed have at least some validity.

Gestures and Expression

29. Although the main focus of this survey was explicitly the use of gesture and body-movement as potential tools to improve vocal tone, gestures are also a vital ingredient in expressing the dramatic content of a musical piece and can also be used as an instrument to connect to a song or aria (Chekhov, 1953; Stanislavsky, 1960; Balk, 1985). This question therefore concerned the use of gestures to enhance expressiveness.

Table 32

Gesture as a tool for expressiveness

	Surveyed Group	Not at all	Rarely	Some-times	Regularly	Response count
Apart from their use as a tool to improve vocal tone, gestures can also play an important role in achieving expressiveness. Please indicate to what extent you instruct/encourage your students to use gestures as a means to access the emotional content of a song or aria?						
I encourage gestures to enhance expressive-ness	ANATS	1.4% (1)	8.1% (6)	43.2% (32)	47.3% (35)	74
	BDG	20.3% (14)	24.6% (17)	36.3% (25)	18.9% (13)	69
Skipped Question	ANATS	2				
	BDG	3				

The number of ANATS-respondents who identified as using gestures as a tool to enhance expressiveness is with 98.6% even higher the number of those using gesture in teaching/demonstration (94.7% –see Question7) or those encouraging gesture to facilitate learning (90.8% – see question 15). In contrast only 79.7% DBG-respondents identified as using gestures as a tool to enhance expressiveness compared with 100% (with one abstention) using gesture in teaching/demonstration (see Question7) and 88.7%

encouraging gesture to facilitate learning (see question 16). There appears to be a certain wariness in BDG-respondents towards students using gesture, particularly where expression is concerned which does however not affect ANATS-respondents.

30. Which expression-enhancing gestures?

Table 33

Examples of expression enhancing gestures

Here are examples of ways in which gestures can be used by students to increase their expressiveness. Please indicate to what extent you instruct/encourage the use of gesture in these ways and/or describe any other approaches you might use.						
Answer options	Sur-veyed Group	Not at all	Rarely	Some-times	Regularly	Resp. count
Move about the room whilst singing, letting the body language express the mood of the song	ANATS	5.4% (4)	18.9% (14)	48.6% (36)	27.0% (20)	74
	BDG	13.8% (8)	29.3% (17)	44.8% (26)	12.1% (7)	58
Act out a sung scene as if it were a spoken monologue	ANATS	5.4% (4)	9.5% (7)	50.0% (37)	35.1% (26)	74
	BDG	13.8% (8)	15.5% (9)	50.0% (29)	20.7% (12)	58
Carry out a "psychological gesture" (after M. Chekhov: a bodily posture/gesture that visualises a certain emotion is carried out so as to evoke that emotion)	ANATS	16.2% (12)	32.4% (24)	35.1% (26)	16.2% (12)	74
	BDG	24.6% (14)	26.3% (15)	31.6% (18)	17.5% (10)	57
Other- Please specify (see below and Appendix B)	ANATS	8				
	BDG	5				
Skipped Question	ANATS	2				
	BDG	14				

There is again a wide spread of responses and it is notable that a consistently higher percentage of BDG-respondents rejected the suggested gestures compared to ANATS-respondents. Own contributions of ANATS-respondents included: "I sometimes use

Laban (see Chapter 2) movements as 'psychological gesture', as well as for rhythmic precision and articulation", "Acting is very important for singers. It starts in the mind and is first expressed in the sound, then on the face before the rest of the body". A BDG-wrote:

> I sometimes encourage the student to discover his/her own gestures, but I am very careful not to prescribe gestures. Having taught a lot in China, I am very aware of copying. I really want to see the student's own gestures before mine are being copied

Another mentioned "Walk-in-the-room (*Raumlauf*[81]) function based exercises whilst singing songs and arias for greater vocal self-regulation". Please refer to Appendix B for a full list of respondents' answers.

31. At the end of the survey respondents were invited to add a general comment or suggestion, an opportunity that was taken up by 16 (21.1%) ANATS-respondents and 22 (or 31.5%). About a third of each group commented very positively on the survey, its topic and design; other comments reiterated the subject-inherent complexity and the dangers potentially arising from any over simplification as well as the fact that the benefit of the use of gesture and/or body-movement is highly dependent on the personality of the individual student (learning-types), the type of song being sung and the situation in which a song or musical phrase is sung (learning situation versus performance). One ANATS-respondent wrote:

    > To my mind there are two issues here. On one hand the student needs to be able to use their body freely & expressively. On the other hand the student needs to be able to achieve a 'neutral body' with no false support arising from superficial 'holding' or gesticulating. Knowing when to encourage one or the other mode is part of the art of teaching. Neither can be ignored.

Another stated: "Horses for courses for students. Most students respond well to gesture in my opinion, but some people are more language based than others, so it doesn't work for everybody". Some comments concerned technicalities like "Have an option button for 'I don't know'... some questions you present about the use of gesture are quite complex

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[81] Warm-up exercises used in theatre/improvisation workshops in which participants move freely around the room

concepts. One BDG respondent stated somewhat ironically "The problem is that many questions must be answered with a clear 'Yes and No' (German original: "Jein", a hybrid of *Ja* [Yes] und *Nein* [No]) because pedagogic movements must never be ends in themselves but must be employed depending on the deficiencies of a student". "This cannot/hardly be done in 15 minutes if one wants to answer reasonably conscientiously. I'm looking forward to the result of your work" (BDG). Generally the comments reflected the importance that respondents assigned to the survey's subject matter and the depth of thought they had given it. Please refer to Appendix B for a full list of respondents' answers.

The avid interest and positive response to the survey is also reflected in that 68.5% (52) of ANATS-respondents and 79.1% (57) of BDG-respondents followed the invitation to leave their email contacts on a provided list in order to be informed of the result of this study.

Summary

It came somewhat as a surprise that the great majority survey respondents (in the case of BDG-respondents, all bar one) used gestures actively in their teaching-communication and that an almost equally great majority of respondents were actively encouraging gestures and body-movements as learning tools for students. The fact that only very few respondents explicitly rejected the use of gestures and body-movements – although many called for greatest caution and differentiation may have been interpreted as an indication that the great majority of all voice teachers used gestures and body-movements in one way or the other – as one BDG-respondent commented: "I find this survey rather unnecessary as I have never encountered a single voice pedagogue who did not employ gestures and movements…". This notion is however contradicted by a substantial amount of anecdotal and empirical evidence attesting that many voice teachers neither gesture themselves nor encourage movement. The author's own observational study (Nafisi, 2007, 2008, 2013) included one out of five observed teachers who did not use gesture at all in her teaching and Lehmann (1993) for instance, emphasizes the importance of bringing "the body under control, that is, to remain quiet" arguing that, "the quieter the singer, the more impressive is every expression he or she gives" (p.106).

It appears that one cannot conclude that the percentage of gesture and body-movement users amongst respondents reflects the percentage of gesture and body-movement users amongst voice teachers in general and the surprisingly unanimous positive response is more likely due to a simple 'self-selection' of invitees brought about by the topic: predominantly those teachers who were actively using and encouraging gestures and body-movements in their teaching responded. On the other hand there are obviously many potential reasons for not-responding to a lengthy survey which have nothing to do with the subject matter. We can therefore neither conclude that all advocates of gesture and body-movement amongst the invitees actually responded nor that non-response to the survey implies a rejection of the incorporation of gestures and body-movement in vocal teaching.

Although it is thus unfeasible to put even a vague percentage on advocates or rejecters of gesture and body-movement in vocal teaching, the still significant number of responses of professional voice teachers means that the first three hypotheses or sub-contentions of the study have clearly been confirmed: The various gestures and movements encountered in the context of teaching and learning singing had been identified and categorized in the Nafisi-system which had consequently been validated through its acceptance by a significant number of voice teachers (1a). Gestures of various descriptions are used by a significant number of voice teachers to enhance explanation and/or demonstration (1b) and a significant number of voice teachers encourage their students to carry out similar gestures as well as body-movements whilst singing to enhance their learning experience (1c).

The quest for favoured gestures and body-movements as needed for a confirmation of sub-contention 1dhowever showed a less clear result and can thus only be partially affirmed. There appear to be a limited number of, one might say 'obvious' gestures like 'conducting gestures' which were used by a majority of voice teachers, confirming Cofer's (1998), finding that conducting gestures consist to a large part of emblems (that is universally understood non-verbal acts that have a universally understood verbal translation [Ekman, 1969]): being largely able to be spontaneously understood makes conducting gestures a likely tool to communicate musical concepts. A limited number of simple forms of body-movements like 'walking' or the 'spreading of arms' were also widely accepted as useful and there was also a consent regarding the validity of 'posture

enhancing' movements/stances, reflecting the importance assigned to posture in the voice teaching community (Bunch 1993; Miller, 1996; Davis, 1998; Hemsley, 1998; Thurman & Welch, 2000; Callaghan, 2000; Caldwell, 2001; Kayes, 2004; Chapman, 2006; Nair, 2007; Smith, 2007). Regarding more specific gestures and body-movements however it was found that the majority of examples met with similar numbers of frequent users and rejecters in both respondent groups. It becomes clear that, even within a group of voice teachers who generally subscribe to the advantages of gesture and body-movement use, there exists a high level of individuality regarding which specific gestures and body-movements are used. This tendency towards personal preference is also reflected in the finding that no body-awareness method was a clear favourite giving rise to the conclusion that a number of different 'body/breathing/alignment - schools' might actually have equal validity.

Sub-contention 1e which suggested that voice teachers were utilising gestures and body-movements for similar reasons, can be answered in a cautious affirmative: despite a palpable hesitancy towards some offered reasons, the majority of respondents appeared to see similar advantages in the use of gestures (namely the capacity of gestures to visualize hidden mechanisms, illustrate musical concepts or to provide an external attention focus) and body-movements (namely achieving relaxation, release of tensions, postural improvement, raising body awareness and physical energy). These reasons are backed up by findings in the context of choral rehearsal as well as motor-learning (Wis, 1993; Seitz, J., 1993; Cofer, 1998; Skadsem, 1997; Stollak, 1998; Peterson, 2000; Chagnon, 2001; Goldin Meadow, 2003; Bailey, 2007; Wulf, 2007; Durrant, 2009; Mathers, 2009).

Regarding the definition of gesture-types, there seems to have been some occasional confusion between gestures in communication (used by the teacher in the explanation and/or demonstration of musical concepts, singing related mechanisms and/or acoustic phenomena) and similar gestures employed as learning tools (carried out by the student whilst singing the facilitate learning) visible in a small number of comments. Overall however, the categorization into musical gestures, physiological Gestures, sensation related gestures and body-movements as presented in the Nafisi-system appears to have been accepted as coherent by both respondent groups. Validated by a large audience of highly trained voice teachers in two countries with long traditions of music education of

the highest standard, this nomenclature can henceforth legitimately be used to refer to movements encountered within the context of the teaching of singing.

A comparison between the two respondent groups paints an inconclusive picture regarding the subject matter of the survey with some significant differences in the general data. These include discrepancies in the training and education structure with Germany tending towards a more unified tertiary approach and a greater emphasis on classical singing. A number of German tertiary level music qualifications like *Kirchenmusik* (church/sacred music) or *Schulmusik* (music in schools) have no equivalent in Australia. There appeared to be much less voice teaching in secondary schools in Germany than in Australia which was however compensated by a greater number of voice teaching in dedicated music schools in Germany. Private teaching played an important role for both respondents groups. There was a significantly higher number of active singers amongst ANATS-respondents compared to their BDG-counterparts. Regarding the core subject of the survey, a relatively similar percentage of both respondent groups identified as using gesture and body-movement both as a tool for communication and as a learning tool but a significantly lower percentage of BDG-respondents used gesture to enhance expressiveness. Regarding the influence of breathing/body-alignment methods, BDG-respondents named a large number of schools and methodologies that are virtually unheard of in Australia (see Appendix B).

In conclusion one can say that the survey has yielded a large amount of hitherto unavailable quantitative and qualitative data which could hardly have been acquired in any other way: The unthreatening nature of an anonymous self-reporting questionnaire persuaded respondents to offer some insight into the intimate space of the singing studio and their teaching practice. The survey has confirmed the significant role of gesture and body-movement in the teaching of singing, consolidated the author's way of denoting and distinguishing these specific gestures and movements. The next chapter will introduce the conceptualization of an experiment designed to test the validity of this teaching intervention by gauging the effect of some gestures and body-movements on the quality of singers' vocal tone.

Chapter 5: Experiment - Outline and Design

The last chapter has demonstrated that gesture and body-movement are widely used both by voice teachers in the communication of singing related concepts and by students – upon their teachers' instructions – to facilitate learning. The next chapter will give a detailed account of the design and set-up of an experiment that has been conceived with the express purpose to find proof for the actual efficacy of carrying out specific gestures and body-movements while singing.

Outline

Experimental research is the only type of research that attempts to influence a particular variable and is ideally suited to test hypotheses about cause and effect relationships. The basic principle underlying experimental research is, put simply, to "try something and systematically observe what happens" (Fraenkel & Wallen, 2000, p.284). In an experiment, researchers look at the effect(s) of one or more *independent* or *experimental variable(s)* on one or more *dependent variable*: in a set chain of events, the researcher manipulates the independent variable and measures any changes in the dependent variable. In most experiments there are also a number of other factors which cannot be manipulated but potentially also impact on the dependent variable – in educational research these are for instance participants' age, gender, intelligence, learning style as well as cultural and socio-economic background. The terminology regarding these variables varies in different sources and includes 'extraneous' (Fraenkel & Wallen, 2000), 'organismic', 'intervening', 'nuisance' or 'confounded' variables (Wiersma, 1995). An experiment is said to have *internal validity* if the changes observed in the dependent variable have unarguably been effected by the independent variable and not by an extraneous variable. It is therefore imperative to *control for*, that is eliminate or minimize the effect of extraneous factors. Recurring factors in the experiment which are the same for all subjects (participants) are called *constants*.

Experimental designs can vary in terms of how many groups participate: most experiments might involve two groups of subjects: an *experimental group* for which the independent variable is manipulated in one way (receives some sort treatment) and a *control group* for which the independent variable is manipulated in another way (receives no or another, already known treatment) but it is also possible to have just one group and

compare their performance under both (all) treatments. Experimental designs can also vary in how often the independent variable is being manipulated and when and how often the dependent variable is measured (Wiersma, 1995).

Although the survey (Chapter 4) had shown that a significant number of voice teachers encouraged their students to carry out gestures and/or body-movements whilst singing to enhance students' learning experience, there was no actual proof for the efficacy of this teaching intervention. Therefore an experiment has been designed investigate the following contentions and sub-contentions (see also Chapter 1).

2. Gesture and body-movement are helpful tools for the acquisition of vocal technique, namely vocal tone production;

   a. There is a significant benefit – measurable in the quality of singers' vocal tone – in using a vocal teaching method in which the student is instructed to carry out specific gestures and/or body-movements whilst singing compared to a vocal teaching method in which the student follows verbal instruction with an unmoving body;

   b. This benefit is evident in the rate in which the quality of vocal tone improves as an immediate result of a first teaching intervention;

   c. This benefit is evident in the rate in which the quality of vocal tone improves after the same teaching intervention has been applied over a number of weeks;

   d. This benefit is evident in all tested exercises;

   e. This benefit is evident independent of participants' previous singing experience;

   f. The positive effect of the incorporation of gestures and body-movements is being felt by a majority of participants;

Objective of this experiment was to investigate the validity of gesture and body-movement as tools to improve vocal tone by measuring the effect that carrying out specific gestures and/or body-movements whilst singing specific vocal exercises had on the quality of the sung vocal tone. In order to claim relevance for vocal pedagogy practice, it was important that the validity of this teaching intervention was tested in a setting that resembled an authentic voice teaching situation as far as possible.

Ethical permission having been gained (see Appendix A) participants were recruited amongst staff and students of Monash University and the Melbourne Conservatorium of Music who volunteered their participation by responding to a poster or word of mouth invitation. Participants were given an Explanatory statement (see Appendix C) and signed a consent form agreeing to various uses of the obtained data (see Appendix D); a pre-experimental questionnaire was used to gather information about age, gender and singing experience and participants' preferred learning styles and general attitude towards movement (see Appendix E). At the conclusion of the experiment, participants completed a post experimental questionnaire (see Appendix F) to record their preferences of the employed teaching strategies and a self-assessment of their vocal progress.

The experimental (or independent) variable of this experiment was the teaching intervention whose efficacy was being measured. It had two levels: Level (1) was a teaching intervention which used no gesture or body-movement and was called *NGM-approach* or *NGM-intervention.* Level (2) was a teaching intervention that incorporated gestures and body-movements and was called *GM-approach or GM-intervention.*

The dependant variable was the quality of vocal tone whose definition was based a number of acoustic and physiological indicators; the efficacy of two different types of interventions that is experimental variable Levels (1) NGM and (2) GM was expected to be reflected in the change of the quality of the vocal tone.

The constants in this experiment were the teacher/researcher, four vocal exercises and the basic experimental procedure. Anticipating participants' individual idiosyncrasies and aiming to replicate a "normal" teaching situation as far as possible, the two levels of the independent variable (NGM or GM-intervention) were formulated allowing some flexibility within a certain framework. Extraneous variables like participants' age, sex, singing background and learning style were recorded and later correlated with the measured results. Individual differences in participants' aptitude in dealing with the movement and singing tasks were controlled for by "using the subjects as their own controls" (Fraenkel & Wallen, 2000 p.287) in the experimental design – that is by comparing participants' progress to their own pre-test recording. Any potential effect of the order in which exercises were sung and which teaching intervention was being used was controlled for by randomizing both order and choice of teaching intervention for each participant.

Each participant's recordings of an exercise were to be compared in a pre-test – repeat measure – post-test sequence that is his/her first recording (pre-test/base-line) were compared to his/her second recording (post-test/after the first teaching intervention) and again with his/her last recording (repeat measure/post-test).

Beginning with the first recording, the middle two phrases of each on average seven phrase long recording were extracted and their key noted. The two exercise-phrases in the same key were then also extracted from the second and last recordings. There were now three recordings (base-line, after first intervention, after consecutive intervention) of four exercises per participant. These recordings were coded, organized into *Listening Evaluation Groups* (LEGs) and evaluated by expert listeners by marking on a rating scale any perceived change of vocal tone quality in the second and last take of an exercise compared with the participant's first take of that same exercise. In order to find sufficient numbers of expert listeners, members of professional voice teacher organisations in Australia, the USA, the UK and Germany were invited to participate in the listening evaluation (see Appendix G). The obtained data was analysed using statistical analysis tools in Microsoft excel and SPSS.

The format of the experiment can be dubbed *a One-Group – Pre-test – Repeat-Measure – Post-test – Design.* The procedure can be summarized as follows:

- Volunteer Participants recruited;

- Participants completed a brief questionnaire regarding their age, gender, singing experience, self-assessed learning style and aptitude for movement tasks;

- Participants were led through a brief vocal warm-up;

- Participants were introduced to four vocal exercises in an order which had been randomly assigned and remained the same throughout the experiment;

- The four exercises were recorded (pre-test);

- A teaching intervention took place: independent variable level (1), the NGM approach was used for the first and third sung exercise; independent variable level (2), the GM-approach was used for the second and forth exercises;

- After the first teaching intervention the exercises were recorded again (post-test);

- Participants were given written instructions outlining the exercises and respective teaching interventions as well as a home practice diary;

- Home practice was encouraged but not compulsory. However, where home practice occurred, it was asked to follow the instructions as closely as possible and to record practice sessions in the provided diary (See Appendix H);

- The same teaching interventions for the same exercises in the same order took place in three consecutive session and the exercises were recorded after each teaching intervention (repeat measure and post-test);

- At the conclusion of the experiment participants completed a post-experimental questionnaire regarding their perception of the teaching interventions and perceived vocal tone change (see Appendix F);

- Participants returned their practice diaries;

- The obtained video and audio footage was organized, coded and prepared for evaluation by independent expert listeners;

- Coded and organized data put up on a Monash University research website for online-evaluation;

- Expert listeners were recruited/invited;

- Expert listeners listen to, evaluate and mark their perception of change in tonal quality when comparing takes after an intervention with a base line value;

- Data obtained from evaluation process cleaned and prepared for evaluation;

- Various analyses were conducted, addressing contentions 2a-f;

Variables

The experimental (or independent) variable of this experiment was the teaching intervention whose efficacy was being measured. It had two levels: Level (1) was a teaching intervention which used no gesture or body-movement; Level (2) was a teaching intervention that incorporated gestures and body-movements. The dependant variable was the quality of vocal tone as perceived by expert listeners and loosely based on a number

of acoustic and physiological indicators associated with the Western classical singing tradition. The constants in this experiment were the teacher/researcher, four vocal exercises and the basic experimental procedure. In the following these constants and variables are described in detail.

Constants

The constants in this experiment were the teacher-researcher who conducted the entire experiment on her own and the vocal exercises. The exercises had been designed to showcase a variety of vocal features and vowels while remaining deliberately simple in their layout; they emulate vocal exercises widely used in classical voice lessons particularly on a beginner/intermediate level. The order in which the exercises were sung was randomized and remained unchanged for each participant throughout the trial.

Exercise A: Technical considerations and objectives

Major triad, with "see-saw" (1-3-5-3-5-3-1, do-mi-so-mi-so-mi-do) on [i] (here written as [ee] so as to be more recognisable for participants who were unfamiliar with the International Phonetic Alphabet)
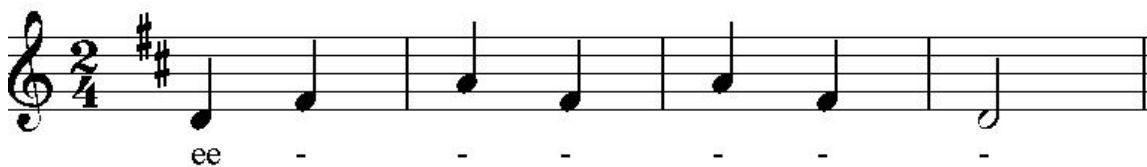
- [i] is the most frontal of all vowels (the closest, regarding forward tongue position). The mouth opening is horizontally elongated as in a pleasant facial expression (Miller, 1996);

- The lower jaw (mandible) is in a position that shows limited space between the two rows of teeth (Miller, 1996);

- In the [i] vowel, there is considerable pharyngeal room and the soft palate is elevated higher than in any other vowel (Miller, 1996; Bunch, 1993);

- The legato line requires seamless transition from one pitch to the next;

- Objectives of this exercise are to achieve a focused and clear [i] vowel with good forward placement and resonance, to achieve consistent vowel colour, tonal quality and vibrato rate throughout the phrase as well as a smooth legato line;

Exercise B: Technical considerations and objectives

Major triad plus sixth (1-3-5-6-5-3-1, do-mi-so-la-so-mi-do) on an [U] vowel (here written as [oo] so as to be more recognisable for participants who were unfamiliar with the International Phonetic Alphabet)

- In the [U] vowel, the front portion of the tongue is lowered whereas the back portion of the tongue is elevated, leaving little space between the tongue and the soft palate;

- Whilst there is little space in the buccopharyngeal[82] area, more room exists in the forward part of the mouth (Miller, 1996);

- In [U] the soft palate becomes dome shaped, larynx is at its relatively lowest natural position (Bunch, 1993);

- Particularly in the German and French version of the [U] vowel the lips are rounded and the mandible somewhat lowered;

- The voice should progress seamlessly from one pitch to the next;

- Objectives of this exercises are to become aware of and practise the above described [U] vowel shape, to achieve consistent vowel colour, tonal quality and vibrato rate throughout the phrase as well as a smooth legato line;

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[82] Referring to mouth and pharynx

Exercise C: Technical considerations and objectives

Five tone scale (1-2-3-4-5-4-3-2-1, do-re-mi-fa-so-fa-mi-re-do) on the syllables [vɔ]-[lɑ] (here written as [voh]-[lah] so as to be more recognisable for participants who were unfamiliar with the International Phonetic Alphabet)

- This exercise introduces two syllables (units consisting of a consonant and a vowel);

- The [v] is a voiced labiodental fricative continuant;

  o *Voiced* means the vocal cords are vibrating during the articulation;

  o *Labiodental* means it is articulated with the lower lips and the upper teeth;

  o *Fricative* means it is produced by constricting air flow through a narrow channel at the place of articulation, causing turbulence;

  o A *continuant* is a sound produced with an incomplete closure of the vocal tract;

- The [l] is a alveolar continuant;

  o *Alveolar* means it is articulated with the tongue against or close to the superior alveolar ridge (the bony sockets of the superior teeth);

  o A *continuant* is a sound produced with an incomplete closure of the vocal tract;

- When singing [ɑ] the mandible is somewhat lowered and the tongue lies flat on the floor of the mouth cavity;

- The vowel requires a slight rounding of the lips as the mouth opening is slightly smaller for than for the [ɑ]. The acoustic definition of the [ɔ] requires some elevation of the back of the tongue (Miller, 1996);

- The exercise requires smooth transition from the voiced consonants to the respective vowels without any sudden "explosions" of sound;

- Where the transitions is from pitch to pitch on [ɑ] or [ɔ] without the consonants (i.e. within the groups of quavers) it should be smooth, clear, without slur and without the insertion of a [h];

- Objectives of this exercise are to practice legato singing of a consonant-vowel combination (i.e. a syllable), to achieve consistent vowel colour throughout each syllable with a clear distinction between the two vowels [ɑ] and [ɔ]; further to achieve consistent tonal quality and vibrato rate throughout the phrase;

Exercise D: Technical considerations and objectives

Staccato arpeggio (1-3-5-8-5-3-1, do-mi-sol-do-sol-mi-do) on [ɑ] (here written as [ah] so as to be more recognisable for participants who were unfamiliar with the International Phonetic Alphabet)

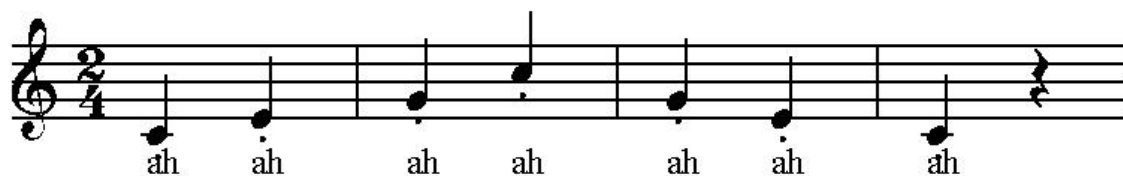- Onset of sound can happen in a variety of ways (Miller, 1996);

    o In the 'hard' onset or 'glottal attack' the vocal folds are firmly closed (adducted) prior to phonation leading to a build-up of air pressure below the folds. The sudden release of this pressure when phonation begins produces the glottal plosive (grunt) associated with this onset;

    o In the soft or 'aspirated' onset there is an audible flow of air through the vocal folds transcribed as [h] before the vocal folds gradually begin to vibrate and the full tone of phonation is heard. Whispering is the extreme form of this type of onset;

    o In the balanced onset the vocal folds are completely but gently closed and set in motion by a consistent air stream. It requires dynamic equilibrium of the

participating musculature and of subglottic pressure as well as "prephonatory tuning" (Miller, 1996, p. 4).This is the most desirable version in the Western classical singing tradition;

- The balanced, coordinated onset demands that the glottis has been fully opened with the preceding inhalation, and the momentary silence between each release and onset should be absolute;

- Objectives of this exercise are to achieve and practice a balanced onset and release of each brief note in a bright [ɑ] vowel in a light tonal quality; the quick and light onset in this fast arpeggio also promotes range extension;

Another constant, albeit to a lesser degree, was the delivery of the teaching instructions; while the type of teaching intervention constitutes the experimental or independent variable (as described in detail below), the respective instructions, either level 1 (NGM, involving no gesture and/or movement) or level 2 (GM, involving gesture and/or movement) were very similar for each participant. While the words in which the instructions were communicated to the participants might have varied slightly in response to individual participants, care was taken to deliver the same instructions to every participant as documented in the video recordings of the sessions. Each participant was also given a printed copy with the core elements of the instructions as they are given below in description of the teaching-interventions. Pre-recorded instructions guaranteeing identical wording and demonstrations for all participants had been considered, but the idea was dismissed because it had been deemed vital for the validity of the experiment that the experimental singing lessons resemble normal singing lessons as far as possible; for the creation of trust and a relaxed atmosphere personal communication between teacher and student has been found indispensable. This decision will be discussed in Chapter 8.

Experimental/independent variable

The experimental or independent variable is the factor in the experiment whose effect is being investigated. As this experiment was set up to measure the efficacy of a specific type of teaching intervention, the experimental variable is the teaching-approach or intervention. It has two levels: Level (1) of the experimental variable has been tagged NGM (No Gesture or Body-Movement), Level 2 of the experimental variable has been

tagged GM (With Gesture and/or Movement). The following script of the instructions was adhered to rather closely although there was a certain degree of freedom to meet the idiosyncrasies of participants. A print out of the instructions was also given to the participants to help with home practice. Where, in the GM-approach, there was more than one gesture/movement possible with an exercise, the teacher-researcher chose the one deemed most suitable for a participant.

Experimental variable Level 1 (NGM-intervention)

Level (1) of the teaching intervention has been called *NGM-intervention* and sought to emulate traditional and generally recognized approaches offering a mix of physiological/acoustic explanations and instructions (Miller, 1996, 2003, 2004), use of imagery (Hemsley, 1996; Patenaude-Yarnell, 2003) and demonstration but barring the involvement of gesturing or movement on the participants' side. In the design of the NGM-approach care was taken to avoid bias towards one particular teaching method (see Chapter 2) in accordance with a majority of singing teachers who appear to be advocating a combination of various teaching elements (Dayme, 2006; Chapman, 2006; Smith, 2007; Ware, 2013).

In the NGM-approach each vocal exercise was played on the piano and demonstrated (that is sung) by the teacher/researcher followed by a description of the desired tone quality and necessary mechanisms through a combination of acoustic and physiological explanations and vocal imagery. The participant was given instructions relating to the tone-producing physiological mechanism and/or to the desired tonal quality and asked to sing the phrase with a focus on the required physiological mechanism and the produced singing tone. Whilst care was taken that the singer assumed a well aligned posture, he or she was discouraged from moving whilst singing.

Exercise A: NGM Teaching Intervention

1/do   3/mi   5/so   3/mi - 5/so - 3/mi - 1/do

- Stand comfortably with equal weight on both feet, feet roughly hip wide apart;

- Feel the pulse of the 2/4 beat. Breathe out. Breathe in on the pulse before you start singing;

- Seek and retain an open, "spacey" feeling in the throat as in the beginning of a yawn;

- Feel your tongue arching high but broadly in your mouth, so that you can feel its rims touch the upper molars;

- Imagine the [ee]-vowel as a very focused sound, somewhat like a cutting vertical edge;

- Repeat the [ee]-vowel in your mind as you sing;

- Do not sing an [h] when moving from one pitch to the next, but rather use a [y])as in [yippee] as you glide from pitch to pitch;

- Though aiming for a clean move from one pitch to the next, a little sliding is acceptable;

Exercise B: NGM Teaching Intervention

OO - - - - - -

1/do - 3/mi - 5/so - 6/la - 5/so -3/mi   1/do

- Stand comfortably with equal weight on both feet, feet roughly hip wide apart;

- Feel 6/8 beat in moderate tempo, with one pulse per dotted crotchet/forth note (group of three quavers/eights notes);

- Shape your mouth as if utterly surprised and/or as if you have a piece of hot potato sitting on your tongue i.e. lift your palate and drop the base of your tongue;

- Find the [oo]-vowel like in the French "L'am<u>our</u>";

- Breathe out. Breathe in on the beat preceding onset;

- Sing with an even vowel sound seeking even vibrato rate on each pitch;

- Repeat the [oo]-vowel in your mind as you sing;

- Feel that the line flows horizontally rather than up and down;

- Do not insert an [h] between vowels;

Exercise C: NGM Teaching Intervention

voh- lah - voh- lah - voh

1/do-2/re-3/mi-4/fa-5/so-4/fa-3/mi-2/re - 1/do

- Stand comfortably with equal weight on both feet, feet roughly hip wide apart;

- Feel the 4/4 pulse;

- Breathe out. Breathe in on the fourth note (crotchet) before onset;

- Think and form the vowel [oh] before the consonant [v];

- Take care to sing the voiced consonants on pitch;

- Sing with a smooth transition from vowel to vowel ([oh] to [oh] and [ah] to [ah]) without the insertion of a [h];

Exercise D: NGM Teaching Intervention
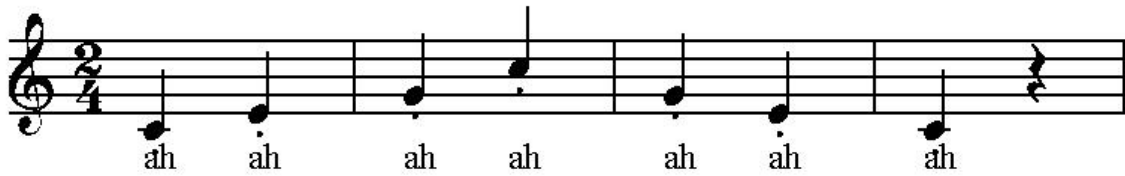
- Stand comfortably with equal weight on both feet, feet roughly hip wide apart;

- Feel the 2/4 pulse;

- Breathe out. Breathe in just one crotchet before onset;

- In order to avoid a hard, glottal onset, feel a bit of airflow, like an inaudible [h] before each note. However there should be no (or very little) audible [h];

- Feel a certain elastic bounce with each note;

- Hear the right pitch in your "inner ear" before trying to sing the phrase;

Experimental variable Level 2 of (GM-intervention)

Level 2 of the teaching intervention has been called *GM-intervention* and employed a mixture of physiological and sensation related gestures and body-movements (see Chapter 3) which, following detailed instructions by the teacher-researcher, were carried out by participants whilst singing. The purpose of the prescribed gestures/movements in the GM approach was one or more of the following:

- Help the body assume a posture conducive to tone production;

- Counteract reflexive reactions of the body detrimental to tone production like raising of shoulders, stiffening of neck, raising of larynx, tightening of abdominals or epigastrium[83];

- Embody/illustrate a core acoustic characteristic of the desired tone quality;

.[83]The epigastrium (or epigastric region) is the upper central region of the abdomen; it is neither a muscle nor is it an organ, but it is a zone of activity where the actions of the *rectus abdominus* and the diaphragm produce an outward bulging of the upper abdominal wall.

- Embody/illustrate a core part of the physiological mechanism essential to tone production;

- Help to achieve effective inhalation;

- Provide an external focus (Wulf, 2007) for the singer's attention;

- Take inner visualisation a step further by actually giving a visible form to a sound and/or phrase;

In the GM-approach each exercise-phrase was first demonstrated as follows: the researcher-teacher sang the exercise and carried out the respective gesture or body-movement. The gesture/body-movement was then repeated and verbally described emphasising its core characteristics. The coordination between the movement and the sung exercise phrase was explained in detail and demonstrated. The participant was then asked to copy the teacher-researcher's gesture/movement with the teacher-researcher correcting mistakes in posture, form and coordination. Having grasped the gesture/movement, the participant was asked to perform it in coordination with the respective vocal exercise that is to sing and move at the same time. The participant was asked to focus his/her attention on the coordination of the gesture/movement and the image it encapsulated rather than on the actual singing. This was practiced until the gesture/movement and vocal exercise could be carried out in correct coordination and with some ease.

Although it has been shown in Chapter 4that gestures and/or movements are relatively widely used in the teaching of singing, the specific gestures and movements employed in this experiment were exclusively of the author's own design:

Exercise A: GM-Teaching Intervention: Prescribed Gesture (GM)

do/1   mi/3 - so/5 - mi/3 - so/5 - mi/3 - do/1

Figure 3: Prescribed gesture (GM) Exercise A

The gesture shown in Figure 3 (1 – 7) can be described as follows:

- Stand with your dominant leg about a step in front, like taking a small step;

- With inhalation, the dominant hand (i.e. the hand on the same side as the front foot) is raised from its hanging position next to the body and brought up along an imaginary vertical centre line in front of the body (Fig. 3.1);

- The forward pointing fingers are held together and form with the palm a blade-like entity attached to which the singer might imagine a fast running saw-blade;

- As the singer sings the first two notes of the triad (do-mi/1-3) the hand is just passing the belly button level on its way up (Fig. 3.2 and 3.3);

- Just before reaching the highest note (so/5) the hand changes direction and moves now slowly downward as in a deliberate cutting action (Fig. 3. 4);

- As the phrase moves down, from so/5 to mi/3 the hand changes direction, moving upwards when the voice sings 3/mi (Fig. 3.5);

- The hand changes direction again, moving downwards when the phrase reaches so/5 again (Fig. 3.6) and keeps going down slowly for the final mi- do/3-1 but keeps pointing forward (not downwards) until the phrase is ended (Fig. 3.7);;

- This means that except for the first and last two notes, the hand moves in the opposite direction than the phrase i.e. downward when the phrase moves up and upward when the phrase moves down;

- Keep your eyes on your fingers or rather on the imaginary cutting blade. 'See' the fast smooth movement and the 'cutting edge';

- Keep both shoulders down;

Rationale for this Gesture (GM)

- Following the Nafisi-system (see Chapter 3), this gesture is predominantly a sensation-related gesture: it gives a visible form and action to the desired acoustic property of the ee-vowel but allows optimal space in the throat by creating the 'edge' in front of rather than inside the body;
- The continuous movement helps even breath flow;
- The gesture gives a visual form to the imaginary notion of 'a vertical edge in front of the body';
- The forward direction of the movement supposedly facilitates better 'forward placement' of the sound;
- The pointed fingers create an energy flow, channelling and focussing that energy;
- The singer has the impression he or she can actually 'will' the sound into the form he or she envisages;
- The counter-movement (downwards when voice goes up and vice versa) counteracts the rising of the larynx with the higher pitch;
- As gesture and vocal phrase are being connected in the singer's mind, the singer focuses his or her attention on the proper timing and coordination the gesture/movement;
- Concentrating on the strongly focussed energy of the movement overrides the desire to sing well which often leads to 'choking through over thinking';

Exercise B: GM Teaching Intervention: Prescribed Gesture 1(GM1)

1/do - 3/mi - 5/so - 6/la - 5/so -3/mi -   1/do
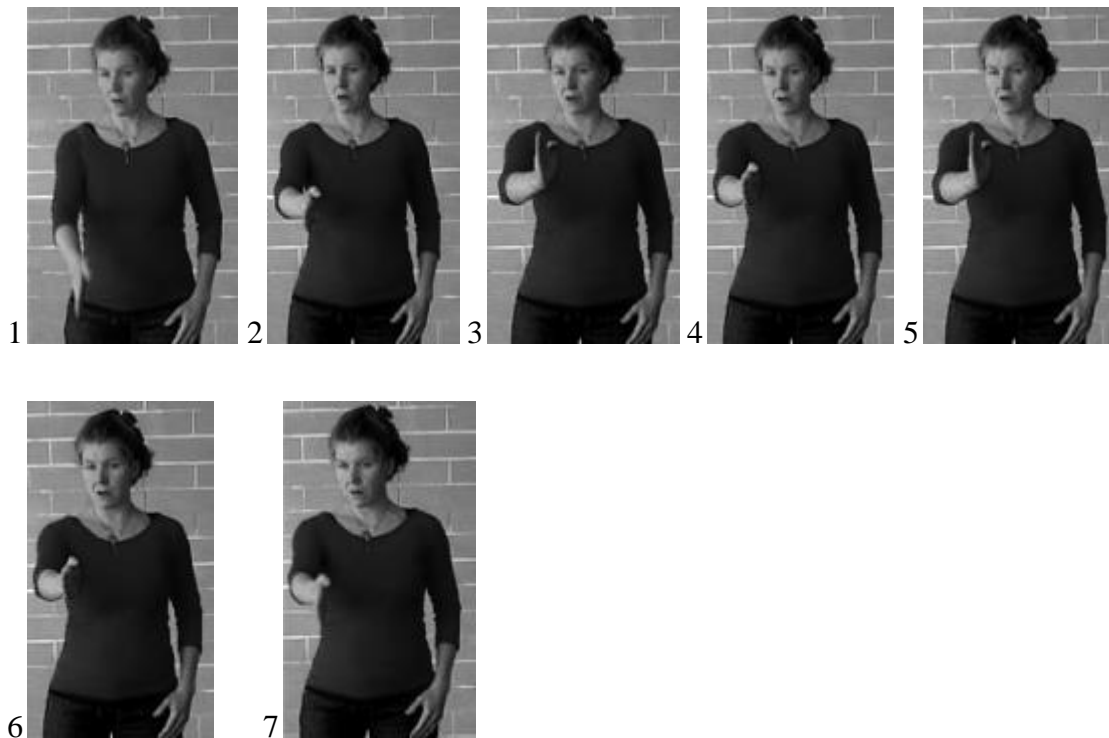

Figure 4: Prescribed gesture (GM1) Exercise B

The gesture shown in Figure 4(1-4) can be described s follows:

- The dominant foot is a step in front of the other. The back leg's foot points about 45 degrees outward, the front leg's foot points forward;

- The hand on the same side as the front leg is held 'open' - as if holding a (volleyball sized) ball, palm/fingertips facing towards the epigastrium;

- A split second before the first note of the phrase, the hand starts describing a slow, deliberate, pulling movement forward – sweeping, but in slow motion (Fig, 4.1);

- 1/do – 3/mi – 5/so: The body 'follows' the arm movement somewhat as if drawn forward from the epigastrium with an upright upper body and slightly bent knees (Fig.4.2 – 4.3);

- The fingers keep pointing towards the body as if there were elastics attached and open to the front only after the highest note of the phrase has been sung;

- The movement needs to be spaced so that 'lowest' and 'most 'forward' position of the body is reached just before the highest note: 5/so – 6/la (Fig. 4.4);

- The body moves smoothly back again while the arm continues in an outward curve for the remainder of the phrase

- Throughout keep reiterating the [oo] vowel.

Rationale for GM 1

- Following the Nafisi-system (see Chapter 3), this gesture has both sensation-related and physiological elements: The round shape of the hand gives a visible, presentation of the dome-shaped soft palate and the rounded lips as well as the desired vowel sound;

- The continuous movement helps to achieve even airflow;

- The body movement 'opens the chest' that is the ribcage expands slightly and prevents the shoulders from rising;

- As gesture and vocal phrase are being connected in the singer's mind, the singer focuses his/her attention on the proper timing and coordination the gesture/movement;

- Concentrating on the movement overrides the desire to sing well which often leads to 'choking through over thinking';

In the case of exercise B there was an alternative gesture:

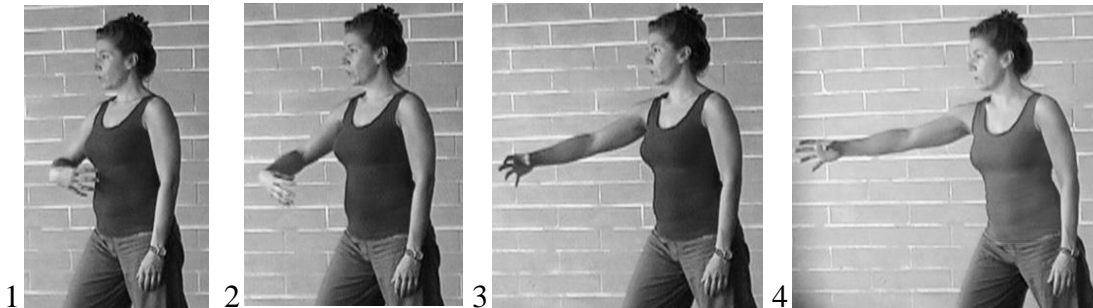**Exercise B: GM Teaching Intervention: Prescribed Gesture 2 (GM2)**
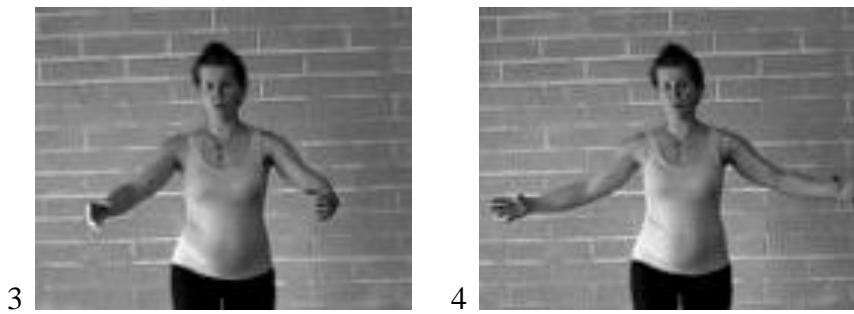
Figure 5: Prescribed gesture (GM2) Exercise B

The gesture shown in Figure 5 (1-4) can be described s follows:

- The dominant foot is a step in front of the other. The back leg's foot points about 45 degrees outward, the front leg's foot points forward;

- The body is comfortably upright, knees slightly bent, equal weight on both legs;

- Both hands are held comfortably in front of the body, fingers pointing towards the epigastrium (Fig. 5.1);

- With onset (1/do) the hands start a slow sweeping opening movement which continues throughout the phrase (Fig. 5.2 and 5.3);

- The body reaches its lowest, most forward position in the transition from 5/so to 6/la that is on the highest point of the phrase (Fig. 5.4);

- The body moves smoothly backward whilst the arms continue their outward 'opening' gesture for the remainder of the phrase (5/so-3/mi-1/do);

Rationale for GM 2

- According to the Nafisi-system (see Chapter 3), this gesture is predominantly sensation- related with physiological and body-movement elements: it embodies the idea of 'opening' but also in reality "opens the chest" as the ribcage expands slightly;

- The continuous movement helps to achieve even airflow;

- The movement expands the ribcage and prevents the shoulders from rising;

- As gesture and vocal phrase are being connected in the singer's mind, the singer focuses his/her attention on the proper timing and coordination the gesture/movement;

- Concentrating on the movement overrides the desire to 'sing well' which often leads to 'choking through over thinking';

Exercise C: GM Teaching Intervention: Prescribed Body Movement

1/do-2/re-3/mi-4/fa-5/so-4/fa-3/mi-2/re - 1/do
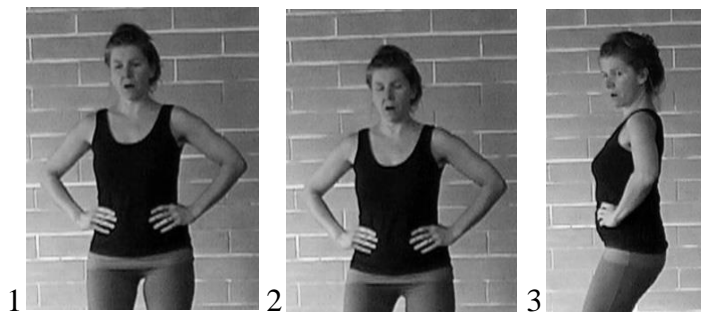
Figure 6: Prescribed body-movement (GM) Exercise C

The body-movement shown in Figure 6 (1-3) can be described as follows:

- Stand comfortably with equal weight on both feet, feet parallel and roughly hip wide apart;

- Place your hands just above your hips, fingers pointing forwards, thumbs, backwards;

- Feel the 4/4 pulse of the phrase;

- Breathe out feeling the abdominal muscles contract slightly inwards;

- Breathe in feeling a release in abdominal tension and a slight expansion against your hands;

- As you begin your phrase, slowly bend your knees taking care to keep your feet parallel and your knees above an imagined prolongation of your third toe;

- Possibly even push knees slightly outwards (as opposed to letting the point inwards);

- Feel that your pelvis rolls slightly underneath you (as opposed to sticking you bottom out) (Fig. 6.3);

- Feel the prolongation of your spine though your head and imagine your spine stretch as you move downwards;

- Coordinate your downward movement so that you reach the lowest point as you sing the highest note of the phrase (Fig, 6.2);

- Feel a slight continuous expansion against your hands as you move downwards;

Rationale for the GM

- Following the Nafisi-system (see Chapter 3), this movement is clearly a body-movement as opposed to a gesture. The movement counteracts the upward movement of the vocal line and encouraged the abdominal and oblique muscles to engage;

- The movement serves to align and energize the singer's body;

- Apart from promoting good postural alignment, the movement helps controlling the out-flowing breath as we feel expansion primarily in the external obliques[84];

- The counter movement (downwards as the phrase moves upwards and vice versa) gives a good sense of 'connecting the voice with the body';

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[84] The external oblique is the most superficial muscle attached to the lower surfaces of the lower eight ribs; it slopes downwards and forwards forming the outmost layer of the rectus sheath

Exercise D: GM Teaching Intervention: Prescribed Gesture 1

1/do - 3/mi - 5/so   1/do - 5/so - 3/mi - 1/do

Figure 7: Prescribed gesture (GM) Exercise D

The fact that Figure 7 does only hint at rather than thoroughly show the gesture used with this exercises has its cause in the nature of this teaching intervention as will become clear through its description:

- Feel a relatively quick 2/4 beat;

- In approaching the first note, make a throwing movement alternating both hands as if throwing little rubber balls against a wall opposite you – each note is a throw;

- Release/sing the staccato tone precisely when your hand opens to 'release' the ball or as it 'bounces off the wall' (Fig. 7);

- As you move upwards through the phrase, feel you throw increasingly further or that the ball you are throwing becomes slightly heavier so that you increase the energy with which you throw;

- Alternately imagine you had wet fingers and were shaking off the water with one quick movement in which the fingers slide along the thumb and then open;

- Sing the staccato tone precisely when your fingers leave the thumb;

- Accompany each short note with one such quick shake;

Rationale for GM 1

- According to the Nafisi-system (see Chapter 3), this gesture has both sensation-related and physiological elements: it embodies the airflow before and in-between the staccato onsets and the onsets themselves. Contrary to the actual physiological function at vocal onset (brief but clear connection and vibration of vocal folds), the gesture gives however preference to the arguably helpful sensation of 'opening', 'freeing', 'letting go' of the tone;

- The two gestures/movements described above are in essence rather similar;

- The gestures/movements embody the sudden onset and release required in staccato and also include a tangible picture of flow before and after the onset, encouraging the singer to 'let fly';

- Onset and airflow are given equal importance;

- The opening of fingers corresponds with the onset and the movement leading to them correspond to the airflow;

- The playful and energetic character of the GM energizes the singer and helps overcome inhibitions to let the voice out;

Exercise D: GM Teaching Intervention: Prescribed Gesture 2

- Rhythmically and lightly tap fingertips of dominant hand in the palm of the other hand with each note

Rationale for GM 2

- Contrary to GM1, this gesture has predominantly physiological elements: it embodies the first part of the actual physiological function at vocal onset (brief but clear connection and vibration of vocal folds) by the light tapping of fingers. The finger tap coinciding with the onset visualizes the vocal folds connecting with each onset;

- The gesture embodies the sudden onset and release required in staccato;

- This gesture is much gentler than GM 1 and focuses only on the onset and not on the airflow;

- The gesture has a calming rather than an energizing effect;

Dependent variable

The dependent variable is the factor in the experiment whose status depends on the experimental variable. Changes in the dependent variable give a measure for the efficacy of the experimental variable that is, in the case of this experiment the effect of two different types of teaching interventions, GM and NGM.

The review of literature (Chapter 2, Vocal Pedagogy/Vocal Tone – formation and perception) has provided detailed information about timbral and spectral characteristics as well as facts and theories about vocal registers. In summary: Vocal sound is produced when the vocal folds (vibrator) are set into vibration by an air stream from the lungs (voice source) and modified by the shape of the vocal tract (resonator). Vocal qualities depend on a variety of factors affecting voice source and resonator and "breath-flow-to-larynx functions and vocal tract acoustic influences are crucial to the creation of vocal qualities" (Thurman & Welch 2000, p.517); there is arguably a correlation between those voice quality producing functions, namely vocal fold closure, and the word groups that describe vocal qualities. There appears to be little doubt that the "most favourable conditions of the pharynx for optimum vocal quality are an elevated soft palate, comfortably low larynx, relaxed tongue, and a sense of balance rather than tension in the neck and chest" (Bunch, 1993, p. 102).

Although defining the nature of quality in voice production remains quite problematic from the voice scientists' perspectives (Titze & Story, 2002), the majority of features in any vocal tone relate directly to specific physiological/acoustical occurrences in the tone production. There is therefore a degree of agreement in the evaluation of vocal tone quality where it can be grounded on the presence or absence of those occurrences. In other words, the quality of a vocal tone contains perceptible and reliable information about the level of health and efficacy in the mechanisms underlying vocal tone production. The fact that healthy and effective tone production arguably constitutes a core value of the teaching of vocal technique in the Western Classical tradition together with the fact that the quality of vocal tone has been identified as an indicator for such vocal tone production, made the *change in vocal tone quality* an ideal indicator for the efficacy of the experimental variable. The change in vocal tone quality has been nominated as dependent variable leaning on the argument that the efficacy of the experimental variable that is two types of teaching interventions would be reflected in the change of the quality of the participants' vocal tone and the rate with which any such change would be evident.

Other variables

Pre-existing characteristics of participants like age, gender, intelligence are called *organismic* variables. In the case of this study this also includes participants' individual singing background as well as their aptitude for singing tasks. It should be noted that the latter is quite independent from singing training and, although not clearly defined, seems to depend on certain "genetic inheritance factors" favourable to singing like specific "anatomic dimensions, tissue density and elasticity" as well as the "neuromuscular predilection for the task of singing like the brain's ability to sequence instructions for and transmit instructions to the muscles and the muscles ability to carry out those instructions" (Nair, 2007, pp.15-16). A similarly important factor was individual participants' aptitude for kinesthetic tasks, manifest in the ease with which gestures and movements could be emulated and coordinated. Where the effect of these variables on the result of the experiment can be determined or 'controlled', they become so called *control* variables (Wiersma, 1995). If their effect remains however uncontrolled, they become so called *intervening* variables.

A pre-experimental questionnaire was used to collect information about participants' age, gender, singing background and, as far as could be determined – learning style (see Appendix E). The results of this questionnaire have been correlated with the measured results where applicable and will be presented in Chapter 7 and discussed in Chapter 8.

In summary: Participants ranged in age from 18 years to 67 years, with a mean age of 31.5 years. There were six males and 22 females. In order to gauge their singing background, participants were asked to identify with one of four levels of involvement with singing. Of the 25 participants 13 identified as "active singers" (level 4) six as having "some singing experience" (level 2), four as having "rather substantial singing experience" (level 3) and two as having "no singing experience" (level 1). Although the wording of the questions suggests a significant difference between levels 1, 2 and 3, once the experiment had started it became evident that participants identifying with levels 1-3 were of very similar vocal standard which however differed significantly from participants who had identified with group 4. This difference might best be described as 'untrained' (level 1-3) versus 'trained' voices (level 4); therefore a distinction has been made between just two levels and in the following participants who self-reported as belonging to levels 1-3 are referred to as *Non-Singers* and those who identified as level 4 are referred to as *Singers*. There were 12 Non-Singers and 13 Singers in the experiment.

Looking at participants' age in combination with their Singer/Non-Singer identity, revealed that the Singer-group was much younger ranging from 18 years to 24 years with a mean age of 20.3 years compared to the Non-Singer-group that ranged in age from 21 years to 67 years with a mean age of 45.3 years. This reflects the selection strategy in the recruitment of participants: Singers were predominantly comprised of undergraduate and postgraduate voice students of the Melbourne Conservatorium of Music whereas Non-singers had been recruited amongst non-music staff and students of Monash University (see Chapter 6). Of the altogether six males three were Singers and three Non Singers) and the 19 females comprised of 10 Singers and nine Non-Singers.

In the absence of a standardized and generally accepted test to measure attitude towards movement the researcher formulated a number of attitude-statements identification with which participants were asked to indicate. These statements conveyed either a positive, neutral or negative attitude towards the notions of movement and physical activity. Considering the nature of the study for which participants had volunteered, it is not surprising that the majority of participants conveyed a positive attitude towards movement. It is however also evident that a self-reporting questionnaire could only give information of limited accuracy. And a positive attitude towards movement like enjoying movement did not necessarily mean that a participant had an aptitude for movement tasks. Whilst it is doubtlessly true that participants' individual aptitude for kinesthetic tasks as well as their aptitude for singing tasks were very likely to have differed significantly between participants and to have had a significant effect on the outcome of the experiment they were quite impossible to measure accurately in the context of this study. In order to eliminate as far as possible any effects arising from this issue, the problem was resolved and controlled by measuring each participant's individual progress in a design that uses "the subjects as their own controls" (Fraenkel & Wallen, 2000, p.287): Rather than comparing participants to each other each participants' development was assessed against their own pre-test recording.

This chapter has detailed the variables of the experiment and given an overview of its procedure. The following Chapter 6 will give a step by step account of the experimental procedure including a description of the experimental voice lessons, recording, coding and evaluation procedures.

Chapter 6: Experimental Procedure

Chapter 5 has outlined of the experimental structure and given a comprehensive description and explanation of its variables. This chapter will now proceed with a detailed account of the actual experimental procedure.

Experimental procedure

After gaining ethics approval (see Appendix A) participants were invited via poster and through word of mouth to take part in the study. The hypotheses formulated in contention and sub-contentions 2a-f had propounded that gesture and body-movement were viable, if not superior tools in the teaching of vocal tone production – irrespective of subjects' age, gender and singing background. It was therefore important to recruit both male and female participants who were of diverse age and singing backgrounds so that any effect of these factors could be correlated with the results of the experiment

Participants were recruited amongst staff and students of the Monash University Faculty of Education and School of Music as well as undergraduate and postgraduate voice students of the Melbourne Conservatorium of Music (see Chapter 5). This recruitment strategy resulted in two groups of participants, distinguished by the "training status" of their voices; participants with relatively trained voices were called *Singers* and comprised voice majors from both Universities. Participants with relatively untrained voices were called *Non-Singers* and comprised all other participants. Please refer to Chapter 5 and Appendix E for more detail on participants and the pre-experimental questionnaire

The explanatory statement (see Appendix C) outlined the nature of the study, what it involved, how obtained data would be stored and that consent could be withdrawn at any time. Participants signed up to the study by contacting the researcher and arranging a time for the first and consecutive sessions. The experiment took place in designated (almost) sound proof rooms at Monash University and the University of Melbourne respectively. The experimental set-up consisted of a keyboard with headphones (Sennheiser HD 201-headphones), a video camera (Sony Handycam DCR-SX65) a recording microphone (T&S, PC K-600) and a digital recording device (Tascam DR-1 Portable Digital recorder). At the beginning of the first sessions, participants signed a consent form (see Appendix D) which authorized the obtained video and audio recordings to be used for analysis verification and the results to be published and presented in the author's thesis,

research journals and conferences. There was never a question of publishing the video or audio footage itself.

Warm-up

Every session started with a few minutes of vocal warm-up. Participants in the Singer group usually chose to use their familiar warm-up routine whilst participants in the Non-Singer group were led through the following exercises:

1. Breathing exercise

   - Place one hand flat on your tummy, the other on your side, just under the lowest rib
   - Say a brief vigorous "Sh" pulling in the tummy slightly so that your "belly button moves towards your spine".
   - Release this tension immediately when the "Sh" is finished
   - Repeat several times
   - Do the same on "F" and "S"
   - Do the same on voiced "Sh", "V" and "Z" in a relatively low, speech like voice
   - Observe (and feel with your hand) how the abdominal muscles contract inwardly when uttering the above sounds and relax as soon as you stop the sound and open your mouth
   - Observe (and feel with your hand) how this quick relaxation of abdominal tension "gives you breath" that is. helps you inhale.
   - Observe (and feel with your hand) a slight outward push just under you lowest ribs as you utter the above sounds i.e. during the vigorous exhalation

2. Siren/Slide (glissando) on either
   - a voiced "v" (upper front teeth [incisors] touch lightly the bottom lip) or
   - a lip-trill (lips are slightly pushed forward and lightly pressed together; they start "fluttering" as air is blown through) or
   - a tongue-trill ("rolled r")

Do this over a fifth or an octave starting in your lower range (usually around A3 for males and C4 for females). Ascertain good airflow. Shift the exercise up semi-tone wise as far as you feel still comfortable.

3. Hum: utter a "hmm"-sound. Breathe in with lightly touching lips, seeking a sensation of space in mouth and throat as if you were "drinking in" the smell of a rose; seek to keep that feeling throughout the "hum" – which occurs on exhalation. Hum a major (or minor) triad (do-mi-so-mi-do/ 1-3-5-3-) rather slowly, starting in your lower range (usually around A2 for males and C4 for females). Shift the exercise pattern up semi-tone wise as far as you feel still comfortable.

4. Sing three rather fast five-tone scales down-up-down (so-fa-mi-re-do-re-mi-fa-so-fa-mi-re-do/ 5-4-3-2-1-2-3-4-5-4-3-2-1) on "myam". The sound is similar to what one might utter when commenting on something delicious ('yummy'), except that our sound starts with an "m". Start in your middle range (usually about F3 for males and A4 for females). Shift exercise up as above.

Base-line-value

After working through the warm-up exercises for between five and eight minutes, participants were led through the exercises A, B, C, D described in Chapter 5. Any potential effect of the order in which these exercises were sung was controlled for by assigning the four exercises to each participant in random order. Once assigned however, this order remained the same for each participant throughout the trial.

The order in which the exercises were sung also decided which of the two approaches/teaching interventions (NGM: No Gesture or Movement or GM: with Gesture or Movement, see Chapter 5) was later to be used for which exercise. The first and third sung exercises were always taught using the NGM teaching intervention and the second and forth were always taught using the GM teaching intervention. This remained constant for the course of the trial. For instance: participant X sang the exercises in the order A, B, C, D and would later be taught using the NGM teaching intervention for exercises A and C, and the GM teaching intervention for exercises B and D; participant Y sang the exercises in the order D, A, B, C would later be taught using the NGM teaching intervention for exercises D and B, and the GM teaching intervention for exercises A and C.

The teacher-researcher introduced the first exercise by playing it on the keyboard and then demonstrating it by singing. The exercise was always placed in each participant's lower/middle vocal range which had been identified and noted by the researcher in the warm-up phase. The participant was then asked to sing the exercise with the teacher-researcher playing along on the keyboard. As soon as the exercise had been understood and could be sung fairly accurately, the participant was given head-phones which were plugged into the keyboard. Thus participants could hear the keyboard guiding them through the exercise but the keyboard was inaudible on the recording. It was suggested that participants put the headphones over one ear only so that they could still hear their own voice while singing. With the keyboard guiding and the participant singing along, each exercise-phrase was played and sung on average seven times while continuously being shifted up semi-tone-wise to cover a good part of each participant's vocal range. This first attempt at an exercise was recorded as base-line-value of a participant's rendition of a particular exercise. Following the same procedure, each participant recorded their base-line-value of all four exercises.

First teaching intervention

Having obtained the base-line-value recording of all four exercises, the teacher-researcher started her teaching intervention with the first exercise in its assigned approach. The two teaching approaches, NGM and GM have been detailed in Chapter 5. It should be noted that not every word listed in the NGM-approaches was necessarily said in the first NGM-teaching intervention; and, where there were more than one possible GM with an exercise, only one of the possible gestures/movements outlined in the GM-approaches (usually GM1) was used in the first session. Within these limits however, the script of the respective teaching approaches given in Chapter 5 has been closely adhered to. In the NGM-approach particular care was taken that the participant understood technical terms and imagery correctly. In the GM-approach particular care was taken that the idea behind the prescribed gesture/movement had been understood and that the gesture/movement was carried out as well coordinated as possible. The relative consistency of the teaching interventions across participants has been documented through video recording every session.

After an exercise had been worked on in its assigned teaching approach and practised for a few minutes, it was recorded again, using the keyboard and head phones as above. The

same procedure was followed until all four exercises had been worked on and practised in the NGM or GM approach respectively and had been recorded a second time.

On a track-sheet (see Appendix I) was carefully noted

- The participant's identification number
- The date and time of each session
- The order in which the four exercises were to be sung by the participant
- Which two exercises were taught using the NGM approach
- Which two exercises were taught using the GM approach
- The duration of warm-up and each intervention (NGM or GM)
- The track number of each recorded file so that the file could be tagged correctly when transferred onto the computer
- any comments of the teacher-researcher

At the end of the first session, each participant was given a detailed description of each exercise with the respective teaching approach as well as a home practice diary. It was explained that home practice was completely voluntary, but, where a participant did find time to practice, it was important that the exercises were practised using the same approaches as in the experimental lesson that is the exercises learned in the NGM-approach were to be practised only using that approach and the exercises learned with the GM-approach were only to be practised using that approach.

Each participant's first session had yielded base-line recordings of all four exercises and recordings after a first teaching intervention of the same four exercises that is eight tracks.

Subsequent teaching interventions

After the first session participants had three more sessions in consecutive weeks. Each session started with a brief vocal warm-up of either the singer's choice or the one outlined above after which the four exercises were repeated and practised in their assigned order and using their assigned teaching approach. A certain degree of flexibility in the design of the teaching interventions allowed for adaptation to individual vocal needs of the participants to achieve the best possible teaching outcome with both approaches. The NGM approach for instance offered a mix of factual teaching and imagery and, having learned more about participants' idiosyncrasies, the teacher-researcher might have focused on fine tuning a physiological mechanism with a participant who responded

better to factual teaching or a metaphor with a participant who responded better to imagery. Similarly in the GM approach: Whilst GM1 was usually tried out first, an alternative gesture/movement (GM2) might have been tried and found to be more helpful in a consecutive session. After an exercise had been practiced for about five minutes using its respective assigned approach, it was recorded using the same procedure as above until all four exercises had been worked on and recorded. Each of the consecutive session thus yielded four more recordings of each participant.

At the end of their last session participants were asked to complete a post-experimental questionnaire; this questionnaire enquired about home practise, participants' perception of their vocal development during the trial and their experience with the two teaching approaches (see Appendix F). Where appropriate, this data has been correlated with the results of the perceptual study in Chapter 7.

Evaluation Procedure

There are basically two main pathways for the evaluation and analysis of voice recordings like those obtained through this experiment: acoustic analysis or perceptual that is listener evaluation. Graphs of *Long Term (*also *'Time') Average Spectra* (LTAS) also known as *voiceprints* or *spectrograms,* give an accurate visual representation of any sound. An indispensable tool for voice analysis and speech therapy, acoustic analysis programs yield a huge amount of information about the spectral composition and other characteristics like vibrato, clarity and pitch accuracy of the singing voice. However, as has been touched upon in Chapter 2, the complexity of the singing voice makes acoustic analysis a surprisingly unreliable tool in the assessment of its quality – a phenomenon which appears to arise mainly from the inherent difficulty of defining vocal "quality". A number of acoustic analyses like a *harmonicity* test (determining the noise to harmonics ratio) were run on the data but with rather inconclusive results.

Acoustic analysis was eventually abandoned in favour of data evaluation through expert listeners, a decision also encouraged by other studies suggesting that the human ear produced by far the most reliable assessment of voice quality (Kenny & Mitchell, 2006, p.56; Mitchell, 2008, p.440). Evaluation was to be carried out by expert listeners who were to compare each participant's first recording of an exercise with his/her recordings after the respective teaching intervention of the same exercise.

The first session had yielded four recordings of each participant's first attempt at each of the four exercises (the base-line-value). The first session had further yielded four recordings of each participant's rendition of each of the four exercises after the first intervention – two exercises with the NGM-approach and two exercises with the GM-approach – had occurred. After the first session there were eight recordings per participant and each consecutive session resulted in four more recordings per participant.

At the end of the trial there were five recordings of each of the four exercises that is 20 recordings per participant. In order to prepare this large amount of data for listener evaluation, relevant samples needed to be extracted without violating the integrity of the data: Two consecutive phrases of each participant's first recording: 'a' (base-line, before any teaching intervention) would be compared to his/her second recording: 'b' (after the first teaching intervention) and again with his/her last recording: 'c' (after the last of four teaching interventions with practice periods in between had taken place) of the same phrases. Before these samples could be extracted however, a meaningful coding system had to be in place.

Coding of Voice Samples

The coding of the voice recordings needed to be concise, unambiguous and include information about several dimensions of the data:

1. Did the participant singing the sample belong to the *Non-Singer* Group or the *Singer* Group?
2. Which level of the independent variable had been used in the sample: Level 1 (NGM-teaching-intervention) or Level 2 (GM-teaching-intervention)? It should be noted that, although no teaching intervention had yet taken place when the base-line (a) of an exercise had been recorded, the recordings have still been grouped accordingly because recordings (b) and (c) after teaching interventions were to be compared to the base-line recording (a) of that same exercises and participant.

Points (1) and (2) have been conflated into one identifying code:
- *Non-Singers'* recordings of exercises where the *NGM* teaching intervention was used have been named Group *1*
- *Non-Singers'* recordings of exercises where the *GM* teaching intervention was used have been named Group *2*

- *Singers'* recordings of exercises where the *NGM* teaching intervention was used have been named Group *3*
- *Singers'* recordings of exercises where taught with the *GM* teaching intervention was used have been named Group *4*

3. Which exercises was being sung in the sample: Exercise A, B, C or D?
4. Which take was presented in the sample: first (a): base-line, second (b): after first teaching intervention or last (c): after consecutive teaching interventions?
5. Which participant was singing the sample? Participants were identified by a number

Table 31

Coding of voice samples

Non-Singer NGM	Non-Singer GM	Singer NGM	Singer GM	Exercise	Take a = base line Take b = second Take c = last	Participant ID (25participants)
1	2	3	4	A, B, C, D	a, b, c	1 - 25
1 or 2 or 3or 4				A or B or C or D	a or b or c	a number between 1 - 25

This system gave each file a unique identifier with exact information about the five dimensions described above: sample code 1Ab-6 for instance meant that this was the second recording of exercise A by participant 6 who was a Non-singer and the NGM approach had been used.

Extraction of Voice Samples

In order to maintain objectivity, a strict procedure was followed for the extraction of all sample phrases. An audio programme called *Wavepad Sound Editor* was used to listen to and view a visual representation (audio wave) of the three recordings (a), (b), (c) of each participant's take of each of the four exercises (A, B, C, D). The recordings were not edited or altered in any way. All recordings have been saved as *wav. 16bits* files.

The procedure is exemplified by participant 1's (a Non-Singer) recordings of exercise B which has been worked on using the GM teaching intervention.

- Led by the researcher/teacher, the participant had sung the phrase (exercise B) eight times, starting in C-major and then progressing through the keys C#, D, Eb, E, F, F# and G-major. The audio wave of this recording looked like this:
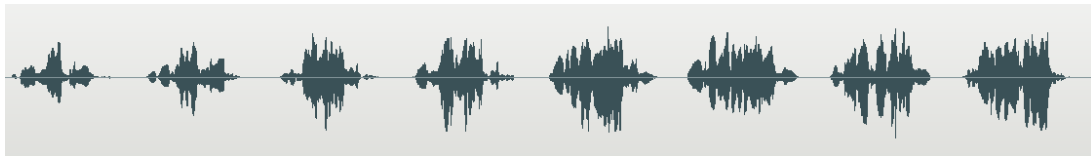
Figure 8: Participant 1, Exercise B, first (base-line) recording

- The middle two phrases in this first (base-line) recording (a), were identified and their key (in this case Eb major and E major) noted, using a piano and the researcher's ear.
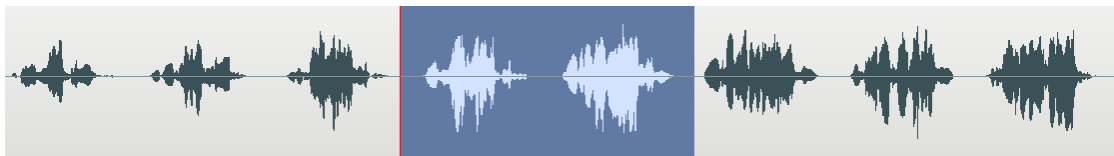
Figure 9: Participant 1, Exercise B, first (base-line) recording, identified phrases

- The extract was cut out, coded as **2Ba-1** (see *Coding of Voice Samples* above) and saved.

Figure 10: 2Ba-1

- The two exercise-phrases in the same key were identified in the second recording (b):
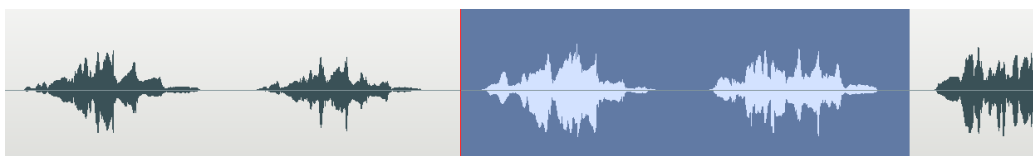
Figure 11: Participant 1, Exercise B, second recording, phrases in Eb and E-major

- The extract was cut out, coded as **2Bb-1** (see above) and saved.

Figure 12: 2Bb-1

- The two exercise-phrases in the same key were also identified in the last recording (c) :

Figure 13: Participant 1, Exercise B, last recording, phrases in Eb and E-major

- The extract was cut out coded as **2Bc-1** (see above) and saved.

Figure 14: 2Bc-1

This procedure was strictly adhered to in the extraction of all sample phrases:

- Samples were always extracted from a participant's *first (base-line), second* and *last* recordings of an exercise
- It were always the *middle two phrases* of the first (base-line) recording that were extracted first

- The *keys* of these middle two phrases was determined and used as the *only selection criteria* for the extraction of the sample phrases of the second and last recordings
- None of the voice files has been edited or altered in any way

Organisation of Voice Samples for Evaluation

Listening Units

There were now succinct samples of each participant's three recordings of all four exercises. Evaluation was to consist in a comparison of each participant's second (b) and last take (c) of an exercise with his or her first take (a) of the same exercise. In order to create optimal conditions for comparison and evaluation the extracted sample recordings were presented as follows:

- The first recording (a) was to be played twice to the listeners, that is it was copied and pasted after the same recording with two seconds silence inserted in between; using

the above example, 2Ba-1(see Fig.10) was copied and pasted to create:
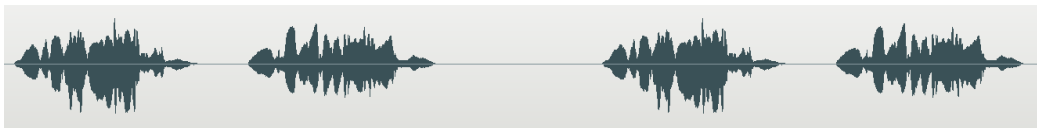
Figure 15: 2Ba-1. 2Ba-1

The rational was that hearing the baseline recording twice would help to establish it in the listener's perception

- For direct comparison between the first (a) and second (b) recordings (after the first intervention. This recording pair has been called "time 1" in the analyses (Chapter 7)

2Ba-1 (see Fig.10)   was pasted before the sample

2Bb-1(see Fig.12) to create:

Figure 16:2Ba-1.2Bb-1

Listeners were to mark any change in vocal quality on a rating scale (see *Listener Evaluation* below)

- For direct comparison between the first (a) and last (c) recordings (after the last intervention. This recording pair has been called "time 2" in the analyses (Chapter 7)

2Ba-1(see Fig.10) was pasted before the sample

2Bc-1(see Fig 14) to create

Figure 17:2Ba-1. – 2Bc-1

Listeners were to mark any change in vocal quality on a rating scale (see *Listener Evaluation* below)

The thus created three sample-pairs of each participant's three takes of an exercise constituted a *Listening Unit*; there were four Listening Units of each participant.

For instance participant 1's Listening Units were:

Table 32

Listening Unit participant 1

File Code	Base Line Recording (BL)	Recording after first inter-vention (time 1) to be marked against baseline (BL)	Recording after last inter-vention (time 2,) to be marked against baseline (BL)
1A-1:	1Aa-1 - 1Aa-1	1Aa-1 - 1Ab-1	1Aa-1 - 1Ac-1
	A – A = BL - BL	A – B = BL –(time 1)	A – C = BL –(time 2)
2B-1:	2Ba-1 - 2Ba-1	2Ba-1 - 2Bb-1	2Ba-1 - 2Bc-1
	A – A = BL - BL	A – B = BL –(time 1)	A – C = BL –(time 2)
1C-1:	1Ca-1 - 1Ca-1	1Ca-1 - 1Cb-1	1Ca-1 - 1Cc-1
	A – A = BL - BL	A – B = BL – (time 1)	A – C = BL – (time 2)
2D-1:	2Da-1 - 2Da-1	2Da-1 - 2Db-1	2Da-1 - 2Dc-1
	A – A = BL - BL	A – B = BL –(time 1)	A – C = BL – (time 2)

Listening Units were identified by a code identifying the Group (1, 2, 3, 4,) the exercise (A, B, C, D) and the participants ID (1 – 25). And each Listening Unit consisted of three pairs of recording: BL – BL, BL – T1 (time 1), BL – T2 (time 2) that had been extracted and arranged following the above described procedure.

In order to control for any potential effect of listeners' expecting a greater change in vocal quality in the last recording (time 2/T2) as in second recording (time 1/T1), these were presented in randomized order i.e. BL – BL, BL – T1 (time 1), BL – T2 (time 2) *or* BL – BL, BL – T2 (time 2), BL – T1 (time 1).

Listener Evaluation Groups

As there were 25 participants each singing four exercises there were 100 such Listening Units. For the evaluation, these were organized into so called *Listener Evaluation Groups* (LEGs). Each LEG consisted of four Listening Units, two of each group (1, 2, 3, 4 – see *Coding* above) and two of each exercise (A, B, C, D) and one Listening Unit being presented twice in order to gauge listener reliability (the first and last Listening Unit are always the same).

In fulfilment of these criteria, the 25 LEGs were:

Table 33

Listening Evaluation Groups (LEGs)

LEG	Listening Units
1	4C-15, 1A-1, 3D-11, 2B-4, 4C-15
2	4A-13, 1C-3, 3B-5, 2D-2, 4A-13
3	2D-20, 4A-5, 1B-6, 3C-10, 2D-20
4	3D-13, 2C-1, 4B-10, 1A-2, 3D-13
5	2C-7, 4B-14, 1D-8, 3A-10, 2C-7
6	4D-17, 1B-7, 3C-12, 2A-23, 4D-17
7	4C-13, 2D-6, 3B-11, 1A-4, 4C-13
8	2B-1, 3D-5, 1C-8, 4A-15, 2B-1
9	4B-12,1A-6, 2C-2, 3D-15, 4B-12
10	2D-4, 3C-14, 1B -23, 4A-11, 2D-4
11	4D-10, 1C-4, 3B-13, 2A-3, 4D-10
12	4C-5, 1D-1, 3A-12, 2B-8, 4C-5
13	2B-20, 3D-16, 1C-9, 4A-21, 2B-20
14	4C-11, 1A-20, 3B-15, 2D-7, 4C-11
15	4B-18, 1D-24, 3C-17, 2A-8, 4B-18
16	3A-14, 2C-6, 4B-17, 1D-23, 3A-14
17	4C-16, 2B-9, 3D-21, 1A-7, 4C-16
18	2A-25, 4D-19, 1C-20, 3B-16, 2A-25
19	4A-16, 2D-25, 3C-18, 1B-2, 4A-16
20	2B-3, 4D-12, 1A-9, 3C-19, 2B-3
21	3A-17, 1B-24, 4D-14, 2C-23, 3A-17
22	4B-19, 1D-3, 3C-22, 2A-24, 4B-19
23	3A-18, 2D-9, 4B-22, 1C-25, 3A-18
24	2C-24, 3A-22, 1B-25, 4D-18, 2C-24
25	4D-22, 4C-21, 3A-19, 3B-21, 4D-22

With five Listening Units per LEG and each unit yielding two rating results, there were 10 ratings results per LEG.

Listener Evaluation

The large number of files that needed evaluation and the imperative that each file be evaluated by several different listeners meant that a large number of expert listeners needed to be recruited to carry out the evaluation.

Live evaluation

The researcher approached her singing teacher colleagues and fellow members ANATS and 14 volunteered their expertise. By listening to and marking between one and three LEGs each, they carried out 29 evaluations. Volunteer listeners were given an Explanatory Statement (see Appendix J) and the following written explanation of the evaluation procedure:

Each listening unit consists of three tracks:

1. The first track establishes the 'base-line' (a): you will hear a recording consisting of two phrases of a participant's first attempt at a particular vocal exercise. You will hear (A) twice: **(A- A).** Please do not mark (A) on the rating scale.
2. Then you will hear (A) again followed by a recording (B) of the same two phrases by the same singer after a teaching intervention has taken place: **(A - B)**. Comparing (B) to (A), please mark (B) on the rating scale, indicating any perceived change in vocal quality.
3. Then you will hear (A) again followed by a recording (C) of the same two phrases by the same singer after another teaching intervention has taken place: **(A– C)**. Comparing (c) to (a), please mark (c) on the rating scale, indicating any perceived change in vocal quality.

Irrespective of the great variance between participants' general singing level, please evaluate each singer's individual development. As a guide: '1' would be a very small change and '5' a dramatic change within the limits of what can be expected as a result of a teaching intervention.

Each unit was marked on a scale:

Table 34

Marking scale (life listeners)

-5	-4	-3	-2	-1	0	1	2	3	4	5
-5	-4	-3	-2	-1	0	1	2	3	4	5

change for the worse   no change   change for the better

All responses used the same format.

These evaluations have been called *live-evaluations* to distinguish them from the *online-evaluations* (see below). As will be explained in detail in Chapter 7, the Live- Evaluation results have been analysed separately and have only been conflated with the online listener evaluation results after this had been demonstrated to be appropriate.

Online Evaluation

It soon became clear that many more expert listeners than could be recruited directly were needed to lend validity to the study. Therefore the evaluation was facilitated online and put up on the Monash University, Faculty of Education Research Projects website. Potential expert listeners who indicated a classical/opera/bel canto background and teaching-approach in their profile, were invited amongst members of four professional voice teacher associations: the *Australian National Association of Teachers of Singing* (ANATS), the US American *National Association of Teachers of Singing* (NATS), the British *Association of Teachers of Singing* (AOTOS) and the German *Bundesverband Deutscher Gesangspädagogen (Federal Association of German Singing Pedagogues*, BDG).

The researcher first contacted the heads of these organisations outlining her project and intention to invite members to act as expert listeners; it was asked that any reservations should be made known within a set time frame. The only reply to this request came from a NATS official assuring that there was no problem as long as members' details were accessed from the public NATS 'find-a-teacher' page. No concerns were identified by the other organisations and invitees' details were in all cases taken from the respective associations' publicly available 'find-a-teacher' pages. E-mail invitations going to Germany (BDG) were written in German. With the subject line reading '*your expertise*', an email (or its German equivalent) was sent to approximately 300 members of ANATS,

1500 members of NATS, 300 members of AOTOS and 300 members of BDG (totalling 2400 email invitations). Response was relatively slow and after 5 months 161 listeners had followed the invitation and – with the option to evaluate more than one LEG – completed 208 evaluations.

The E-mail invitation briefly introduced the researcher and the subject of the study asking invitees to volunteer their expertise. There were links to the Monash University page were the evaluation could be completed as well as links to the researcher and her supervisor. The invitation can be found in Appendix G.

The link brought up the online-listener evaluation page with an explanation outlining the essence of the experiment and giving directions regarding the evaluation procedure. As invitations were also sent to German voice teachers, the explanation could also be brought up in German by clicking on a little German flag with the word "Deutsch". Please find these explanations in Appendix K)

On the left hand side of that page were tabs with the Listening Units:

Table 35
Marking scale (online listeners)

There were five such Listening Units which all needed to be completed in order to be able to submit the evaluation. Upon submission listeners had the option to do another evaluation by clicking on a tab which caused another (randomly selected LEG) to load.

It had been necessary to include the subject of the study (the role of gesture and body-movement in the teaching of Western classical singing technique) in the invitation of potential expert listeners and the explanation on the evaluation page gave enough information to understand the basic experimental procedure (see Appendices G and K). Beyond that, expert listeners received no information regarding either the exact nature of the employed teaching intervention, the order in which the recordings had been made (time 1 or time 2) or any specification regarding what 'quality' of vocal tone to look out for.

The submitted evaluations with all relevant data were exported into an excel spreadsheet. As each LEG consisted of five Listening Units each of which requiring two ratings, each listening-evaluation resulted in ten different ratings. This means that there were 2080 rows of online listener results and 290 rows of life listener results. The following chapter will detail the preparation of the collected data, the different analyses undertaken and present the results.

Chapter 7: Experimental Data Preparation, Analyses and Results

The previous two chapters have given a detailed report of the design and procedure of the experiment including the steps taken to ensure objectivity in extracting the experimental recording samples. It has also been described how these samples were grouped and presented to expert listeners for evaluation. This chapter will explain how the raw data was prepared for analysis, outline the rationale and procedure of various analyses undertaken and present the results of the same.

Preparation of data

Validity and Reliability of Measurement

In order to keep error at a minimum and ensure confidence in obtained results, the *validity* of an evaluation process has to be ascertained. Measurements are said to have validity if it can be shown that the chosen "instrument actually measures what it sets out to measure" (Field, 2009, p.11). In the case of this particular experiment this meant confirmation that the rating results marked by expert listeners actually reflected a perceived change in vocal tone quality and that this change in vocal tone quality had actually been effected by the independent variable. The manner in which participants' sample recordings were presented for comparison and evaluation has been detailed in Chapter 6: With no information about the participants, the specifics of the teaching interventions or the timing (after the first or last intervention) of the recordings volunteer expert listeners listened to groups of paired voice recordings each consisting of a base-line recording (heard twice), the base-line recording and a subsequent recording (time 1) and the base-line recording two recordings and another subsequent recording (time 2). Each subsequent recording was identical to the base-line recording in the featured singer, exercise, key and recording procedure (see Chapter 5). The only difference lay in the fact that, while base-line recordings had been made before any teaching intervention, subsequent recordings had been made after a first teaching intervention (time 1) and after a number of teaching interventions had taken place (time 2) – presented in randomized order so that the listener did not know which was which. Thus the only difference that could possibly be perceived between base-line and consecutive recordings lay in the *quality of the vocal tone* exhibited in the recordings and listeners were asked to mark their perception of any change for the

worse or the better on a rating scale. It is therefore reasonable to assume that the ratings given by listeners reflect indeed the perceived change in vocal quality.

The experimental procedure carefully controlled for organismic and confounding variables as far as possible (see Chapter 5) so that any change in vocal tone quality had a high probability to have been effected by the teaching intervention – the independent variable. There remained however the possibility that changes in participants' vocal tone quality had occurred independent from the teaching interventions.

The null-hypothesis in this experiment was the negation of *Contention 2*, namely that there was *no* 'significant difference – measurable in the quality of the student's vocal tone between a vocal teaching method in which the student is instructed to carry out specific gestures and/or body-movements whilst singing and a vocal teaching method in which the student follows verbal instruction with an unmoving body' (see Chapter 5). Considering that the sheer act of deliberately repeating a (motor-) task constitutes practicing and is likely to result in a certain improvement irrespective of any instructions that might accompany this practice (Lee et al., 1991), an overall improvement was to be expected in any case. The fact that with an overall mean rating value of 1.21, a significant overall improvement could indeed be observed does therefore nothing to dispel the null-hypothesis. Looking at the mean rating results of all samples separated for levels of the independent variable (Level 1: NGM – No Gesture/Movement. Level 2: GM – using Gesture/Movement however exposed a significant difference between the mean rating values depending on the teaching intervention used:

Table 36

Mean ratings separated for teaching intervention

Teaching Intervention	Overall ratings (times 1 and 2)
NGM	0.93
GM	1.5
Combined	1.21
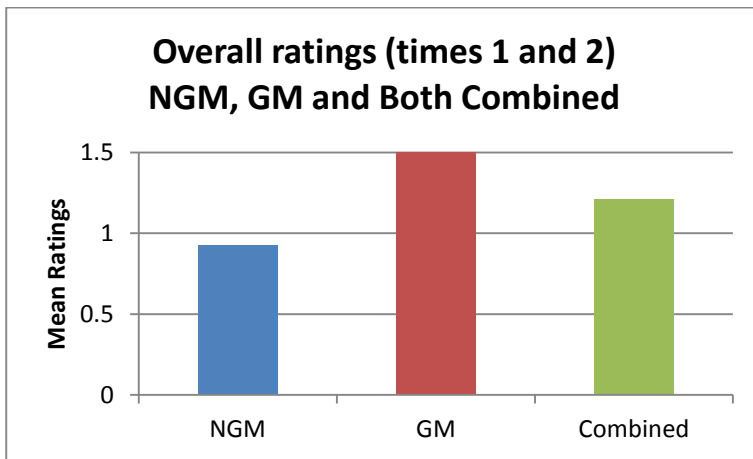
Figure 18: Mean ratings for NGM and GM intervention and both teaching interventions combined

With all other factors remaining equal, the mean of ratings given at both times for vocal quality after the GM-teaching intervention is significantly higher as the mean of ratings given for vocal quality after the NGM-teaching intervention. This suggests strongly that the change in participants' vocal tone quality perceived by the expert listeners was dependent on the kind of teaching intervention used. It can therefore confidently be stated that the perception of expert listeners comprised a valid tool for measuring the efficacy of the independent variable.

Inter-listener reliability

Homogeneity of listener groups

As has been explained in Chapter 6, the evaluations had been carried out in two somewhat different ways: A number of singing teacher colleagues of the researcher (14 members of ANATS) had volunteered to evaluate the files in the presence of the researcher. This relatively small group of evaluations has been called live-evaluations. The other, much larger group of evaluations had been carried out by singing teachers (169 members ANATS, NATS, AOTOS or BDG) who had followed an email invitation and completed the evaluation online. These have been called online-evaluations. Although the presented voice files, organized into Listening Units and Listening Evaluation Groups (LEGs) were identical in both settings (see Chapter 6), some circumstantial elements still constituted potentially influential differences. These factors included the fact that expert listeners knew the researcher as a colleague and her presence during live evaluations; although the researcher did not discuss the experiment or offer information beyond the written

explanations, the latter could however be clarified where the researcher was present. Conversely, online-listeners had no connection to the researcher, their evaluation remained anonymous and they could only clarify queries regarding the experiment or evaluation process via email.

Before these two evaluation groups could be combined for subsequent analyses it was important to ascertain that the difference in evaluation circumstances had not had a significant effect on the results. The difference in sample size (each listener evaluated between one and three LEGs so that there were 2080 online listener results and 290 life listener results) made a t-test[85] unviable. Instead, the rating values given by live-listeners were located within the spread of online-listeners for each exercise and participant. Although there was a slight and statistically insignificant tendency towards higher ratings in the live listeners, it was found that these ratings exhibited a satisfactory level of similarity to the online listener ratings as they were consistently within two standard deviations[86] (2SD) of the online-listeners' mean. It was therefore decided to combine online and life -listener rating values for all subsequent analyses to one file of 2370 rating results by 172 listeners.

It was then investigated whether the fact that online listeners comprised members of four different organisations representing several different countries (ANATS, Australia; NATS, United States of America/Canada; AOTOS, United Kingdom; BDG, Germany) played any role in the distribution of results. A t-test on all results separated for exercises showed that there was no significant difference in the rating values depending on whether a listener belonged to a specific voice teacher organisation/country. The slightly higher ratings of ANATS members reflect the fact that the life listener group has been absorbed into this analysis as all live listeners were members of ANATS.

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[85]Standard procedure assessing whether the means of two similar groups are statistically different from each other.
[86]Standard deviation shows how much variation ("spread") exists from the average/mean; 1 SD deviation away from the mean accounts for around 68 % of the values in this group; 2 SD away from the mean account for roughly 95 % of the values, and 3 SD account for about 99 % of the values (Niles, 2013).
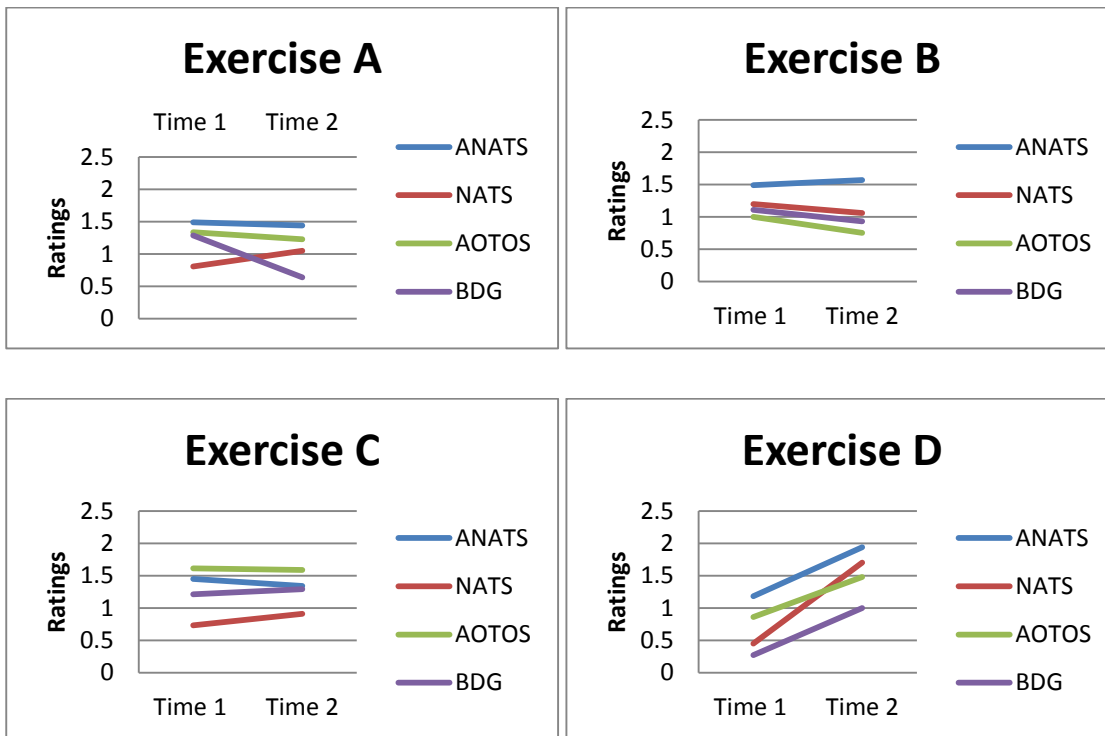
Figure 19: Ratings separated for listeners' organisations

Removal of Outliers

Another question entirely was the level of agreement between individual listeners. Consilience amongst listeners in perceptual studies concerning the singing voice has proved notoriously difficult to achieve (Thompson et al. 1998; Thompson et al., 2003; Merritt et al., 2001; Kenny & Mitchell, 2006; Watts et al., 2006). Controversies arise mainly from divergent descriptions and definitions of vocal qualities and the complex interaction of vocal and musical elements in singing. The current experiment and evaluation process had been designed to minimize areas of potential controversy: *quality of vocal tone* had deliberately not been described so that listeners would not get caught up on specific wording but rather trust their perception of what was overall "better" or "worse". Idiosyncratic preferences for specific voices played no role as all evaluations were carried out within samples that featured recordings of the same voice – that is singers were compared to themselves, not to each other. Moreover the sample phrases were simple, thereby highlighting the sheer vocal tone with musical aspects like phrasing and expression rather unimportant. Yet even this rather narrow focus left room for interpretation regarding what constituted the change in vocal tone quality under investigation. The main factors immanent in the formulation vocal tone quality were arguably the timbre (spectral make-up) and clarity of the tone, the accuracy of its

intonation, the clearness of the required vowels and the way in which single notes were joined (legato). Trusting that there would be an intuitive consensus regarding what constituted positive or negative change in vocal tone quality, the researcher had left the decision how these factors should be weighed in each recording sample to the expert listeners. If this trust was justified was to be seen in the level of agreement that is the relative congruence of ratings achieved by listening samples. In fact a certain level of concurrence amongst listeners (inter-listener reliability) was crucial for the validity of all subsequent analyses. In order to investigate inter-listener reliability, the author worked out mean and standard deviation (SD) of all rating results of each listening unit that is all ratings given to each recording sample (see Chapter 6: Listening Units).

A point in a sample that is widely separated from the main cluster of points in the sample is called an *outlier.* By shifting the mean value into their direction, outliers can distort an analysis result and therefore need to be identified and removed, following stringent and objective criteria. In this case outliers were rating values given to a sample recording that differed greatly from the mean of the rating values of that particular sample. The criteria identifying a rating value as outlier was if

- A value differed by more than 2SD from the mean value of this sample AND
- the deletion of the outlier reduced the SD by at least 50%.

The following eight ratings met these criteria and were therefore removed, resulting each in a significant reduction in SD

Table 37

Outliers ratings removed and resulting reduction in SD

Participant	Exercise	Time	Rating	Z-score[87]	Listener ID	Reduction in SD	Reduction in SD in %
1	4	2	2	2.57	109	.74 to .33	55%
3	2	1	-3	-2.31	43		50%
3	2	2	-4	-2.48	154	2 to .83	59%
3	4	2	-2	-2.59	85	1.15 to .5	57%
20	1	1	-2	-2.45	127	1.22 to .52	57%
21	3	1	-2	-2.36	49	1.41 to .71	50%
24	1	1	-2	-2.57	85	1.60 to .73	54%
24	3	1	-2	-2.41	155	1.42 to .64	55%

Although some of the spread of multiple ratings for the participants violated the normality assumption, even after removing the above identified outliers, it was found that summarising the multiple ratings into a mean for subsequent analyses was justified due to the tight clustering of standard deviations (i.e. the ratings within individuals were close to one another). The mean SD for each group by exercise and time were as follows:

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[87] The Z-score shows the distance of a rating from the mean of its group, in either positive or negative direction

Table 38

Standard Deviation of four Exercises after first (1) and last (2) teaching intervention

Exercise	Time	Minimum rating	Maximum rating	Mean rating	SD
A	1	0.500	2.048	1.29432	0.465620
	2	0.833	2.712	1.55727	0.504349
B	1	0.707	2.635	1.40239	0.492666
	2	0.641	2.915	1.57631	0.580758
C	1	0.500	2.369	1.26238	0.484553
	2	0.641	2.345	1.37050	0.470996
D	1	0.738	2.390	1.42673	0.447871
	2	0.333	1.853	1.25027	0.377962

Intra-Listener reliability

The fact that all listeners who carried out the evaluations were professional voice teachers and members of highly respected voice teacher associations suggested a level of competency and trustworthiness regarding the task at hand – which was why this group had been chosen in the first place. It was however no objective measure of listener consistency and reliability. In order to gauge the consistency of each individual listener's perception (intra-listener or intra-rater reliability) one Listening Unit in each LEG was presented twice: the first heard Listening Unit (question 1) and the last heard listening unit (question 5) were identical in each LEG – except for the order in which the recording at time 1 and time 2 were presented. LEG1 consisted for instance of 4C-15, 1A-1, 3D-11, 2B-4, 4C-15 (see Chapter 6).

The expectation was that a perceptive listener would rate the samples heard as question1 similarly upon hearing them again only a few minutes later as question 5. A significantly different rating value in response to question 1 and 5 was consequently taken to indicate a lack of consistency in a listener's perception. This table shows the differences in rating values between questions 1 and 5 (on either time 1 or time 2):

Table 39

Summary intra-rater reliability data

Difference Q 1 vs Q 5	6 +	5	4	3	2	1	0
Violations	2	5	5	17	45	142	258
Total cases	474	474	474	474	474	474	474
Proportion	.42%	1.1%	1.1%	3.6%	9.5%	29.96%	54.43%

Removal of outliers

The great majority of listeners rated the repeated samples either identically or with only one or points difference to their first ratings. As this was a measure for listeners' reliability, differences in the ratings of questions 1 and 5 were put into context of listeners' other ratings. The decision to remove a listener's entire rating values as outliers was made where

- their ratings of Units 1 and 5 differed by four or more points

    AND

- at least one of their other ratings differed by more than 2SD from the mean; this qualification was added as it turned out that some of the listeners who had exhibited "unreliability" by rating Listening Units 1 and 5 significantly differently (i.e. more than four points apart), still lay within 1SD of the mean with all their other ratings. In these cases, the divergence in questions 1 and 5 was interpreted as unexplained momentary confusion and the other results have been kept

    OR

- at least four of their other ratings differed by more than 2SD from the mean

These criteria led to the removal of just four listeners' entire ratings. To further measure listener reliability, we conducted a so-called Pearson correlation[88] between each listener'

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[88]Standardized measure of the strength of relationship between two measures.

rating value for question 1 and question 5. An *r*-value[89] of 0 .73 indicated a strong positive correlation between the two values.

Table 40

Pearson correlation between answers to Questions 1 and 5

		Unit 1	Unit 5
Question 1	Pearson Correlation	1	.729*
	Sig. (2-tailed)		.000
	N	473	473
Question 5	Pearson Correlation	.729*	1
	Sig. (2-tailed)	.000	
	N	473	473

*Correlation is significant at the 0.01 level (2-tailed).

The scatter plot depicts a positive relationship between answers to question 1 and 5 because high scores on the X-axis (Q5) are associated with high scores on the Y-axis (Q1).
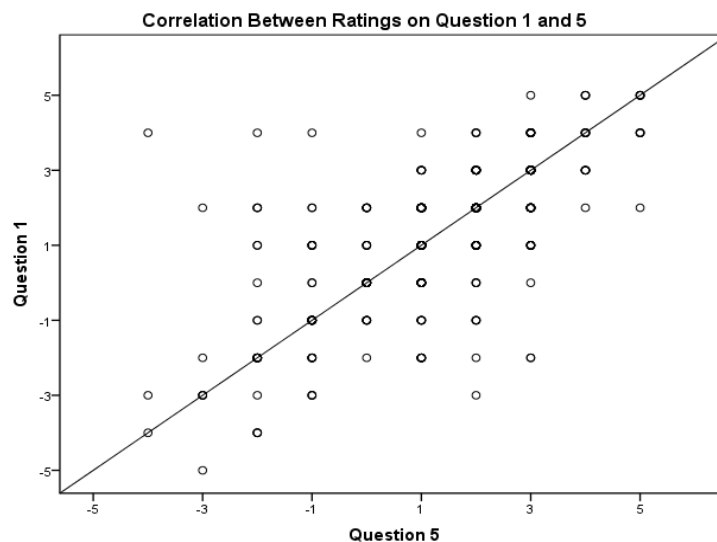
Figure 20: Scatter plot showing correlation of Q 1 and Q 5

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[89]Also called "Pearson's r." It ranges from +1 to -1. A correlation (r-value) of +1 means that there is a perfect positive linear relationship between variables (as one changes the other changes in the same direction), 0 means there is no relationship at all and -1 that there is a perfect negative relationship.

Other outliers

Apart from the outliers identified amongst individual ratings (inter-listener) and individual listeners (intra-listener), there were three other issues that needed to be cleared before the actual analyses could confidently be conducted:

- One participant elicited an unusually wide spread – that is a standard deviation of between 1.2SD and 2.9SD – of rating results for *all* of her recorded samples. While the case of this particular participant's vocal quality and the discord amongst listeners it provoked might become the subject of a follow-up study: all of this participant's ratings have been removed from the current analyses.

- One participant fell sick during the trial and, although she continued, was worried that she did not improve vocally as she felt she might otherwise have. As she did however still show improvement in three out of the four exercises, her results have been kept in the analyses.

- Due to a technical glitch in the online evaluation page, one file in listening unit 3 in LEG 12 did not play for three listeners – who notified the researcher via email and said that they had marked this unit '0'. These ratings have been removed from the analyses.

Analyses

To recapitulate: there were five sub-contentions to qualify and strengthen the hypothesis that constitutes the second contention of this study – the one that this experiment had been set up to answer (see Chapter 5):

2. Gesture and body-movement are helpful tools for the acquisition of vocal technique, namely vocal tone production

    a. There is a significant benefit – measurable in the quality of singers' vocal tone – in using a vocal teaching method in which the student is instructed to carry out specific gestures and/or body-movements whilst singing compared to a vocal teaching method in which the student follows verbal instruction with an unmoving body

    b. This benefit is evident in the rate in which the quality of vocal tone improves as an immediate result of a first teaching intervention

c. This benefit is evident in the rate in which the quality of vocal tone improves after the same teaching intervention has been applied over a number of weeks

d. This benefit is evident in all tested exercises

e. This benefit is evident independent of participants' previous singing experience

f. The positive effect of the incorporation of gestures and body-movements is being felt by a majority of participants

As has been detailed in Chapter 6 experimental recordings were coded in a way that allowed grouping according to singing status (Non-singer/Singer), level of the independent variable (NGM [no gesture/movement] or GM gesture/movement), exercises (A, B, C, D), which take (base-line, after first teaching intervention [time 1], after consecutive teaching interventions [time 2]), which participant. In order to investigate the above research questions the files were separated according to the four exercises (A, B, C, D, see chapter 5) and within these groups again into Non-singer/Non-gesture, Non-singer/Gesture, Singer/Non-gesture and Singer/Gesture.

Effect of teaching intervention depending exercise, time of intervention and singing status

A number of two-way ANOVAs[90] were conducted for the ratings given to each exercise at time 1 and time 2. The analyses also distinguished if the participant belonged to the Singer or Non-Singer group.

Table 41

Descriptive statistics for intervention and singing groups

	Intervention		Singing Status	
	Non-Gesture	Gesture	Non-Singer	Singer
Exercise 1				
Time 1				
n	12	11	12	11
M	.551	1.891	.956	1.450

---

[90] Analysis of variance that measures the effect of more than one independent variables.

SD	.727	.738	1.027	.925
Time 2				
n	12	11	12	11
M	.432	1.869	.638	1.645
SD	.698	.799	.981	.849
Exercise 2				
Time 1				
n	12	12	12	12
M	1.323	1.133	1.054	1.403
SD	.946	.815	.848	.891
Time 2				
n	12	12	12	12
M	1.106	1.369	1.063	1.413
SD	.594	1.160	.983	.839
Exercise 3				
Time 1				
n	11	13	12	12
M	1.234	1.111	1.206	1.129
SD	.679	.736	.722	.703
Time 2				
n	11	13	12	12
M	1.256	1.283	1.466	1.075
SD	.638	.805	.701	.709
Exercise 4				
Time 1				
n	12	12	12	12
M	.344	1.201	.856	.694
SD	.660	.635	.863	.696
Time 2				
n	12	12	12	12
M	1.084	2.039	1.418	1.706
SD	.775	.722	.706	1.038

Below the results are displayed in *box plots* (box-whisker diagrams) which are to be interpreted as follows: "At the centre of the plot is the median, which is surrounded by a box, the top and bottom of which are the limits within which the middle 50% of observations fall. Sticking out the top and bottom of the box are two whiskers which extend to the most and least extreme scores respectively" (Field, 2009, p.99).

Exercise A
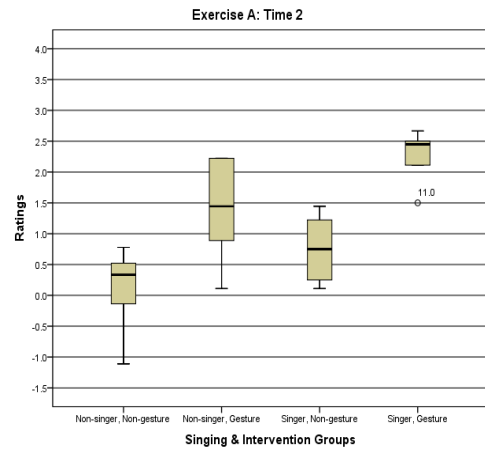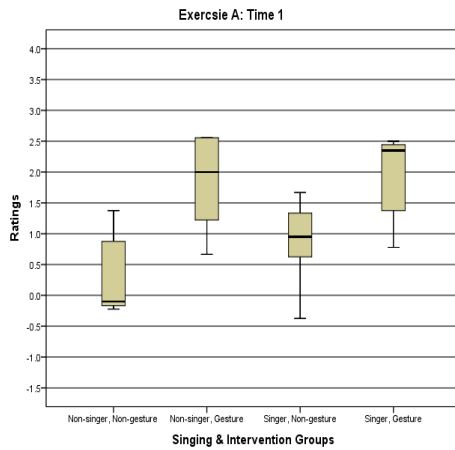
Exercise B
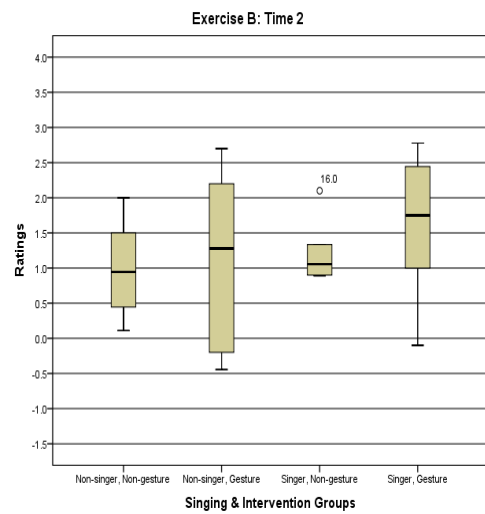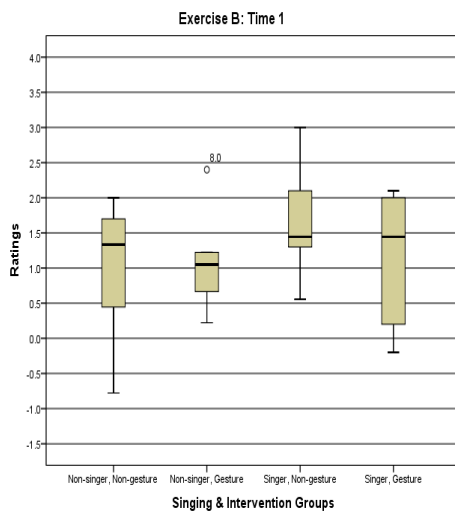
Exercise C
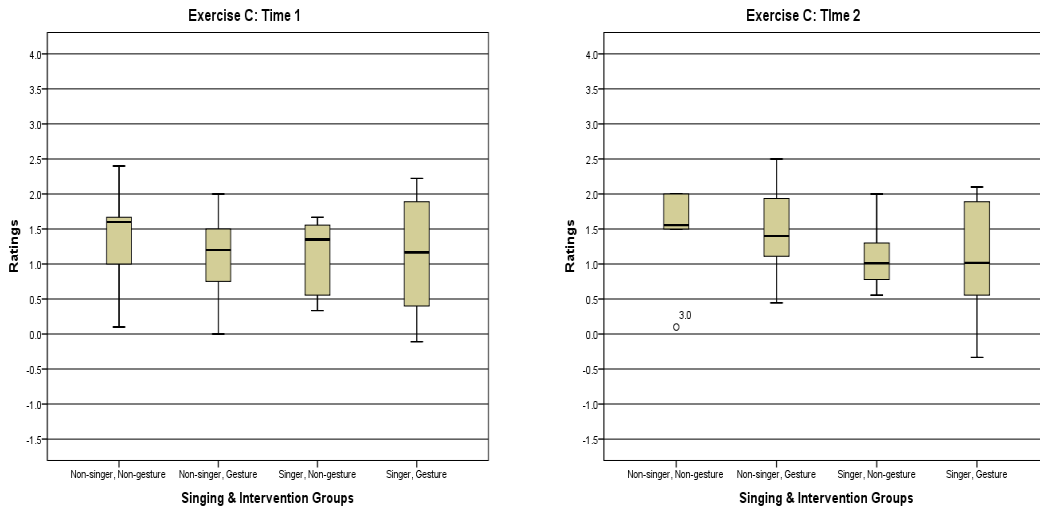
Exercise D
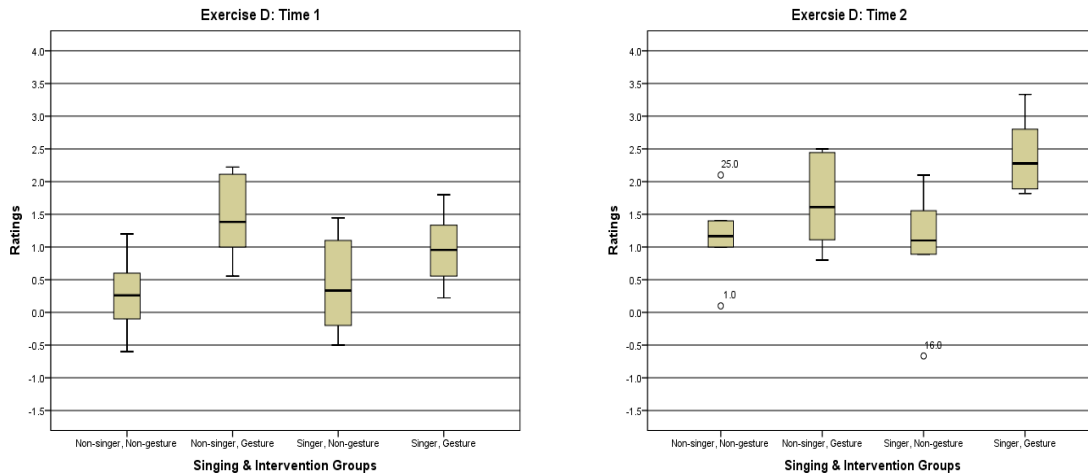
Figure 21: Box plots for ratings for singing and intervention groups for all exercises at time 1 and 2

Some plots (Exercise A, time 2; B time 1 and 2; C, time 2; D time 2) showed apparent outliers but an investigation of each of these participants' values found that their ratings were within 2SD: The z-score value in the table below shows exactly how far the mean is from the mean of its group. Since all the values were within -2 and 2, none of these participants needed to be removed.

Table 42

Outliers based on box plot criteria

	Time	Group	Participant	Z-Score
Exercise A				
	2	Singer, Gesture	11	-1.84
Exercise B				
	1	Non-singer, Gesture	8	1.77
	2	Singer, Non-gesture	16	1.91
Exercise C				
	2	Non-singer, Non gesture	3	-1.70
Exercise D				
	2	Non-singer, Non-gesture	25	1.44
	2	Non-singer, Non-gesture	1	-1.61
	2	Singer, Gesture	16	-1.79

Interaction between singing status and teaching intervention

Another two-way ANOVA was conducted to test whether the effect of the teaching intervention (level 1 or 2 of the independent variable) on mean ratings was impacted by singing status (interaction effect). For example, did the gesture intervention improve the ratings for singers whilst reducing the ratings for non-singers? Or did the gesture intervention have a similar impact on ratings, regardless of whether the participant was a singer or a non-singer.

Table 43

Results from 2-way ANOVA using factors intervention and singing status

	df	F	Mean sq	P
Exercise 1				
Time 1				
Intervention	1	18.295	9.655	.000*
Singing status	1	1.265	.667	.274
Interaction	1	.323	.170	.576

Time 2				
Intervention	1	27.846	11.539	.000*
Singing status	1	8.541	3.539	.008*
Interaction	1	.235	.097	.633
Exercise 2				
Time 1				
Intervention	1	.271	.216	.608
Singing status	1	.918	.731	.349
Interaction	1	.617	.491	.441
Time 2				
Intervention	1	.465	.415	.503
Singing status	1	.823	.735	.375
Interaction	1	.094	.084	.762
Exercise 3				
Time 1				
Intervention	1	.190	.104	.668
Singing status	1	.104	.057	.750
Interaction	1	.155	.085	.698
Time 2				
Intervention	1	.000	.000	.988
Singing status	1	1.615	.881	.218
Interaction	1	.045	.024	.835
Exercise 4				
Time 1				
Intervention	1	10.501	4.457	.004*
Singing status	1	.372	.158	.549
Interaction	1	1.362	.578	.257
Time 2				
Intervention	1	10.196	5.475	.005*
Singing status	1	.930	.500	.346
Interaction	1	2.077	1.115	.165

* $p < .001$

The analyses revealed that there was no such interaction effect between intervention and singing status that is the intervention showed similar effect irrespective of participants' previous singing experience. This can also be shown in graphs:
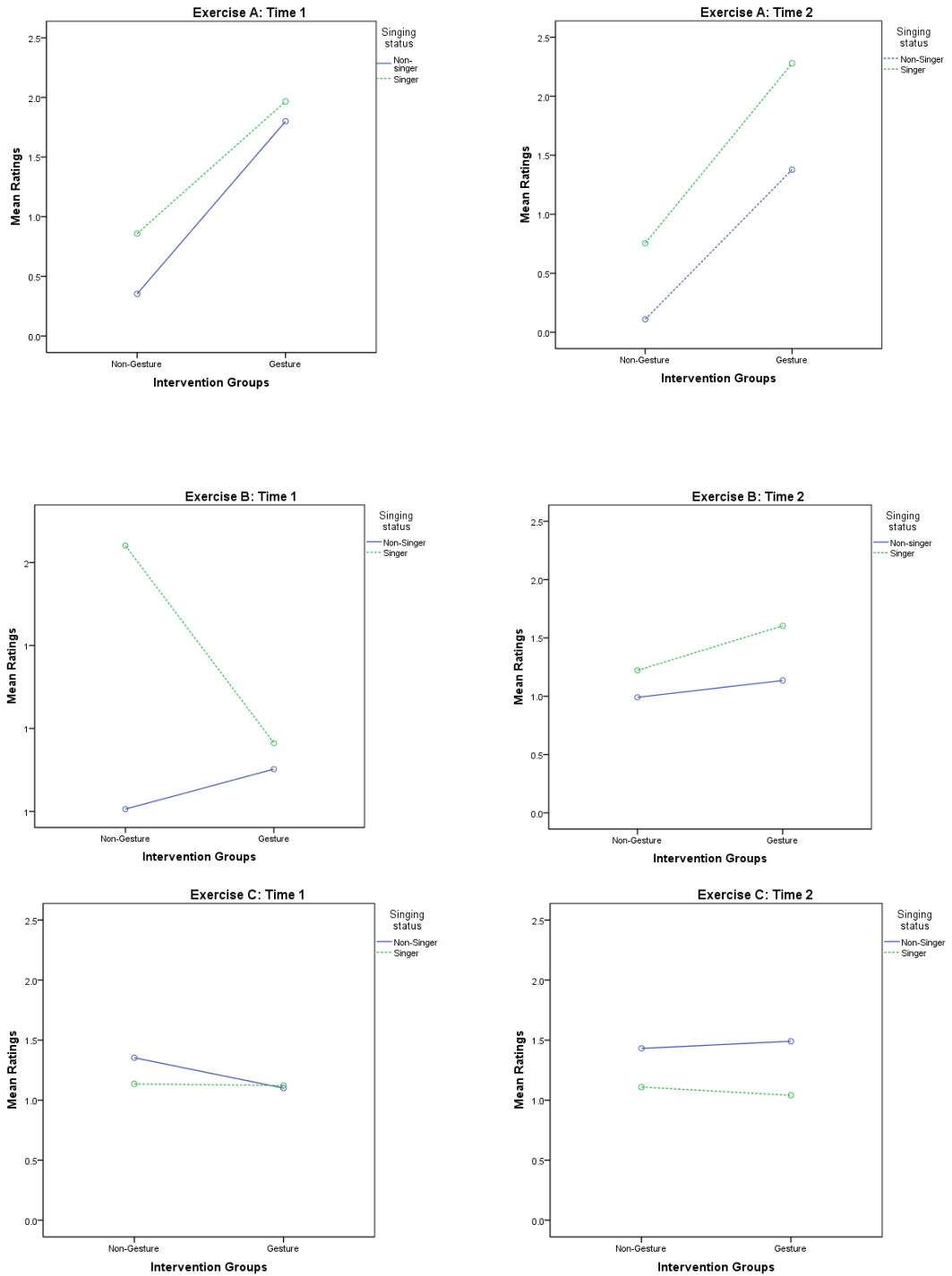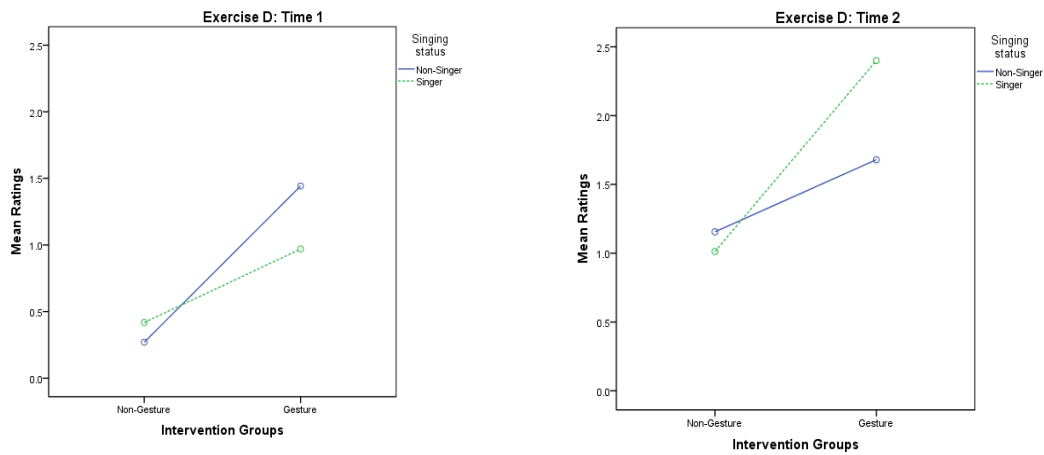
Figure 22: Plots for the interaction effects between intervention and singing groups

Correlations between other factors

As has been explained in Chapter 5, the recruitment strategy had meant that the Singer-group was much younger, ranging from 18 years to 24 years with a mean age of 20.3 years compared to the Non-Singer-group that ranged in age from 21 years to 67 years with a mean age of 45.3 years. Conducting the above analysis according participants' age groups looked very similar to the analysis according to singing status (Singer/Non-singer) and similarly no correlation could be found. The post-experimental questionnaire had shown that a majority of participants had preferred the GM intervention over the NGM intervention. In order to investigate whether preference for GM intervention correlated with performance on GM versus NGM intervention the GM and NGM rating for each participant was calculated. This showed the difference in the performance of each individual for GM versus NGM intervention. Participants were then separated into two groups based of preference for GM. A t-test was conducted to test whether the mean GM – NGM difference values differed significantly across these two groups based on gesture preference. It was found that there was no significant difference between the two groups (t = -.091, p = .924).

Table 44

Correlation of GM preference and mean ratings

Preference of Teaching Intervention	Number of participants	Mean Rating	Std. Deviation	Std. Error Mean
No preference or NGM preference	8	.5700	.45666	.16146
GM preference	17	.5900	.53606	.13001

The pre-experimental questionnaire (see Chapter 5 and Appendix E) had attempted to gauge participants' aptitude towards kinesthetic tasks. Considering however that there was no standardised test available and the questions had gauged participants' attitudes towards rather than aptitude for movement, the answers to this question have not been further correlated with the evaluation results.

Results

Validity and reliability of measurements

Before any proper analysis could be undertaken the questions of validity and reliability of the measurements had to be addressed and answered satisfactorily. It could be demonstrated that the rating values given by expert listeners upon comparing recording samples were differed significantly depending on which teaching intervention had been used. This established the validity of the listener evaluation by confirming that the chosen instrument of measure did indeed measure the independent variable.
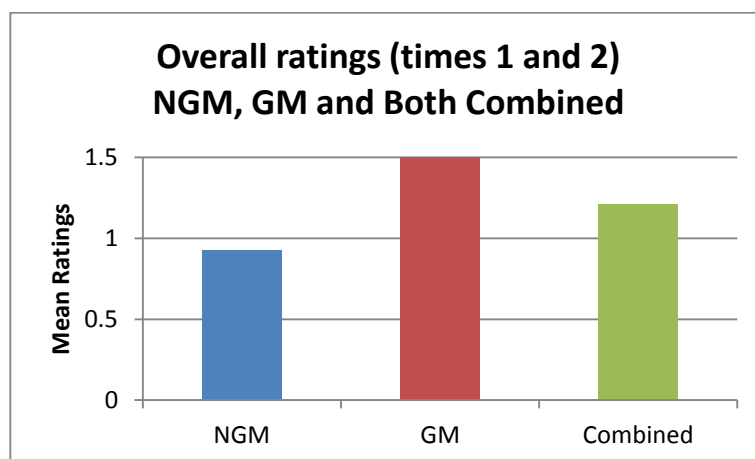
Figure 23 (see also Fig.18): Mean ratings for NGM and GM interventions and both teaching interventions combined

More complicated was the demonstration of reliability of measurements because it demanded a satisfactory level of both inter-listener-reliability (agreement amongst individual listeners) and intra-listener reliability (consistency of ratings). Although the cohort of expert listeners spanned several countries and was conducted both live and online, it could be shown that the majority of ratings reflected a significant overall level of agreement. The fact that all listeners were professional voice teachers proved sufficient common ground and individual differences in the ratings were greater than differences that could be associated with listener groups. The inclusion of a repeated Listening Unit as question 5 provided a good means for gauging listeners' perceptual consistency (intra-listener reliability) as is demonstrated that the great majority of listeners were extremely astute in their ratings (with 84.4% rating the repeated recordings identically or with only one point difference). The number of ratings that were identified as outliers and had to be removed from the analyses was relatively small (eight single ratings and four listeners' entire ratings) and well within the limits of what can be expected in a sample of that size (Field, 2009). The proof of validity and a high level of inter-listener and intra-listener reliability justified confidence in the rating results.

Addressing the contentions

A two-way ANOVA was conducted for the ratings given to each exercise at time 1 and time 2. The analysis also distinguished if the participant belonged to the Singer or Non-Singer group (see above). In order to address the five research questions, the results are presented through the prism of each question separately.

Contention 2a

Arguably the core of this study is encapsulated in *Contention 2a*:

2. Gesture and body-movement are helpful tools for the acquisition of vocal technique, namely vocal tone production
    a. There is a significant benefit – measurable in the quality of singers' vocal tone – in using a vocal teaching method in which the student is instructed to carry out specific gestures and/or body-movements whilst singing

compared to a vocal teaching method in which the student follows verbal
instruction with an unmoving body

The answer to this question was sought in the mean rating results (after the removal of
outliers, see above) of all exercises and at both times 1 and 2. The same analysis has also
been used to demonstrate validity of the instrument of measure (see above) and
demonstrates beyond doubt that there was a significant difference in rating values
depending on which teaching intervention had been used and that the GM intervention
elicited overall higher ratings.

Table 45

Mean ratings separated for teaching intervention

Teaching Intervention	Overall ratings (times 1 and 2)
NGM	0.93
GM	1.5
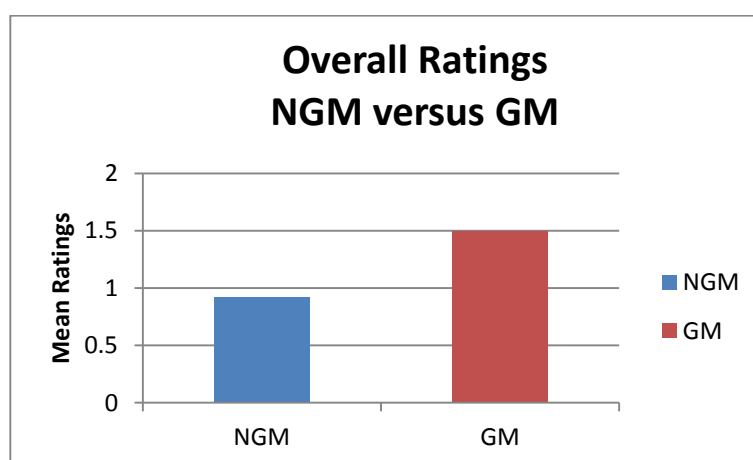
Figure 24: Mean ratings for NGM, GM intervention and both teaching interventions
combined

This means that contention 2a has been confirmed: With the quality of vocal tone as
measure a significant benefit could be shown in using a teaching method in which the
singer carried out specific gestures and body-movements whilst singing (GM) compared
to a teaching method in which the student followed verbal instruction with an unmoving
body (NGM). With all other factors being equal, participants' vocal tone showed a
marked improvement after the GM teaching intervention. However, it remains to be seen

if the potentially influential factors addressed in sub-contentions 2b, 2c and 2d will corroborate or somewhat qualify this affirmative answer.

Contentions 2b and 2c

The next two research questions enquired:

2. Gesture and body-movement are helpful tools for the acquisition of vocal technique, namely vocal tone production

   b. This benefit is evident in the rate in which the quality of vocal tone improves as an immediate result of a first teaching intervention

   c. This benefit is evident in the rate in which the quality of vocal tone improves after the same teaching intervention has been applied over a number of weeks

Because the two two-way ANOVA elicited the mean values at time 1(after the first teaching intervention) and time 2 (after the last teaching intervention) as comparison, contentions 2b and 2c have been addressed side by side. The below shows the mean ratings of all exercises separated for teaching intervention and times.

Table 46

Mean ratings separated for teaching intervention and time

Teaching Intervention	Mean rating at time 1	Mean rating at time 2
NGM	0.87	0.98
GM	1.34	1.65
Difference between NGM and GM	0.5	0.7
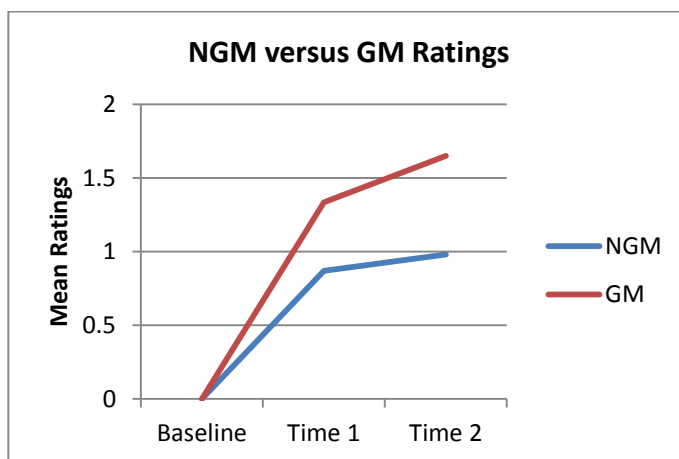
Figure 25: Mean ratings separated for teaching intervention

The observed differences of 0.5 points between the NGM and GM rating values at time 1 and 0.7 points between the NGM and GM -rating values at time 2 are significant when considering the tight clustering of rating values. Contentions 2b and 2c can therefore also be confirmed: The benefit of the GM-intervention is evident in the rate in which the quality of vocal tone improved both as an immediate result of a first teaching intervention (time 1) and, even more, after the same teaching intervention has been applied over a number of weeks (time 2).

Contention 2d

In order to investigate the first three questions, the separation according to the four exercises had been blended out. This part of the two-way ANOVA will now have to be brought back in so as to investigate the contention:

2. Gesture and body-movement are helpful tools for the acquisition of vocal technique, namely vocal tone production
   d. This benefit is evident in all tested exercises

This excerpt of the analysis results highlights the mean rating values of each exercise at times 1 and 2 and separated for teaching intervention:

Table 47

Mean results NGM and GM intervention

	Non-Gesture (NGM)	Gesture (GM)
Exercise A		
Time 1	0.551	1.891
Time 2	0.432	1.869
Overall	0.5	1.9
Exercise B		
Time 1	1.323	1.133
Time 2	1.106	1.369
Overall	1.2	1.3
Exercise C		
Time 1	1.234	1.111
Time 2	1.256	1.283
Overall	1.3	1.2
Exercise D		
Time 1	.344	1.201
Time 2	1.084	2.039
Overall	0.7	1.6

The results can also be shown as graphs:
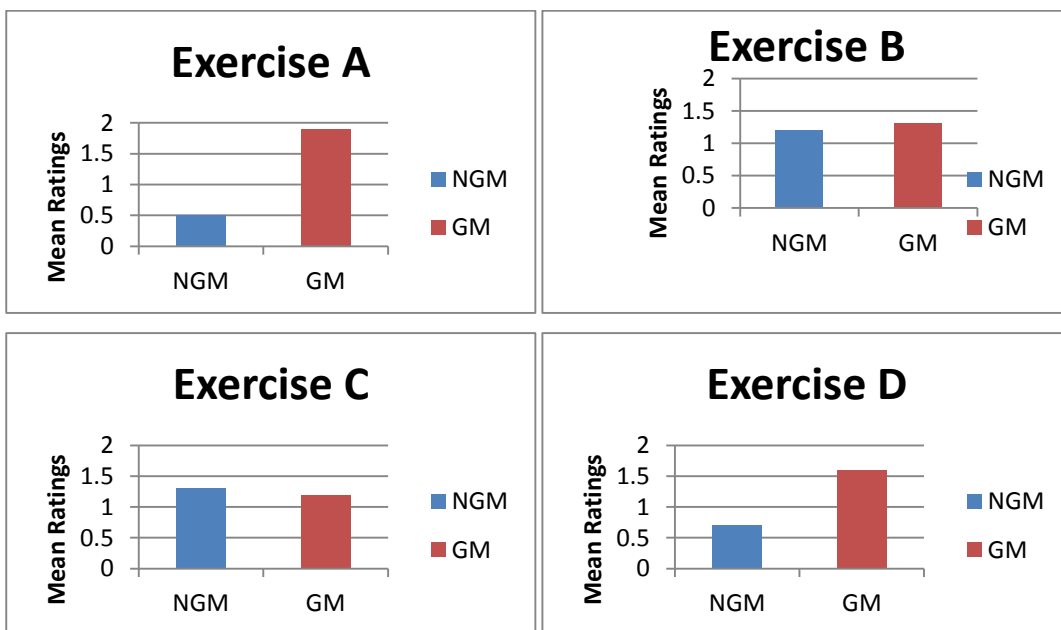
Figure 26: Mean ratings separated for teaching intervention at times 1 and 2 combined

To complete the picture, here are the mean rating values of each exercise separated for teaching intervention at times 1 and 2:
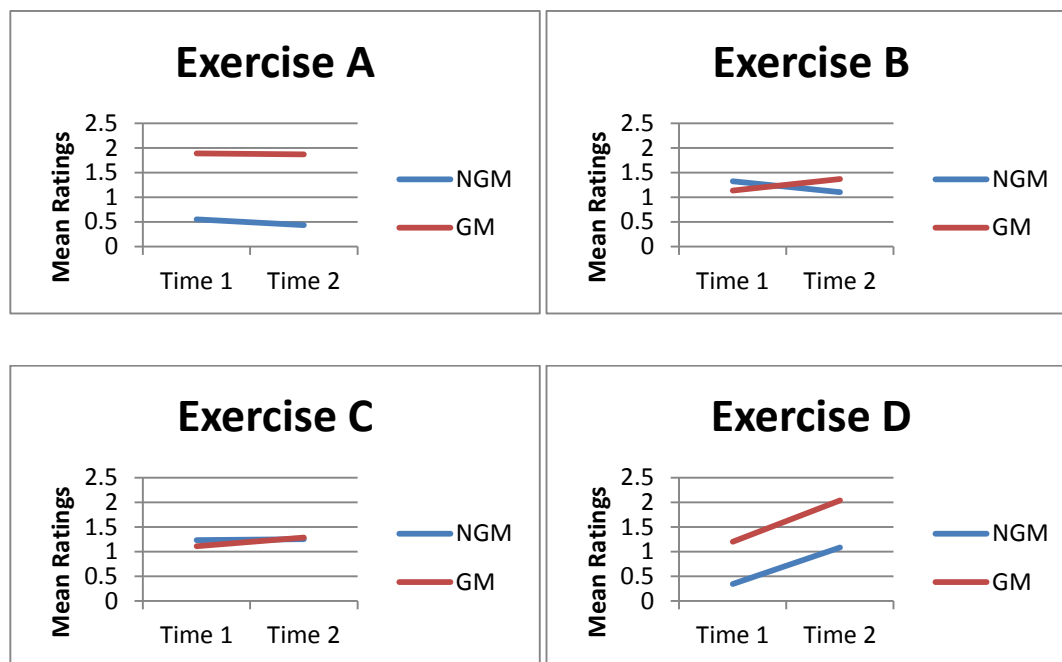
Figure 27: Mean ratings separated for teaching interventions and exercises

It is immediately obvious that the above found overall higher ratings of the GM teaching intervention compared to the NGM teaching intervention was not equally present in all but only in two out of the four exercises: While the GM intervention elicited much higher ratings than the NGM intervention in Exercises A and D there is not much difference between the interventions evident in Exercises B and C. Contention 2dcan therefore not be confirmed: The benefit of the GM teaching intervention was not consistently present in all four exercises and was therefore not independent from the exercises.

Numbers and graphs displayed in *table 47* and Figures 27 and 28 also show that NGM interventions rated significantly lower in Exercises A and D than in Exercises B and C. This suggests that the very exercises that thrived with the GM intervention were not helped by the NGM interventions or, put the other way round the very exercises in which the NGM interventions were not very helpful thrived with the GM intervention. Conversely the two other exercises, in which the GM intervention had not proved an advantage over the NGM intervention, both had achieved relatively high ratings indicating a significant level of improvement. It is further notable that only Exercise D showed significant positive development between the ratings after the first intervention (time 1) and the ratings after the last intervention (time 2) for both interventions; Exercise

C showed mild (but statistically insignificant) positive development in the GM intervention offset by mild (but statistically insignificant) negative development in the NGM intervention and there was little or no difference between both interventions' ratings at time 1 and time 2 in the other exercises.

Considering that the order in which the exercises were taught had been randomized to control for any potential effect of same, the above results must arguably have been effected by the specifics of the four exercises and respective interventions. To attempt an explanation of the above divergent results, exercises and interventions are briefly recalled and discussed in the light of their rating results. For a detailed description of the four exercises and all teaching interventions please see Chapter 5.

Exercise A elicited significantly higher ratings after the GM intervention and rather low ratings after the NGM intervention but very little development between times 1 and 2.

Major triad (1-3-5-3-5-3-1, do-mi-so-mi-so-mi-do) on [i] (here written as [ee])

Objectives of this exercise were to achieve a focused and clear [ee] vowel with good "forward placement" and resonance, consistency in vowel colour, tonal quality and vibrato rate throughout the phrase as well as a smooth legato line. The difficulties of this exercise seem to lie partly in the characteristics of the [ee] vowel and the associated danger of raising the larynx and tightening the throat in the attempt to make a clear and focused sound. Furthermore the slow, relative long and sustained phrase required considerable breath control and support. Apart from addressing breathing and posture, the NGM intervention stated a number of physiological details and described the desired tone/vowel quality yet the evaluation results indicated that this did not go very far in helping participants achieve better vocal tone with an improvement rate of only around 0.5 points. A possible explanation might be that the physiological functions required in this exercise are too complex and fault-prone to perform well after being simply instructed to do so. The GM intervention on the other hand embodied the core features of the phrase by creating the image of an "edge" outside of the body, ascertained airflow through a flowing movement and aided forward placement with the notion of moving downward-

forward where the phrase moved upwards. The required gesture/movement in this intervention was arguably the most complex of the entire experiment which was also reflected in a slightly longer time participants took on average to master the gesture in proper coordination. A rating mean of 1.9 points however reflected a decisive improvement in vocal tone quality and proved that the intervention had worked.

Exercise D elicited similarly significantly higher ratings after the GM intervention and rather low ratings after the NGM intervention and also showed a distinct development between times 1 and 2 for both interventions:

Staccato arpeggio (1-3-5-8-5-3-1, do-mi-sol-do-sol-mi-do) on [a], here written as [ah]

Objectives of this exercise were to achieve and practice a balanced onset and release of each brief note in a bright [a] vowel in a light tonal quality; the quick and light onset in this fast arpeggio also promotes range extension. The physiological mechanism behind a balanced onset is rather complex and lies halfway between two extremes: in a 'soft' or 'breathy' onset the vocal folds are "adducted (approximated) without firm closure of the glottis, resulting in a soft blowing sound" accompanying the sung note whereas in a 'glottal' onset the vocal folds are firmly adducted prior to phonation often resulting "in a grunting sound caused by a sudden release of pressure audible with the expulsion of air" (Miller, 1996, p 3). So-called prephonatory tuning[91] must take place before each onset in order to 'hit' the right note. As in Exercise C, the NGM intervention, having addressed breathing and posture, stated a number of physiological details and described the desired tone/vowel quality but the evaluation results indicated that this did not go very far in helping participants achieve better vocal tone with an improvement rate of only around 0.3 points at time 1. Repetition and practice did however better this result to 1.1 point at time 2. The GM intervention completely bypassed all thoughts of singing but focused on

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[91] The complex neuromuscular process of adjusting one's voice to the pitch one is going to sing.j.

a somewhat playful yet carefully coordinated movement: the throwing movement ascertained airflow while the sudden opening of fingers and 'bounce' off the wall not only coincided but 'initiated' the short [ah] sounds and the rhythmic pulse aided inhalation. Where this movement elicited too forceful an action, it was reduced to tapping of one's fingertips in the palm of one's hand, a smaller and calmer movement which otherwise retained the attributes of the 'throw'. The results of 1.2 points at time 1 and 2 points at time 2 proved that the gesture/movement had an immediate beneficial effect which grew even further with practice.

Exercise B showed relatively even improvement with both interventions with insignificant positive development between times 1 and 2 in the GM and an equally insignificant negative development between times 1 and 2 in the NGM intervention.

Major triad plus sixth (1-3-5-6-5-3-1, do-mi-so-la-so-mi-do) on an [U] vowel (here written as [oo])

Objective of this exercise was to become aware of and practise the [U] vowel in which the soft palate becomes dome shaped and the larynx is at its relatively lowest natural position (Bunch, 1993), to achieve consistent vowel colour, tonal quality and vibrato rate throughout the phrase as well as a smooth legato line. Apart from addressing breathing and posture, the NGM intervention gave clear instructions on how to shape one's mouth and drew attention to the flowing character of the phrase. An immediate improvement in vocal tone quality of 1.3 points showed that these instructions were indeed helpful; the slight drop in ratings at time 2 was insignificant and well within the limits of chance fluctuation. There were two GM interventions that were applied with this exercise: one focused on continuity of breath-flow and the notion of 'opening', the other mimed the 'roundness' of the [U] and the notion of a phrase that started at the epigastrium and stayed connected with the body while moving horizontally. An immediate improvement in vocal tone quality of 1.2 points showed that the gestures were effective; the slight rise in ratings at time 2 stayed well within the limits of chance fluctuation and was therefore insignificant.

Exercise C showed also equal improvement rates with very little difference between ratings at time 1 and time 2.

Five tone scale (1-2-3-4-5-4-3-2-1, do-re-mi-fa-so-fa-mi-re-do) on the syllables [vɔ]-[la] (here written as [voh]-[lah])

Objectives of this exercise were to practice legato singing of a consonant-vowel combination, (i.e. a syllable), to achieve consistent vowel colour throughout each syllable with a clear distinction between the two vowels [a] and [ɔ]; further to achieve consistent tonal quality and vibrato rate throughout the phrase. Apart from addressing breathing and posture, the NGM intervention drew attention to the formation of the consonants [v] and [l] as well as the vowels [a] and [ɔ], asking for a smooth transition from one to the other. Like in Exercise B, an immediate improvement in vocal tone quality of 1.2 points showed that these instructions had been helpful; the slight rise in ratings at time 2 stayed well within the limits of chance fluctuation and was therefore insignificant. The GM intervention consisted of a postural adjustment and controlled movement in counter direction of the phrase. It was the only GM intervention that was entirely a Body-Movement (see Chapter 3) that is it had no expressive component. An improvement in vocal tone quality of 1.3 points immediately after the first intervention (time 1) showed that the movement was effective; the slight rise in ratings after consecutive interventions (time 2) stayed well within the limits of chance fluctuation and was therefore insignificant.

In summary it has been found that the NGM intervention had had little, the GM intervention significant positive effect in Exercises A and D and that NGM and GM interventions had been equally effective in Exercises B and C. In the case of the latter, the satisfactory improvement in vocal tone quality effected by both intervention types confirms the benefit of sensible voice teaching instructions epitomized in the NGM intervention and also establishes the GM intervention as an equally effective method. A possible explanation for the discrepancy between NGM and GM results in Exercises A

and D might be that the physiological functions required in these exercises were more complex and fault-prone than those required in Exercises B and C, making them harder to perform correctly upon sheer verbal instruction – even though the instructions included factual explanations as well as imagery. It appears that just having understood details of a vocal task did not help participants much in accomplishing it. Conversely bypassing attention to bio-mechanics and concentrating instead on visualization, and even 'physical visualisation' (see also 'physical metaphor', Wis, 1998) of the core features of a phrase seems to be more beneficial with the discrepancy growing relative to the difficulty of the vocal task. The implications of this in the greater context of motor learning and attention focus will be discussed in Chapter 8.

Contention 2e

In order to investigate the next contention another two-way ANOVA had been conducted regarding the effect of participants' belonging to the Singer group or Non-Singer group. The contention was:

2. Gesture and body-movement are helpful tools for the acquisition of vocal technique, namely vocal tone production

      e. This benefit is evident independent of participants' previous singing experience

Table 48

Results from 2-way ANOVA using factors intervention and singing status

	df	F	Mean sq	P
Exercise A				
Time 1				
Intervention	1	18.295	9.655	.000*
Singing status	1	1.265	.667	.274
Interaction	1	.323	.170	.576

Time 2				
Intervention	1	27.846	11.539	.000*
Singing status	1	8.541	3.539	.008*
Interaction	1	.235	.097	.633
Exercise B				
Time 1				
Intervention	1	.271	.216	.608
Singing status	1	.918	.731	.349
Interaction	1	.617	.491	.441
Time 2				
Intervention	1	.465	.415	.503
Singing status	1	.823	.735	.375
Interaction	1	.094	.084	.762
Exercise C				
Time 1				
Intervention	1	.190	.104	.668
Singing status	1	.104	.057	.750
Interaction	1	.155	.085	.698
Time 2				
Intervention	1	.000	.000	.988
Singing status	1	1.615	.881	.218
Interaction	1	.045	.024	.835
Exercise D				
Time 1				
Intervention	1	10.501	4.457	.004*
Singing status	1	.372	.158	.549
Interaction	1	1.362	.578	.257
Time 2				
Intervention	1	10.196	5.475	.005*
Singing status	1	.930	.500	.346
Interaction	1	2.077	1.115	.165

* $p < .001$
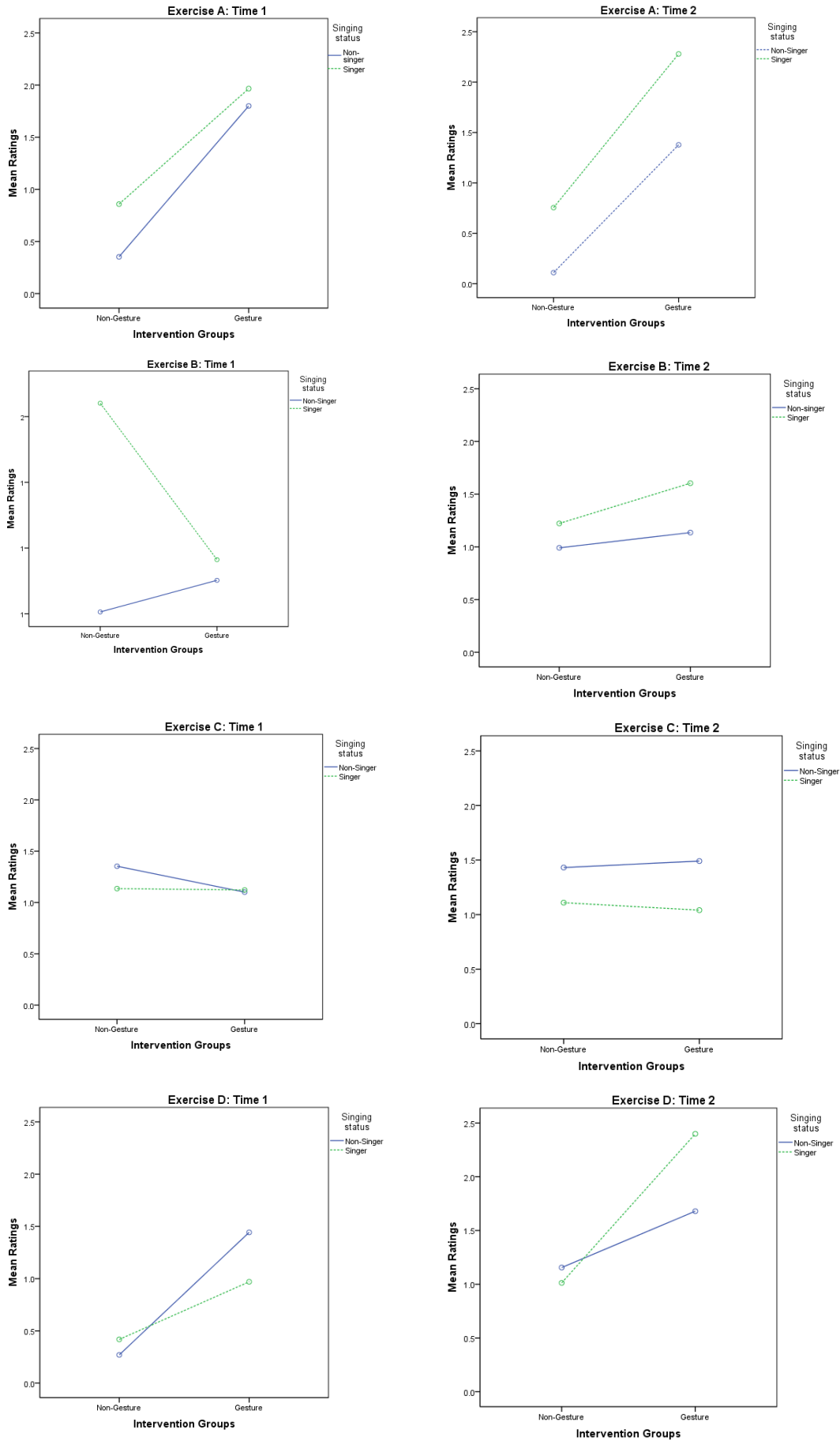
Figure 28: Plots for the interaction effects between intervention and singing groups

Tables 48 and Figure 28show that there was no interaction effect between the teaching intervention and participants' singing status. Contention 2e can therefore be confirmed: The beneficial effect of the GM intervention was effect was independent of participants' previous singing experience. As the Singer and Non-singer groups also represented different age groups with mean ages of 20.3 years and 45.3 years respectively, it can be equally stated that also age played no significant role regarding the efficacy of the independent variable.

Contention 2f

At the conclusion of the experiment, participants had been asked to indicate their own perceptions regarding the development of their vocal tone throughout the trial. These perceptions have been correlated with the rating results in order to investigate the last contention:

2. Gesture and body-movement are helpful tools for the acquisition of vocal technique, namely vocal tone production
    f. The positive effect of the incorporation of gestures and body-movements is being felt by a majority of participants

In the post-experimental questionnaire, 22 out of the 25 participants (88 %) indicated that they felt their vocal tone quality had improved over the course of the trial. Asked which of the teaching intervention they preferred, 68 % of participants indicated that they preferred the GM intervention and 32 % that they preferred the NGM intervention or none. These two findings together allow the conclusion that contention 2f can be – if somewhat tentatively – confirmed: The objectively observed improvement in vocal tone quality had been felt by a majority of participants and had been demonstrably influenced by the use of the GM-intervention suggesting that participants felt the positive impact of the GM-intervention. An – albeit smaller – majority of participants indicated that they preferred the GM intervention over the NGM intervention which might be seen as confirming the beneficial effect of this intervention even further. However, a t-test conducted to check for correlations between participants' preference and the ratings showed that there was no significant difference in the mean ratings depending on participants' preference for the GM-intervention (see Table 14). This means that, somewhat surprisingly, neither was an indifferent or negative position towards the GM-intervention detrimental to its positive effect nor did a preference for the GM-intervention

make it any more beneficial: the benefit of the GM intervention was evident irrespective of and independent from participants' intervention preference.

Summary

Thorough analyses of various aspects of the data collected in this experiment has found answers to all six research questions: A comparison of the means of the rating results given to GM intervention and the NGM-intervention showed a clear advantage in using the GM intervention. This effect appeared to have been present immediately after the first intervention and, stronger still after the last intervention and to have been independent of participants' previous singing experience and age. Furthermore it has been found participants' own perception of their vocal improvement mirrored the judgement of the collective expert listeners. However there has been a significant difference in the ratings if viewed separated from the four exercises: the arguably more demanding exercises (A and D) showed a significantly greater benefit through the GM intervention while the NGM intervention was rated little helpful; the arguably less demanding exercises (B and C) benefitted equally from the NGM and GM-interventions. This might be taken to mean that the benefit of a teaching intervention in which the student is instructed to carry out specific gestures and/or body-movements whilst singing is mostly dependent of the type of vocal task at hand. The deeper implications of the results will be further discussed and put into context with other research in Chapter 8.

Chapter 8: Discussion

This chapter will recapitulate the thoughts and actions that constitute this thesis. It will in particular remark on areas of potential argument, explaining and justifying the decisions taken. The results of the survey and experiment will be interpreted and put into context with existing research.

Thought processes

The subject matter of this thesis constitutes a complex yet very specific aspect of vocal teaching and overlaps several fields of enquiry. The human voice is the result of intricate physiological mechanisms and acoustic phenomena and carries a host of information about the speaker or singer including a reflection of their psychological state. Despite impressive advances in voice science which mean that every vocal sound can be dissected and analysed down to its faintest overtone and most fleeting nerve impulse at work in its genesis, the great appeal of singing may just lie in a certain remaining mystery as it often seems more than the sum of its ingredients. Within the complex disciplines of singing and teaching singing, this study concentrated on a very specific enquiry: Largely disregarding music and emotion, it focused on the teaching and learning of vocal tone production, particularly in the Western classical singing tradition and gesture and body-movement as a strangely elusive though arguably widely used teaching and learning tool in this context.

Difficulties encountered in the learning and teaching of singing usually have their causes in the very complexity of the biomechanical and psychological processes required for singing. Parallels between learning to sing and motor skill acquisition have only relatively recently been given scientific attention (Verdolini, 1997, 2002; Poolton et al., 2006; Wulf, 2007; Nisbet, 2010, see also Chapter 2) and appear to offer explanations to some associated problems. In the context of motor learning, it has for instance been shown that attention to the biomechanics of a physical task tends to adversely affect the performance of that task while attention to an external goal tends to have a beneficial effect on performance. This may explain the phenomenon that difficulties in vocal tone production often seem to become more prevalent the more the singer focuses on them in trying to overcome them. Similarly there is also evidence that detailed factual explanations may not be helpful in acquiring a skill lending scientific validity to many singers' deep rooted reluctance concerning thinking or talking about the biomechanics of what they do when

they sing and to focus on music and expression instead. Related to this debate is the possibly at times exaggerated but still real controversy between factual teaching (voice science) and imagery.

In the learning of singing and particular the highly stylized vocal tone production required in Western classical singing, the singer has to learn new physiological functions or modify and fine-tune familiar ones. For this purpose he or she will have to somehow access and interfere with the inner mechanisms of vocal tone production and it turns out that having understood what one wants to do does not always easily translate into one being able to doing it. It seems that vocal problems often stem from our body simply not understanding what our mind wants. Even if one's mind knows perfectly well what and how to do something, it is an entirely different thing to communicate this knowledge to one's body. If communication is the problem, then body-language and gesturing might be part of the solution and so it is their capacity to communicate which brings gestures into the picture.

It becomes clear that the role of the body in singing has several dimensions and can be viewed from different angles: From one perspective the singing voice is obviously a 'bodily instrument' as vocal tone production requires the coordinated functioning of various interconnected physiological mechanisms. From this perspective, singing is a motor skill with all consequent implications for the learning process. However, contrary to the motor skills required for say playing the piano, the physical functions to be learned for singing are internal, thus invisible and partly unconscious as well as interconnected with the singer's emotions. Indeed, singing, at least on some level may also be viewed as primal vocal expression (Mithen, 2006) that is completely 'natural' and unlearned. It seems fair to say that while there are certain parallels between singing and other motor skills, there are also fundamental differences. Yet, irrespective of these differences, the application of some central principles of perceptual-motor learning to voice instruction is arguably of great value for vocal pedagogy (Verdolini, 1997, 2002; Nisbet, 2010).

First contention - the prevalence of using gesture and or/movement

A completely different role of the body in singing hinges on the connection between gesture and thought-processing, body-language and communication. Substantial research in many non-singing related areas suggests that gestures are closely related to inner processes; humans appear to not only feel, but also think with their bodies. Body-language not only communicates thoughts and emotions with extreme accuracy to the onlooker (Fast, 1977; Beattie, 2003; Pearce, 2006) but gestures may also feed back into the brain, modulating and altering thoughts and feelings (Seitz, 1993; Goldin-Meadow, 2003; Kendon, 2004). Apart from the capacity of communicating to others it seems that gestures' capacity to communicate includes the communication with one-self. These considerations alongside personal experience and anecdotal evidence laid the ground for two main contentions and a number of sub-contentions (see Chapter 1). The first contention was:

1. Gestures and body-movements are widely used tools in the teaching and learning of singing;

    a. The various gestures and movements encountered in the context of teaching and learning singing can be identified and categorized in a way that will be accepted by a significant number of voice teachers;

    b. A significant number of voice teachers use gestures to enhance explanation and/or demonstration;

    c. A significant number of voice teachers encourage their students to carry out gestures as well as body-movements whilst singing to enhance their learning experience;

    d. there are some universally accepted and used gestures and body-movements in voice teaching;

    e. there is a shared rationale for using gestures and body-movements in voice teaching;

Having introduced the thought processes underlying and leading up to the main contentions (Chapter 1), the first step in the actual investigation was, like in any study, a thorough review of existing material (Chapter 2). The literature review covered six areas of enquiry deemed most pertinent to this study: *Vocal Pedagogy*, with the subheadings: nature of the singing voice, vocal tone (formation and perception) posture, breathing and

the teaching of singing. *Learning*, with the subheadings: motor learning (the body learns) and the role of the body in knowing (the body helps learning), *Gesture Studies, Choral Rehearsal, Music Education* and *Acting.* As the subject matter of this study was a specific aspect of the teaching of singing, material on vocal pedagogy was of first and central interest and has been dealt with at some length. It could be shown that there exists a certain rift within the singing teaching community with advocates of voice science and factual teaching on one side and those who believe in the benefit of imagery on the other. Very recent research (Ware, 2013) suggests however that this divide might be more of a theoretical kind as a majority of voice teachers (at least in the US and Canada) has been shown to happily co-use science and imagery implying that the two may actually not be mutually exclusive after all. The review of vocal pedagogy literature revealed a certain confusion regarding content (what to teach) versus method (how to teach). Some material concentrated entirely on physiological and acoustic facts and insights while some more practical singing guides offer a variety of step by step exercises. Regarding the above mentioned controversy between science and imagery it appears that imagery advocates possibly focus more on how to teach whereas science advocates focus more on what to teach. It has been found that there was surprisingly little mention of how exactly insights and instructions are best being communicated from teacher to student. It seems to be generally and silently assumed that everything will be taught using verbal explanation and demonstration. Although, as the author could show in previous studies, gestures are definitely used by singing teachers as communication tools (Nafisi, 2007, 2008, 2013) they are very rarely mentioned as systematic tools for communicating singing related concepts.

A brief excursion into theories on learning styles and multiple intelligences has further exposed a surprising disconnection between these disciplines and both vocal pedagogy and motor learning investigations. Although growing interest within the voice teaching community in knowledge and insights gained in motor skill acquisition shows that an overlap of the latter two is beginning to be acknowledged, very little research has been done into learning style differences in motor skills acquisition and vocal pedagogy. And although there is evidence to the "crucial role of gestures in teaching and learning "this role still remains "typically unacknowledged" (Goldin-Meadow, 2004, p.314).

There is a well-documented long and fruitful tradition of gesture and body-movement in early childhood music education, particularly methods related to Dalcroze' Eurhythmics,

Orff Schulwerk and Kodály although they appear to be hardly ever used with adult students. In the context of choral singing the use of gesture and body movement is however becoming more established (Wis, 1993; Skadsem, 1997; Stollak, 1998; Peterson, 2000; Chagnon 2001; Bailey 2007). Movement and gesture are here mostly used to depict, illustrate and communicate musical or dramatic features but also to unify choral sound, achieve greater balance, or fine tune intonation. There is however virtually no material on the role of gesture and body movement as teaching and learning tools in one-on one voice teaching, or concerning the effect of gesture and body movement on the tonal quality of the adult singing voice. Movement in the student is – apart from relaxation exercises prior to singing – generally discouraged.

The important role of gesture in communication in general has long been known and has been reaffirmed by a number of psycho-linguistic studies (Beattie, 2003, 2004; Kendon, 2004). Some formerly purely practical approaches such as for instance Chekhov's "psychological gesture" are satisfyingly affirmed by proof that particular gestures can indeed help generate particular feelings or thought processes (Katz, 2002; Goldin Meadow, 2000, 2003; Seitz, J., 1993, 2005).

Categorising gestures and movements

The review of literature (Chapter 2) showed the relevance of this study's subject matter and at the same time revealed the curious gap caused by a lack of interaction between different disciplines: Gesture has been proven to be a prime tool of communication yet its use in teaching was only slowly being acknowledged and has, although supposedly widely used, hardly been documented in vocal teaching. Having established background and context the next step was to investigate the first contention and the obvious methodology to this end was to conduct a survey amongst professional voice teachers. Only a self-reporting survey granted entry into the privacy of a large number of singing studios and allowed insight into voice teachers' ways of thinking. In order to be able to formulate the questionnaire through which the survey was to be administered, it was however necessary to find an understandable, relevant and comprehensive terminology. In the face of the want of such a terminology the author, based on her own studies (Nafisi, 2007, 2008, 2013) developed her own nomenclature.

The Nafisi-system of singing movements used the movements' pedagogical intent as determinant and distinguished physiological gestures, sensation related gestures, musical gestures and body-movements (see Chapter 3).

- Physiological gestures are gestures (usually of hands and arms with head and/or torso as reference points) that visualise actual internal physiological mechanisms related to the singing process. The pedagogic intention behind these gestures is to make the depicted physiological actions known and understandable to the student or to facilitate the functioning of the visualised mechanism. They are used by teachers in explanation and/or demonstration or are carried out by students before or whilst singing;

- Sensation related gestures are gestures (usually of hands and arms with head and/or torso as reference points) that illustrate singing metaphors, imagery and/or acoustic phenomena. They visualise subjective thoughts and/or sensations connected to a desired vocal sound but do not reflect actual physiological occurrences;

- Musical gestures are gestures (usually of hands and arms with head and/or torso as reference points) in which the hands are used to give a visible form to musical phenomena. Music being an inherently immaterial, abstract matter, these gestures have no reference point in the 'bodily world' but symbolise pure thought-images;

- Body-movements are movements (of any part of or the whole body) that students are carrying out upon instruction by voice teachers; they are distinguished from gestures in that they have no explicit expressive component. While gestures can be both a tool of communication (used by the teacher in explanation and/or demonstration) and a learning tool for the student (when carried out whilst singing), body-movements cannot be used as a tool of communication and make only sense as learning-tools for the singing-student;

This categorisation system encompassed all movements possibly occurring in the context of teaching singing and facilitated the wording of the comprehensive survey-questionnaire which in turn served to validate the system. The survey was administered to professional singing teachers in Germany and Australia, who were all members of professional voice teaching organisations: the Australian National Association of Teachers of Singing, ANATS, and the Bundesverband Deutscher Gesangspädagogen (Federal Association of Singing Pedagogues), BDG respectively. After a number of questions regarding general statistics and background respondents were given a brief yet detailed explanation of the above distinction of musical gestures, physiological gestures,

sensation related gestures and body-movements (Nafisi-system). These terms were then used throughout the core questions. Although the questionnaire gave ample opportunity for comments – which was also taken up by respondents in many instances, not a single respondent questioned or even commented on the categorisation system. Thus validated by a large audience of highly trained voice professionals in two countries with long traditions of music education of the highest standard, the Nafisi-system of singing movements can henceforth be legitimately used to refer to movements encountered within the context of the teaching of singing. Furthermore contention 1a has been resoundingly confirmed.

Gesture as a tool to communicate singing related concepts

There was a surprisingly strong consensus amongst survey respondents regarding their active use of gesture in their teaching-communication with 94.7% of ANATS respondents and 98.5% of BDG respondents identifying as gesture users. Four ANATS respondents indicated that they were unaware what their hands were doing which ties in with evidence that people are not always fully aware and sometimes completely oblivious to the way they gesture (Beattie, 2003; McNeil, 1992); and one BDG respondents skipped the question (see Chapter 4).The fact remains that none of the respondents explicitly rejected the use of gestures – which is heartening but calls for careful interpretation as it strongly suggests a certain 'self-selection' of invitees which meant that predominantly teachers who were actively using gestures in their teaching had responded. Any assumption that a majority of all voice teachers were using gesture in their teaching is contradicted by a substantial amount of anecdotal and empirical evidence attesting that many voice teachers do not use gesture in their teaching. The relatively low response rate of 13.9% (76 out of 550) in Australia and 24% (72 out of 301) in Germany makes predictions regarding voice teachers in general highly debatable and are therefore not undertaken in this thesis. Without reliable evidence from a representative (not self-selected) sample or better still the complete cohort of voice teachers in one or several countries, it remains impossible to put a percentage on users and advocates of gesture users versus those who reject using gesture in their teaching. However, the survey response has still demonstrated beyond doubt that a significant number of voice teachers, both in Germany and in Australia actively use gestures of various descriptions to enhance their explanation and/or demonstration, confirming contention 1b.

It was further notable that a majority of respondents identified as using all three gesture types (physiological, sensation related and musical) 'regularly', which was the option indicating highest frequency. These numbers affirm the significance of gesture as a teaching tool and are of particular interest when contextualised with recent findings that a great majority of voice teachers in the US and Canada identified as using imagery as well as scientific explanations in their teaching (Ware, 2013). According to the here applied Nafisi-system of gesture categorisation, physiological gestures would be apt to accompany scientific/factual explanations whereas musical and sensation related gestures would more likely be used to illustrate certain imagery. Survey questions 8, 9 and 10 (see Chapter 4) show that all three gesture types are being used to a relatively high extent with physiological gestures being used most frequently. This confirms Hostetter's (2011) finding that "gestures that depict motor actions are more communicative than those that depict abstract topics" (p. 297) but it is clear that gestures are being used to underpin factual explanations as well as to illustrate images and metaphors.

It turned out to be far more difficult to find common ground regarding specific gestures with a great variance in responses generally as well as some significant differences between ANATS and BDG responses. Some undisputed physiological mechanisms (like the descending diaphragm, widened ribcage, elevated palate, relatively low larynx) find reflection in commonly used physiological gestures. A limited number of, one might say 'obvious' gestures like conducting gestures were used by a majority of voice teachers, confirming Cofer's (1998) findings that conducting gestures consist to a large part of emblems (universally understood non-verbal acts that have a universally understood verbal translation [Ekmann, 1969]). Their capacity to be largely spontaneously understood makes conducting gestures a likely tool to communicate musical concepts. The great variance in responses suggests however that it will prove difficult to name and describe specific gestures which would be regularly used by a majority of teachers. As far as gesture in communication is concerned, contention 1d could only be confirmed with great limitations: there are some generally accepted and universally used gestures but many more highly individual ones and it would be difficult to reach a general consensus.

Conversely there was a relatively broad consent regarding the reasons for deliberate gesture use in communication: apart from the obvious advantages of facilitating communication while singing, gestures' capacity to simplify a complex mechanism and

to encapsulate essential meaning was acknowledged by a significant number of respondents. This means that, at least as gesture in communication is concerned, contention 1e could be confirmed. One respondent added: "A gesture can illuminate a mechanism, making it physical and real to the student. I feel gesture should be used in conjunction with and after a lucid verbal explanation. It can later be used as shorthand but one must check regularly that the student continues to identify the correct sensation with the gesture". This explanation may refer to the use of physiological gestures as well as sensation related gestures and, within the science-versus-imagery debate, places them squarely in the toolbox of the factual teacher. Particularly the remark regarding the necessity of checking that the student identifies the "correct sensation with the gesture" resonates with Michael's (2010, 2011, 2012) endeavour to rectify vocal misconceptions. Considering the overwhelming evidence attesting the communicative power of gestures in other fields (Seitz, 1993, 2005; Goldin-Meadow, 2000, 2003, 2004; Katz, 2002; Beattie, 2003; Kendon, 2004) as well as the observational study underlying the Nafisi-system of singing movements (Nafisi, 2007, 2008, 2013) makes this result less surprising but not less gratifying. However, accepting the beneficial role of gesture in the communication of singing related concepts – that is gestures' benefit for the onlooker – is entirely different to subscribing to gestures' positive effect for the gesturer.

Gesture and Body-Movement as learning tools

The survey showed that an only slightly lower number of voice teachers (90.8% of respondents in Australia 88.7% of respondents in Germany) attested to encouraging their students to carry out gestures whilst singing to enhance their learning experience compared to those attesting to encouraging body-movements (93.2% of respondents in Australia and 98.6% of respondents in Germany). As was the case with gesture-use in communication (see above) the fact that only very few respondents explicitly rejected the use of gestures and body-movement was quite likely due to the same 'self-selection' of invitees meaning that predominantly those teachers who were actively using and encouraging gestures and body-movement in their teaching responded. However, the survey response has still demonstrated beyond doubt that a significant number of voice teachers, both in Germany and in Australia actively encourage their students to carry out specific gestures and/or movements, confirming contention 1c. Yet, as was the case in regards to using gesture in communication, any assumption that a majority of all voice teachers were using gesture and body-movement in their teaching is contradicted by a substantial amount of anecdotal and empirical evidence attesting that many voice teachers

do not encourage gesture or body-movement in their students. As with the question of gestures in communication, the relatively low response rate (see above) makes predictions regarding voice teachers in general highly debatable and are therefore not undertaken in this thesis.

As much as response to the survey indicated interest in the subject matter which grew in this case from actively using gesture and body-movement, the reverse it almost certainly not true: there are many potential reasons for not responding to a lengthy survey which have nothing to do with the subject matter and it would therefore be erroneous to conclude that non-response necessarily implied a rejection of the incorporation of gestures and body-movement in vocal teaching. As the questionnaire had been designed to gain as much information as possible, its completion required a certain amount of dedication to the subject matter – a fact which might have deterred some voice teachers. Although it would doubtlessly have been interesting be able to put a percentage to users and advocates of gesture and body-movement versus those who generally do not use gesture and discourage their students from gesturing and moving while singing, this was not the main objective of the survey.

Similarly to the responses regarding gesture in communication (see above) the quest for favoured gestures and body-movements resulted in a rather patchy picture: A very wide spread of answers pointed to the difficulty of finding and describing universally applicable gestures and is further highlighted by the relatively large number of respondents who added their own gestures, body-movements and comments. A limited number of simple forms of body-movements particularly generic ones like 'walking' or the 'spreading of arms' were however widely accepted as useful and there was also a consent regarding the validity of 'posture enhancing' movements/stances, reflecting the importance assigned to posture in the voice teaching community (Callaghan, 2000, p.52) and most publications dedicate one or more chapters to postural awareness or body-alignment (Bunch 1993; Miller, 1996; Davis, 1998; Hemsley, 1998; Thurman & Welch, 2000; Callaghan, 2000; Caldwell, 2001; Kayes, 2004; Chapman, 2006; Nair, 2007; Smith, 2007). Regarding more specific gestures and body-movements however it was found that the majority of examples met with similar numbers of frequent users and rejecters in both respondent groups.

It becomes clear that, even within a group of voice teachers who generally subscribe to the advantages of gesture and body-movement use, there exists a high level of individuality regarding which specific gestures and body-movements are used: The choice is limited only by the teacher's imagination and depends primarily on the situation at hand as well as the students' and the teachers' idiosyncrasies and preferences. Contention 1d had carefully propounded that there were some generally accepted gestures and body-movements in voice teaching. There has been an only tentative confirmation as far as gestures in communication were concerned (see above). In regards to gestures and body-movements used by students to facilitate learning, the consensus was even slimmer and, apart from a number of more generic movements, individuality appears to reign supreme. This tendency towards personal preference is also reflected in the finding that no body-awareness method was a clear favourite – giving rise to the conclusion that a number of different 'body/breathing/alignment- schools' might actually have similar validity.

If individual gestures and movements can be tailored, fine-tuned and modulated to suit almost any musical, physiological, psychological or vocal situation, the resulting possibilities will necessarily be virtually endless. Thus, the flexibility of this teaching tool is at the same time its greatest strength and its greatest potential flaw as it is the very reason that generally accepted and universally used gestures and body-movements are so hard to identify.

The survey showed that there was a certain level of agreement regarding the rationale behind the use of both gesture and body-movement as learning tools for students cautiously affirming contention 1e. Despite a palpable hesitancy towards some offered reasons, the majority of respondents saw similar advantages in the use of gestures (namely the capacity of a gesture to visualise hidden mechanisms, illustrate musical concepts or to provide an external attention focus) and body-movements (namely achieving relaxation, release of tensions, postural improvement, raising body awareness and physical energy). These reasons are backed up by findings in the context of choral rehearsal as well as motor-learning (Wis, 1993; Seitz, 1993; Cofer, 1998; Skadsem, 1997; Stollak, 1998; Peterson, 2000; Chagnon, 2001; Goldin Meadow, 2003; Bailey, 2007; Wulf, 2007; Durrant, 2009; Mathers, 2009). One BDG-respondent added the poignant comment:

A gesture gives very good feedback about a student's thoughts about a phrase, his/her sensation for voice positioning, breath, etc. Hand and body show a student's unconscious thoughts, with which inner image he guides his voice. Adjusting a movement to a desired gesture also alters voice positioning and breath. The causal connection between brain and hand never ceases to astonish

This ties in with findings in motor-learning (Seitz, J., 1993; 2002, 2005; Wulf, 2007) or choral rehearsal (Wis, 1993; Chagnon, 2001; Bailey, 2007) and suggests that respondents were either aware of the relevant science or their experience and intuition told them what is only being reconfirmed by research.

Genuine interest in the subject matter together with the unthreatening nature of an anonymous self-reporting questionnaire persuaded a large number of voice professionals to offer access into the intimate space of their teaching practice. The survey's primary objectives had been to confirm the significant role of gesture and body-movement in the teaching of singing, to gain insight into teachers' rationale of using these teaching tools and to get a glimpse onto the huge variety of possible gestures and movements. Consolidation of the author's way of denoting and distinguishing these specific gestures and movements had been an implicit additional goal. All these objectives have been met with the amount of information yielded being more than satisfactory; the critical but generally positive reception of the survey is evidenced in respondents' comments (see Chapter 4 and Appendix B).

Other information gathered by the survey

The questionnaire also contained a number of questions which, although not un-important, have turned out to be of lesser relevance for this study as a whole. Therefore, and although these points have still been reported and discussed in Chapter 3, they have not been made part of this final discussion. They include information about respondents' professional training and employment background as well as respondents' preference of various breathing/body-alignment methods and the use of gesture to enhance expressivity. Once it had been established that there were no statistically significant differences between the two respondent groups (members of ANATS and members of BDG) regarding the core questions, comparison between the two respondent groups has been only peripheral. In fact differences between the two respondent groups were most pronounced in the general data and included discrepancies in the training and education

structure with Germany tending towards a more unified tertiary approach and a greater emphasis on classical singing. Both in regards to the breathing/body-alignment schools and general vocal pedagogy techniques it was notable that BDG-respondents named a large number of schools and methodologies that are virtually unheard of in Australia, some of which with a decidedly esoteric touch (for example Terlusologie – see Chapters 3 and 4 and Appendix B).

The survey could convincingly establish that gesture and body-movement were prevalent in the teaching of singing, both as tools of communication and as learning tools. This ties in well with ample material regarding the potential of gesture as a tool on communication in general (Goldin Meadow, 2000, 2003; Katz, 2002; Beattie, 2003; Kendon, 2004; McNeill, 2000, 2005; Hostetter, 2011) and a few studies regarding specifically gesture in teaching confirm its benefit in this application (Goldin-Meadow, 2004; Cook et al., 2006). In a musical context there is a history of gesture-use in music education and conducting (Wis, 1993; Skadsem, 1997; Stollak, 1998; Peterson, 2000; Chagnon 2001; Bailey 2007, Liao, 2008, 2009) and although there is only very little material on the use of gesture in one-on-one voice teaching (Nafisi, 2007, 2008, 2013) the prominent role gesture plays in the communication of singing related concepts cannot really surprise: If gesture is a prime tool for communication in general it is only logical that gesture would be equally well suited for the communication of singing related concepts. Because gesture is usually used in conjunction with speech and/or demonstration and may only be used independently once it has been established, it would be very difficult to measure its specific efficacy as a means of communication. To pinpoint their benefit it seems fair to say that, as the strength of gestures lies arguably in their capacity to visualise and illustrate, they constitute at the very least an additional tool of communication alongside verbal explanation and demonstration and at the most a tool of communication that functions on a different, potentially deeper level and independently from speech.

Accepting that there might be a benefit of using gesture as a tool of communication in the singing studio is one thing – but it is another thing entirely to accept a potential benefit of carrying out gestures and/or body-movements for the gesturer/mover him or herself – simply because this benefit might be even harder to describe, pinpoint or even prove. The survey has revealed that a substantial number of voice teachers instructed their students to gesture and/or move in a variety of ways to enhance their learning, albeit slightly fewer than used gesture as a tool for communication, As has been shown in Chapter 2, gesture

and movement have a long tradition of being applied in music education (Spector, 1990; Caldwell, 1997; Baney, 1999; Levinowitz, 2004; Fassone, 2006) and are increasingly utilised in choral rehearsal (Hibbard, 1994; Skadsem, 1997; Stollak, 1998; Peterson, 2000; Skoog, 2004). Furthermore lot of research (Damasio, 1994; Seitz, 1993, 2002, 2005; Goldin-Meadow, 2000, 2003; Rosenbaum, 2010) and anecdotal evidence suggests that gesture and movement have a way of altering and modulating the way we think and feel. And yet, the notion that gesturing and moving might help in the learning of singing and vocal technique in particular might still seem somewhat farfetched – simply because the actual effect of this teaching intervention has never been accurately described, let alone measured. The survey has shown that there was some common ground regarding the objectives of using gestures and body-movements; for example gestures were thought to enhance the invisible process of singing and vocal tone as well as the understanding of musical phrases by providing a visible form; and body-movements were thought to help release tension, raise body awareness and/or bring the body into a position conducive to vocal tone production. While the fact that a large number of teachers use these tools to achieve these goals may be taken to suggest a certain efficacy of the tools, there was hitherto no proof whatsoever. The experimental part of this study set out to provide such proof of such an effect.

Second contention – the effectiveness of using gesture and or/movement

Procedural decisions in the experiment and evaluation

As there was no comparable study to provide a tested template to follow, this study had to be designed from scratch and a number of elements in the experiment may be found debatable. Seeking the most logical and appropriate pathway in dealing with a multi-faceted subject, all decisions in the design and procedure of the experiment have been made with careful consideration of all aspects involved: Twenty-five volunteer participants of diverse age and singing back grounds were recruited amongst staff and students of Monash University and the Melbourne Conservatorium of Music. The status of participants' singing background was first determined through a question in the pre-experimental questionnaire where the wording suggested four different levels of singing expertise (see Appendix E). However, once the experiment had started and participants started to sing, it became evident that, although there was a spectrum of vocal ability, participants could be easily identified into two groups which might best be described as 'untrained' (level 1-3) versus 'trained' (level 4). Participants who self-reported as

belonging to levels 1-3 were referred to as *Non-Singers* (untrained) and those who identified as belonging to level 4 are referred to as *Singers* (trained). There was a relatively even split with 12 Non-Singers and 13 Singers in the experiment. The fact that the Singer group was much younger, ranging from 18 years to 24 years with a mean age of 20.3 years compared to the Non-Singer group that ranged in age from 21 years to 67 years with a mean age of 45.3 years reflected the recruitment strategy in as far as Singers were mostly voice majors (i.e. University students) and Non-singers a mix of University staff and students. There were six males (three Singers and three Non Singers) and 19 females (10 Singers and 9 Non-Singers). This diversity within the participant-cohort was an important factor as the researcher explicitly wanted to demonstrate the validity – or non-validity – of gesture and body-movement as a learning tool independent from and irrespective of participants' gender, age and pre-existing singing training. It should however be noted that, although participants included both genders as well as various age groups and singing backgrounds they cannot be regarded as representing the general population because of one crucial point: the subject matter of the study – which was necessarily known to potential participants – required a degree of openness to the notion of singing and moving and the preparedness to sing and move in front of and upon instruction by the researcher. Therefore only people who possessed these qualities were likely to have volunteered.

Another prerequisite was a general basic musicality manifest in the ability to pick up a simple melody and sing in tune; this had however not been specifically mentioned upon recruitment and if participants did or did not meet this criterion only became apparent once the experimental sessions had started. Most participants fulfilled this demand but the recordings of two volunteers whose pitching had gone too far astray could not be used. The results of the experiment can therefore only be generalized for the portion (of unknown percentage) of the general population who possess at least basic musicality and feel reasonably free to sing in front of someone else. While this restriction in the characteristics of participants had been absolutely necessary for the experimental procedure, it arguably also constitutes a limitation. The efficacy of gesture and movement in the acquisition of basic musical skills and pitching has already been documented (Spector, 1990; Caldwell, 1997; Schnebly-Black & Moore, 1997; Baney, 1999, Levinowitz, 2004; Liao, 2007, 2008; Crosby, 2008). An investigation of the effect of gesture and body-movement on the vocal tone and general singing ability of the self-

proclaimed 'unmusical' or shy may warrant future research and will as such be further discussed in Chapter 9.

The experimental design and procedure has been detailed in Chapters 5 and 6 – to recapitulate: At the start of the experimental sessions, participants were led through a vocal warm-up and four vocal exercises which had been designed to address a variety of vocal features and vowels while remaining deliberately simple in their layout; they can be said to emulate vocal exercises widely used in classical voice lessons particularly on a beginner/intermediate level. As soon as participants had grasped the exercises a recording was made which served as each participants' base-line recording of each exercise.

After this recording in the first session and three subsequent sessions the exercises were worked on following one of two types of teaching instructions. The experimental (or independent) variable whose efficacy was being measured was the teaching intervention and had two levels: the so-called *NGM-approach* was a teaching intervention which used no gesture or body-movement and the so-called *GM-approach* was a teaching intervention that incorporated gestures and body-movements. Exercises and teaching interventions have been presented in great detail in Chapter 5. It should be noted though that the two teaching interventions were formulated to allow for adaptation to individual vocal needs of the participants to achieve the best possible teaching outcome with both approaches in the consecutive teaching sessions. As the NGM approach offered a mix of factual teaching and imagery, the teacher-researcher might have emphasised the physiological mechanism with a participant who seemed to respond better to factual teaching or focused more on a metaphor with a participant who seemed to respond better to imagery. Likewise in the GM approach: as has been detailed in Chapter 5, some exercises could be taught with more than one – albeit similar – GM intervention and, while usually having started out with GM 1, another one might have been introduced in a consecutive session. It had been confirmed by the survey (see Chapter (4) that the choice of gestures and body-movements tended to be a highly individual affair which depended largely on teachers' idiosyncrasies and the situations in which the gestures or movements were to be employed. In line with these findings the researcher, drawing on her teaching experience and prior research, designed her own gestures and movements for this experiment.

When first devising the experiment it had been contemplated to divide participants into two groups – one group who would be taught using gesture and/or movement (GM-group) and one group who would be taught without gesture and/or movement (NGM-group) and to test which group showed greater vocal improvement. However, considering the relatively limited number of participants available for the experiment at the time, individual differences like participants' natural aptitude to movement and singing tasks would have been impossible to control and would likely have skewed the results. It was therefore decided to "use the subjects as their own controls" (Fraenkel & Wallen, 2000, p.287) in an experimental design in which each participant sang two exercises with the GM-intervention and two exercises with the NGM-intervention and to then compare individual participants' progress to their own pre-test recordings. The order in which exercises were sung and which teaching intervention was used was randomized so as to eliminate any potential effect order might have had. Each participant's first recording (base-line) was compared to his or her second recording (after the first teaching intervention/time 1) and again with his or her last recording (after the last teaching intervention/time 2).

The teaching and recording procedure in the experimental 'mini voice lessons' represented a compromise between two competing imperatives: As the experiment set out to test the effectiveness of a teaching tool that was demonstrably widely used in voice teaching (see Chapter 4), it was crucial to replicate a teaching situation which resembled a 'normal' voice lesson as far as possible: unless the experiment could reasonably be argued to reflect a 'real teaching situation', the experimental outcome could not be said to have any relevance for normal voice teaching. Factors that characterise a normal and potentially successful voice lesson arguably include a certain rapport between teacher and student, the student should feel acknowledged as an individual and the whole teaching process should be non-threatening. On the other hand the whole evaluation procedure and subsequent analysis depended on reliable and comparable data. In order to produce such data, it needed to be ascertained that each participant went through the same procedure particularly in the way the teaching interventions – which constituted the experimental variable (see Chapter 5) – were administered. While pre-recorded instructions would have guaranteed that each student got the exact same instructions, they would have created an artificial and sterile atmosphere as well as taken away any possibility of rapport building and addressing participants' idiosyncrasies. These factors were seen as disadvantages

outweighing the benefits so that pre-recorded instructions were dismissed and all instructions were given to each student individually and with demonstration. However the researcher/teacher endeavoured to deliver very similar instructions to all participants the success of which endeavour could be ascertained through the video recordings. Furthermore, each participant was given a printed copy with the core elements of the instructions.

In order to produce clean and comparable recordings, the actual recording procedure needed to be exactly the same for all participants, all exercises and teaching interventions. Professional voice recording equipment of the kind that combines microphone and headphones was neither available at Monash University nor the Melbourne Conservatorium of Music and the researcher opted instead for using a recording microphone mounted on a stand. Participants did however wear headphones so that they could be guided by the keyboard while only their voice would be heard on the recording but these were non-intrusive and participants were not hindered in their movement in any way. A marking on the floor helped to ascertain that each participant stood at the same distance (about 1.5m) away from and facing towards the microphone. The keyboard was slightly to the side and the video-camera unobtrusively in a corner, taking in the whole scene. None of the gestures or movements required in the GM teaching interventions necessitated moving away from that position and where a stepping position of the feet was asked, care was taken that the participant's head remained at roughly the same distance from the microphone. All sessions involving participants recruited from Monash University took place in the same sound-proof room at the Faculty of Education, Monash University and all sessions involving participants recruited from the Melbourne Conservatorium of Music took place in the same (fairly) sound-proof room at the Melbourne Conservatorium of Music, University of Melbourne. As much as using the same room for the whole experiment would have been preferable as it would have provided perfect consistency in the recording set-up, it would have necessitated participants to travel halfway across town; yet, as participation was already rather demanding with four consecutive sessions, inconvenience needed to be kept at a minimum and travelling was out of the question. Considering however that this experiment measured each participants' individual progress and did at no point compare participants to each other, the potential impact of two acoustically slightly different rooms appears negligible.

The quality of the vocal tone is arguably the single most important factor in all singing and particularly in Western classical singing (Stark, 1999; Himonides, 2009), consequently constituting a core part of the vocal technique associated with this tradition. It was therefore argued that any teaching intervention with claims to usefulness should have a measurable effect on the vocal tone quality. Furthermore, considering the various components that make good singing, vocal tone quality was found to be a sufficiently limited factor to be able to be measured in relative isolation. The quality of vocal tone was therefore the dependant variable whose development as a result of the above teaching interventions was being measured.

The decision to have the data evaluated by expert listeners instead of using computerised acoustic analyses was made after careful deliberation and a number of trial analyses. As has been shown in Chapter 2, there have been a number of studies investigating the power of spectral analyses as predictors of vocal quality in comparison to perceptual evaluation (Sundberg, 1997; Mitchell and Kenny, 2004; Watts et al., 2006; Kenny & Mitchell 2006; Mitchell, 2008; Collyer et al., 2009). The findings have been somewhat mixed: On one hand there could be shown to exist strong correlations between acoustically measurable and perceived vocal quality features of the vocal tone, for instance intonation and vocal timbre. Yet, while so called long term average spectra (LTAS, see Chapter 2) provide precise information namely about a tone's energy distribution (formant strengths), they do not reliably match perceptual judgments by expert listeners and were therefore not useful to define or predict overall voice quality. The multitude and complex ratio of factors at play in the sung vocal tone has so far frustrated the ongoing quest to define a 'beautiful' vocal tone through its acoustic characteristics (Collyer, 2010) and means that the human ear is as yet the most reliable assessor of voice quality (Mitchell, 2008). The relative change in vocal tone quality to be measured in this experiment was expected to be equally elusive in acoustic terms: the teaching interventions were neither designed to change the voice spectra in one specific way nor was it possible to conclusively deduct the direction of change (positive or negative) from any such observed change. Conversely all vocal instruction relies on the teacher's keen and experienced ear to identify various features in a student's vocal tone and guiding him or her towards improvement even though the objectively measurable change may be a combination of sometimes competing and divergent factors. The arguably partly intuitive weighing of these factors to arrive at a "That was better..." is indeed a vital part of what voice teachers do. It was therefore decided to have the entire evaluation carried out by expert listeners – namely professional

voice teachers. To ascertain a high level of expertise, potential expert listeners needed to identify as members of either of four professional voice teacher associations: the *Australian National Association of Teachers of Singing* (ANATS), the *National Association of Teachers of Singing* (NATS), covering the US and Canada, the *Association of Teachers of Singing* (AOTOS) covering the UK and the German *Bundesverband Deutscher Gesangspädagogen (Federal Association of German Singing Pedagogues* BDG). An investigation of how these experts' assessments correlated with the changes in the LTAS would be an interesting future study (see Chapter 9) but was of no relevance for this thesis.

The procedure in which the large amount of obtained recordings was cut and organized has been described in detail in Chapter 6. There were two consecutive phrases of each participant's first recording: 'a' (base-line) ready to be compared to the same participant's second recording: 'b' (after the first teaching intervention*)* and again with the same participant's last recording: 'c' (after the last of four teaching interventions with practice periods in between had taken place) of the same phrases. These recordings were coded to show

- If the participant singing the sample belong to the *Non-Singer* Group or the *Singer* Group

- Which level of the independent variable had been used in the sample: Level 1 i.e. the *NGM-teaching intervention* or Level 2 i.e. the *GM teaching intervention*

- Which exercise (A, B, C or D) was being sung in the sample

- Which take was presented in the sample: first (a): base-line, second (b): after first teaching-intervention/time 1 or last (c): after consecutive teaching-interventions/ time2

- Which participant was singing the sample?

The recordings were organised into so called Listening Units (LU) and Listening Evaluation Groups (LEG) with each LEG consisting of 5 LUs. The composition of these LEGs was such that each listener evaluated four different participants of whom two were Singers and two Non-singers, four different exercises; the first LU was always repeated as the fifth one so as to be able to gauge listener reliability. These LEGs were presented for evaluation to the expert listeners who had volunteered to their participation either by

following a personal invitation by the researcher (live listeners) or by following a link on an email invitation (on-line listeners). The decision to make the evaluation available online was taken when it became apparent that the enthusiasm and number of the researchers' voice teacher colleagues was no match for the large number of recordings that needed to be evaluated, particularly as a high number of evaluations was crucial for the a viability of the subsequent statistical analysis of the data. Evaluation took place by listeners marking their perception of any positive or negative change in vocal tone quality on a rating scale and resulted in two ratings (time 1 and time 2) for each LU per listener (see Chapter 6). At the end of the experiment and evaluation process, there were 2080 online listener results and 290 live listener results, coded to identify all their relevant features and ready to be analysed.

It seems fair to say that the high yield of usable data attests that the complex and sometimes divergent organisational, procedural and technical demands of this experiment had been managed with due diligence and prudence of judgment. An analysis of the data would show if the experiment had indeed succeeded in what it set out to do: to gauge the efficacy of carrying out specific gestures and/or movements whilst singing by using the change in vocal tone quality as a measure and expert listeners as instruments of measure.

Analyses and results

Like in the experimental set-up, the order and procedures in which the analyses were to be carried out called for careful deliberation. Also here there was no template or comparable study that might have served as a guide so that all decisions had to be taken by the researcher and be justified with logical reasoning. Most importantly and before the actual data analyses could be embarked on, it had to be demonstrated that the evaluation process actually had validity (Field, 2009): Did the rating results marked by the expert listeners actually reflect a perceived change in vocal tone quality and was this change in vocal tone quality really effected by the independent variable? As outlined in Chapters 5 and 6, each evaluated recording pair was identical to the base-line recording in the featured singer, exercise, key and recording procedure. The only difference lay in the fact that, while base-line recordings had been made before any teaching intervention, subsequent recordings had been made after a first teaching intervention (time 1) or a number of teaching interventions had taken place (time 2); any effect of listeners' potentially expecting a greater change at time 2 had been controlled for by presenting the recordings of time 1 and time 2 in randomized order. The only difference between base-

line and consecutive recordings that could possibly be perceived was thus in the quality of the vocal tone exhibited in the recordings and listeners were asked to mark their perception of any change for the worse or for the better on a rating scale. There can therefore be little reasonable doubt that the ratings given by the expert listeners reflected indeed the perceived change in vocal quality.

As outlined in Chapter 5, the experimental procedure had ascertained that the circumstances under which the recordings were taken remained identical in all factors except for the choice of teaching intervention, GM or NGM. Organismic and other potentially confounding variables were controlled for as far as possible so that any change in vocal tone quality had with high probability been effected by the applied teaching intervention (GM or NGM) – the independent variable. The possibility that changes in participants' vocal tone quality had occurred as an effect of sheer repetition that is independent from the teaching interventions could be dispelled by comparing the overall rating results with those given after the GM and after the NGM teaching interventions respectively (see Chapter 7). This simple comparison attested that, all other factors remaining equal, the mean of ratings given for vocal quality after the GM- teaching intervention was significantly higher as the mean of ratings given for vocal quality after the NGM-teaching intervention. This strongly suggested that the change in participants' vocal tone quality perceived by the expert listeners was dependent on the kind of teaching intervention (that is the independent variable) used. These two determinants: The change in vocal tone quality was caused by the teaching interventions and the rating results given by the expert listeners reflected a perceived change in vocal tone quality together suggest that the rating results were a gauge for the effectiveness of the teaching interventions. It therefore follows that the perception of expert listeners comprised a valid tool for measuring the efficacy of the independent variable.

Having confirmed the validity of measurement, a high level of both inter-listener reliability (agreement amongst individual listeners) and intra-listener reliability (consistency of ratings) needed to be demonstrated. In order to warrant combining live listener and online listener results, the rating values given by live listeners were located within the spread of online listeners for each exercise and participant. As it was found that these ratings exhibited a satisfactory level of similarity to the online listener rating, it was decided to combine online and live listener rating values for all subsequent analyses to one file of 2370 rating results by 172 listeners.

Although the cohort of expert listeners had been sourced from four different voice teacher organisations representing several countries (see Chapter 6), a t-test showed that there was no significant difference in the rating values depending on whether a listener belonged to a specific voice teacher organisation/country and that the majority of ratings reflected a significant overall level of agreement. There appears to be no other study comparing the perception of voice teachers from different countries and the decision to source expert listeners for this evaluation internationally did bear some risk. Although this comparison was not an objective of this study it was implied as soon as the decision to invite voice teachers in different countries had been taken and demonstrated that all listeners being professional voice teachers in the field of Western classical singing provided sufficient common ground to override any potential differences arising from the diversity of listeners' backgrounds.

There had however been no way to predict the level of agreement amongst individual listeners and several studies even point to the difficulty of achieving a level of consilience amongst listeners in perceptual studies concerning the singing voice (Thompson et al., 1998; Merritt et al., 2001; Kenny & Mitchell, 2006; Watts et al., 2006). However these controversies mostly stem from discrepancies in definitions and descriptors of vocal quality whereas the current experiment and evaluation process had been designed to minimize areas of potential controversy: 'Quality of vocal tone' had deliberately not been more closely defined to avoid listeners getting caught up on specific wording and rather encourage them to trust their perception of what was overall 'better' or 'worse'. Singers were compared to themselves – not to each other –so that idiosyncratic preferences for specific voices played no role. The sample phrases were short and highlighted the sheer vocal tone while musical aspects like phrasing and expression remained rather unimportant. Although even this rather narrow focus left room for interpretation, the researcher had trusted that there would be an intuitive consensus regarding what constituted positive or negative change in vocal tone quality. As has been detailed in Chapter 7, with the exception of eight rating values that had been identified and removed as outliers, this trust was vindicated as there an overall high level of agreement amongst individual listeners could be demonstrated. Neither the fact that listeners had been sourced from four different countries nor the notorious individuality of voice teachers outweighed a general consensus of what professional teachers of singing trained in Western classical singing consider a desirable vocal tone.

Equally as important as demonstrating inter-listener reliability had been to demonstrate consistency within each listener's ratings (intra-listener reliability). This had been facilitated by presenting one Listening Unit twice to each listener: each listener needed to evaluate a minimum of five LUs in order to submit evaluations; LU5 was always identical to LU1. Only four listeners (out of 172) had to be removed as their results suggested unreliability with the great majority of listeners exhibiting extreme astuteness in their ratings. These manifestations of both inter-listener and intra-listener reliability had been crucial as they validated the researcher's choices in the evaluation process and gave authority to the subsequent analyses' results.

The second contention and its five sub-contentions had been satisfactorily answered: To recapitulate (see also Chapters 1 and 7):

2. Gesture and body-movement are helpful tools for the acquisition of vocal technique, namely vocal tone production

    a. There is a significant benefit - measurable in the quality of singers' vocal tone – in using a vocal teaching method in which the student is instructed to carry out specific gestures and/or body-movements whilst singing compared to a vocal teaching method in which the student follows verbal instruction with an unmoving body

    b. This benefit is evident in the rate in which the quality of vocal tone improves as an immediate result of a first teaching intervention

    c. This benefit is evident in the rate in which the quality of vocal tone improves after the same teaching intervention has been applied over a number of weeks

    d. This benefit is evident in all tested exercises

    e. This benefit is evident independent of participants' previous singing experience

    f. The positive effect of the incorporation of gestures and body-movements is being felt by a majority of participants

Contention 2a appeared to encapsulate the core of the study: was there a significant advantage – measurable in the quality of the singers' vocal tone – in using a vocal teaching method in which the student was instructed to carry out specific gestures and/or body-movements whilst singing (GM intervention) over using a vocal teaching method in

which the student followed verbal instruction with an unmoving body (NGM intervention)? Only confirmation of contentions 2b through to 2e would prove satisfactorily that the advantage of the tested teaching intervention was indeed real.

A detailed step by step account of the conducted analyses has been given in Chapter 7. The results showed a significant benefit of using the GM intervention over the NGM intervention, confirming the basic premise of the second contention (2a); this benefit was equally as clearly evident in the rate in which the quality of vocal tone improved as an immediate result of a first teaching intervention and even more apparent after the same teaching intervention had been applied over a number of weeks, confirming sub-contentions 2b and 2c; an advantage of using the GM intervention was clearly evident in two out of the four tested exercises (Exercises A and D) with the other two (Exercises B and C) showing no advantage of using the GM intervention over the NGM-intervention thus posing further questions regarding sub-contention 2c; the benefit of the GM-intervention was however clearly independent of participants' previous singing experience , confirming sub-contention 2e.

Before drawing any conclusions from these results, it should be remembered that, like in any experimental design, the experimental building blocks had been chosen to create an – albeit small-scale – model of reality. As the survey presented in Chapter 4 has emphatically demonstrated, there are sheer endless variations of gestures and movements that can be used in different kinds of vocal/singing related situations. The conclusions drawn from this experiment's results can only be stated with some certainty as far as the current experiment is concerned and any generalization of the findings must, at least in part, remain speculative. The choices made by the researcher endeavoured to cover a number of generally recognized features in the vocal exercises and to provide a mix of facts and imagery in the NGM-intervention so as to emulate a teaching model which has been shown to be used by a majority of voice teachers (Ware 2013). The GM-interventions had come out of the researcher's own teaching practice and were entirely her design – with the exception of the rather generic body-movement (bending of knees) used for Exercise C whose widespread use has been shown in Chapter 4.

The experiment's results evidence that the teaching method called GM intervention was a not only valid but even sometimes superior tool in the teaching of vocal tone production. The fact that the significantly higher results elicited by the GM intervention were evident immediately after a first application and were retained or even further improved by

repeated application plus the fact that the level of the singer's previous singing training played very little role in this outcome corroborate that this teaching tool can confidently be used in all stages and on all levels of vocal training.

However, viewing the rating results separated for exercises brought to light a number of facts that had been invisible in the previous analyses that had used the combined data of all exercises: the type of vocal exercise – that is the kind of vocal function to be learned – appeared to play a decisive role for the level of efficacy of the applied teaching method. The findings tie in well with the experiences and opinions of voice teachers (presented in Chapter 4) who had emphasized that the suitability of using gestures and/or movement depended very much on the (vocal) situation. In any normal voice teaching scenario there are a number of factors that may make the incorporation of gestures and/or movement seem not indicated or even counter-productive. These factors will either lie in the student – who might be too shy or in some other way opposed to the notion of moving – or in the characteristics of the vocal phrase at hand. As has been discussed above, the experiment's recruitment strategy (see Chapter 5) favoured participants who were open to the notion of moving whilst singing so that the first factor (participants inclination to move) played little role in the case of this experiment. On the other hand and in contrast to a real voice lesson, there was neither room to tailor the exercises to the individual 'students' (participants) nor to choose the most suitable teaching intervention. Rather all participants were treated to the same exercises and interventions and the choice which intervention was used for which exercises had been randomized. The four exercises have been detailed in Chapter 5 and it should be noted that, although they each demonstrated different vocal features (vowels, syllables and articulation), they had all been designed/selected to be of equally simple structure (based on the major triad or five-tone scale); this to say that no exercises had intentionally been created 'easier' or 'harder', and the discrepancy in the rates at which the exercises improved under the two different teaching interventions had not been anticipated. It was only after the two-way ANOVA regarding the four exercises had revealed a striking difference, that they were re-examined in order to find a possible explanation in the exercises themselves.

The analyses' outcome has been detailed in Chapter 7: Two exercises received significantly higher ratings after the GM intervention but notably low ratings after the NGM intervention; conversely the two other exercises showed similar and relatively high ratings with both teaching interventions – a finding that incidentally also refutes the

objection the NGM-intervention might have rated lower in two exercises because it was somehow flawed. The discrepancy in the level of improvement in the four exercises reflected in the ratings suggested, in the absence of any other possible explanation, that two out of the four exercises were much better suited to be taught and learned with gestures. It was found that the two exercises that showed similar improvements with both teaching interventions (Exercises B and C) were arguably relatively similar to phrases found in songs and required physiological functions ([U]-vowel and alternating syllables [vɔ] and [lɑ] respectively) that were comparatively easily emulated upon a verbal stimulus so that the NGM-intervention was found to be helpful; The fact that the GM-intervention did equally as well in these cases shows however that replacing even a demonstrably useful verbal explanation with a gesture (in the case of Exercise B) or a body-movement (in the case of Exercise C) can be just as effective. The decision which teaching method maybe the more suitable one will in many cases depend largely on the teacher's assessment of any given situation and the student's preferences.

Conversely the two exercises that benefitted significantly from the GM intervention but did rather badly with the NGM intervention were arguably more unusual and required physiological functions that were more complex and fault-prone (Exercises A and D: [i]-vowel and staccato on [ɑ] respectively). The improvement rates suggest that being told and arguably also having understood the details of the vocal task at hand was not very helpful at all to actually accomplishing it. This ties in well with some findings coming out of research in motor-skill acquisition according to which "motor skills are readily acquired without awareness of mechanical principles" and "explicit verbal instructions about mechanics are useless or even harmful to learning" (Verdolini, 2002, p.48). Although there is still relatively little scholarly enquiry into the parallels between singing and the acquisition of motor skills (Nisbet, 2010) there is ground to the suggestion that principles found for other physical skills apply to voice as well (Verdolini, 1997, 2002; Helding, 2007, 2008 – see Chapter 2). The observed advantage of the GM-intervention over the NGM-intervention may therefore lie in its bypassing attention to bio-mechanics and concentrating instead on visualisation of the core features of a phrase.

A great majority (88%) of participants had indicated that they felt their vocal tone quality had improved over the course of the trial and an – albeit smaller – majority (68%) indicated that they had preferred the GM-intervention over the NGM-intervention. Together this suggests confirmation of the last contention (sub-contention 2e) which

propounded that the benefit of the GM-intervention would be felt by a majority of participants. It is particularly notable that the objectively measured greater improvement in vocal tone under the GM-intervention was independent from participants' preference for this teaching intervention: The benefit of the GM-intervention was evident to an equal extent in the 32% of participants who had preferred the NGM-intervention. This finding suggests that a personal reluctance towards using gestures and movements while singing– which arguably found expression in a preference for the NGM-intervention in this experiment – does not impair the wholesome effect of the GM-intervention. This important finding may serve as encouragement for voice teachers to gently insist on the carrying out of a gesture or movement even where a student might appear less than enthusiastic. One must be aware though that in actual voice teaching practice, there will always be some cases in which ostensive disinterest or reluctance towards a prescribed gesture or movement manifests as outright resistance indicating a deeper lying problem which might, at least momentarily, outweigh the potential benefit of the GM-intervention. As these cases were not the focus of this study and their inclusion would potentially have jeopardized the outcome of the experiment, they had been sidelined through the recruitment strategy and experimental procedure (see Chapters 5 and 6). The reasons behind an aversion to using gestures or movements would however certainly warrant further investigation (see Chapter 9).

This chapter has laid open the thought processes and deliberations based on which the decisions regarding the methodologies of this study were taken. Both the survey and the experiment were pioneering endeavours: The survey relied on a terminology that had to be specifically created and managed to gain insight into the private realm of the singing studio and specifically an area of voice teaching which has never before been subject of an investigation. The experiment was conceived from the idea to prove that gestures and body-movements were indeed helpful tools to improve vocal tone quality. Great care was taken to achieve and maintain objectivity and repeatability in all aspects of the experimental design and procedure as well as the data analyses. The originality of the experimental design necessitated a number of sometimes difficult decisions which have all been laid bare and discussed at length. While the yield in results validates the experiment as a whole, there are also aspects with still unanswered questions. The implications of the study, its limitations and resulting future research projects will be discussed in the following chapter.

Chapter 9: Conclusion

The previous chapter has reiterated the thought-processes underlying this study's methodologies, examined the decision taken in the design and procedure of survey and experiment and discussed the results. This chapter will draw together the core findings and arguments demonstrating their relevance and weight. It will further contextualize the study with existing research, state its limitations and implications and suggest future research.

Contextualising the study

This thesis set out to investigate a very narrow and specific aspect of the extremely multi-faceted complex that is singing and vocal teaching: The role of gesture and body-movement in the teaching of singing and vocal tone production in the Western classical singing tradition. Teachers of singing are confronted with a rather tricky problem unique to their trade: the singer's instrument is not visible nor entirely subject to the conscious mind; it relies on a delicate and highly complicated mechanism that is substantially internal, not readily seen and poorly innervated for sensory feedback. Moreover, virtually all organs used for singing have multiple and often vital functions that compete with their singing function and can hardly be consciously controlled. The singer has to make this unconsciously controlled 'breathing-swallowing-speaking-primal-sound-making' apparatus understand what new functions it is supposed to execute so that it becomes a singing apparatus, a vocal instrument.

One may therefore argue that the great challenge for singing students and singing teachers alike lies in the problem of communicating specific vocal demands to the body because unless our body understands what our mind wants, it cannot possibly do as asked. Considering the nature of singing on one side and the communicative power of gestures as well as the healing capacity of movement on the other, a theoretical link between singing and gesture/movement can be formed. This investigation based its rationale on a number of primary assumptions in the context of singing and the body: The quality of the vocal tone is a decisive factor in all singing and Western classical singing in particular (Stark, 1999; Himonides & Welch, 2005; Himonides, 2009); consequently vocal tone production constitutes a major part of Western classical singing technique. Vocal tone quality is dependent on and determined by a number of intricate physiological

mechanisms and acoustic events (Vennard 1967; Miller 1996; Titze, 2000; Thurman &Welch, 2000; Sundberg, 1974, 1987; 2006; McCoy, 2004; Himonides 2009). In as far vocal tone production can be viewed as a bio-mechanical function. The human voice also reflects innermost emotions and the singing tone can also be seen as a mirror of the human soul (Reid, 1975; Hemsley, 1998; Smith, 2007).

Given the undisputable fact that the human voice is a bodily instrument, the role of the body in singing is surprisingly multilayered: there are philosophical disputes regarding the unity – or dualism – of body and soul, not to mention the dispute concerning the existence of the latter versus the mind. Vocal instrument and singer may be viewed as identical or the voice may be seen as an attribute to the singer (Reid, 1975; Callaghan, 2000). In any case, the undoubted connection of voice and body suggests singing as a physiological task at least on one level and urges parallels between voice training and general motor skill acquisition.

Apart from but not in contrast to this aspect there is the capacity of the body to communicate, to be a medium that may help the brain (or the body itself) learn. Confirming long standing propositions about the power of body-language (Fast, 1970, 1977; Argyle, 1975, 1988; Pease, 2006) there is mounting evidence that "movement enhances and informs perception" (Rosenbaum, 2010, p. 29) and that gestures help the thinking process (Beattie, 2003; Goldin-Meadow, 2003; Kendon, 2004; McNeill, 2000, 2005; Seitz, 2000, 2005) and also help learning (Goldin-Meadow, 2004). These roles of the body have been distinguished as 'the body learns' and 'the body helps learning' in Chapter 2.

Correlating the results

A review of existing literature (Chapter 2) had shown that although there was ample material on neighbouring subjects, the use of gesture in the teaching of solo-singing had hitherto attracted little attention. Indeed, the notion that gestures and movements might be useful tools in the teaching of singing and vocal tone production in particular had been based mainly on plenty of anecdotal evidence, the author's personal experience and theoretical considerations weaving together the threads from music education, choral rehearsal practice, motor learning and gesture studies.

By conducting a survey in two countries with high credentials and long traditions in music education and vocal pedagogy, the author could demonstrate that gesture and body-movement played a significant role in one-on-one teaching of singing; this finding exposed the current lack of knowledge in this field as a deplorable gap in existing research and established the relevance of this study. The survey further gathered a wealth of information regarding teachers' rationale of using said teaching tools and testified to the huge variety of possible gestures and movements. The survey covered both aspects of gesture use: on one side there is the capacity of gestures to aid or replace verbal communication that is singing teachers use gestures to enhance and illustrate their verbal explanations and/or demonstration. On the other side is the potential of gestures and movements to facilitate learning that is singing teachers instruct their students to carry out gestures or body-movements whilst singing to help them understand specific acoustic or musical concept and/or perform specific physiological mechanisms with greater ease. The survey results tie in well with other recent studies about studio voice teaching practice (Maxfield, 2011; Ware, 2013) and encourage further research into this field of vocal pedagogy. As a by-product, the survey has consolidated the author's system of denoting and distinguishing gestures and movements encountered in the singing studio, the so-called Nafisi-system (see Chapters 3 and 8).

It seems fair to say that the use of gesture in communication may be viewed as a rather obvious tool in the teaching of singing – whereas a certain ambiguity might be said to surround the use of gestures and movements to facilitate learning. By demonstrating that gestures and/or movements are in fact used by a large number of voice teachers, the survey may help to somewhat demystify these voice teaching methods – while corroborating their validity at the same time. Anecdotal evidence suggests the existence of 'miracle-methods' that involve gestures and movements and have been 'invented' by highly coveted teachers who typically like to surround themselves with a certain air of mystery. The fact that actually many singing teachers are using gestures and/or movements in their teaching puts these methods somewhat into perspective, while it must still be noted that the choice and design of gestures and body-movements has been shown to be a highly individual affair which appeared to depend largely on the teachers' idiosyncratic preferences as well as the situation at hand. The survey suggests that singing teachers who use this kind of teaching intervention tend to have a set of tried gestures and movements – usually of their own design – which they encourage their students to use. One may even argue that the individuality inherent in this teaching method is vital to its

perceived success; this means that there may indeed be teachers who have found particularly meaningful and effective gestures and/or body-movements – which they might rightfully guard as their 'secret'.

Apart from teachers' idiosyncrasies determining the shape of the used gestures and/or movements, great importance has also been ascribed to the situation in which they might be used. Many voice teachers are convinced of the beneficial effect of their gestures or movements in the 'right' situations but the definition of the latter that is when and with whom to use which gesture or body-movement remains controversial.

The actual benefit of encouraging students to carry out gestures and/or body-movements while singing is seen to consist of a variety of factors like a release of tension, better understanding through visualisation, better concentration or a welcome distraction from the bio-mechanics of singing. Although the survey had not explicitly asked this question, it stands to reason that, in order to be perceived as benefit, said effect of the gestures or movements needed to have ultimately resulted in an improvement in vocal tone quality as this was arguably the primary objective of all singing instruction. The survey results suggest that a significant number of voice teachers found that using gesture and/or body-movement benefitted at least some of their students in some cases. Due to the private nature of a one-on-one singing lesson, the assessment of a particular gesture's or movement's effect had necessarily been made by the respective singing teacher him or herself– and gauging the success of their own teaching might have resulted in a certain bias: While the sum of the survey responses painted a bigger picture, the answers were, due to the self-reporting nature of a survey, still only many individual teachers' subjective assessments of his or her own experiences. Thus the survey responses cannot serve as hard proof for the actual effect of the gestures and body-movements. Therefore the researcher set out to prove the benefit of using specific gestures and/or body-movements by measuring their effect on the arguably most crucial aspect of singing: the quality of the vocal tone (Stark, 1999; Himonides, 2009).

It was hoped that the findings from the experiment would corroborate the survey results by confirming a real and objectively measurable beneficial effect of (specific) gestures and body-movements. In order to achieve this ambitious goal an innovative experiment was diligently designed and carried out followed by careful and meticulous data organisation, preparation and analysis (see Chapters 5, 6 and 7). The analyses' results demonstrated that the teaching intervention that incorporated specific gestures and body-

movements (GM-intervention) resulted in either very similar or significantly greater improvement in vocal tone quality than following verbal instructions with an unmoving body (NGM-intervention). The advantageous effect depended on the vocal task at hand (the type of exercise) but was independent from participants' previous singing experience, age or preference for a particular teaching method.

Outcome and Implications

The greatest merit of the survey lies arguably in its putting gesture and body-movement squarely amongst the tools available to teachers of singing. It has shown that gestures are widely used to communicate and illustrate physiological mechanisms, singing metaphors, imagery and/or acoustic phenomena as well as musical concepts. The survey also testifies that the incorporation of gestures and body-movements as tools to facilitate learning was not merely a fancy of a few eccentric teachers (like the author) but a widely encountered teaching practice that has both passionate and cautious advocates and evoked at times heated debate.

The greatest merit of the experiment lies arguably in providing convincing confirmation of the hypothesis that gesture and body-movement are useful and potentially even superior tools in the teaching and learning of vocal tone production. While the benefits associated with the use of gestures and movements as learning tools for students may have appeared somewhat elusive and subjective in the survey, the experiment went right to the core of the matter. Following the argument that the quality of the vocal tone constituted the single most important factor in Western classical singing technique (Stark, 1999; Himonides, 2009) it was propounded that a teaching intervention could only rightfully claim validity if its efficacy was evident in an improved quality of vocal tone. Within the limits of the experimental design, the results were unambiguous: The teaching interventions that incorporated gestures and/or body-movement were in two out of four tested vocal tasks equally as effective and in the other two out of four tested vocal tasks clearly superior in their efficacy compared with a teaching intervention that emulated what could be called 'traditional' voice teaching without movement.

The experimental findings confirm and complement the survey results and also tie in well with existing research in motor-learning and voice pedagogy (Verdolini, 1997, 2002; Helding, 2007, 2008; Poolton et.al., 2007; Nisbet, 2010). Together they may serve to

reassure voice teachers to use gesture and body-movement wherever they deem appropriate.

Limitations

Considering the wide range of fields surrounding and touching upon the subject matter of this investigation, the review of literature could have continued for much longer than what has been presented in the already rather substantial Chapter 2. It should be noted that, although the study has a certain international component with the survey having been conducted in Germany as well as in Australia, and the expert listener having been invited from several countries, the literature review was, with very few exceptions, limited to publications in English – simply because an inclusion of Non-English material would have led far beyond the scope of this enquiry. Yet also the great number of publications in English made a selection necessary and the author had to decide what material to include and where to draw a line. Every effort has been made to include as much relevant material as possible but it should be noted that the Literature Review could never hope to cover all available material of pertinence comprehensively.

The narrow focal point and tailored design of both survey and experiment had entailed a number of unavoidable limitations to the investigation. In the case of the survey, these concerns lie predominantly with the selection of the respondent groups: The relatively low response rate of 13.9% in Australia and 24% in Germany may have its cause in the considerable length of the questionnaire as well as in the fact that potential survey respondents were aware of the survey's subject matter resulting in a kind of self-selection: Only singing teachers with an active interest in gesture and body-movement were likely to have followed the invitation and responded to the survey (see Chapters 3 and 8). That a self-selection had taken place is also confirmed by the surprisingly universal positive assessment of the use of gesture and body-movement by survey respondents.

It could further be argued that opting to conduct the survey in two very different countries constituted a limitation and that it might have been better to either concentrate on just one country or to target more countries simultaneously. The targeted voice teachers may however certainly be seen as being representative of their peers and the strength of the survey lies in its depth rather that its breadth. It must be noted though that this survey does not provide an objective figure about how great a percentage of all voice teachers

use the teaching tools under scrutiny. Neither does it propound to give a comprehensive overview over the kinds of gestures or body-movements used by singing teachers.

As detailed in Chapters 5, 6 and 7 and discussed in Chapter 8, all aspects of the experiment were the result of careful consideration. Each decision taken entailed that alternative pathways had to be dismissed and it should be noted that all limitations present in the experiment were either necessary or deliberate. Firstly the experiment is limited through its relatively small scale: there were 25 participants and four different exercises; there were four experimental voice lessons per participant (the first of which lasting about 30 minutes and the consecutive ones about 15 minutes). The NGM-interventions had been formulated to offer a sensible mix of factual teaching and imagery such as arguably commonly used by a majority of voice teachers (Ware, 2013). While the body-movement to go with Exercise C had been shown to be also employed by other voice teachers (see Chapter 4), the GM-interventions that were used to teach Exercises A, B and D were entirely of the researcher's own design. The fact that there are many other possible gestures and body-movements that may be used in this context lies in the very nature of the matter and has also been confirmed by the survey: Singing teachers who use this teaching tool tend to have a set of tried gestures and movements which they encourage their students to use. In fact, the conviction of a gesture's or movement's benefit appears to grow solely from teachers' personal trial – and possibly occasional error – experience with particular gestures and movements. It was therefore only natural that the researcher chose gestures and movements that she had previously found to be beneficial in her own voice teaching practice.

The experiment was not set up to investigate the effect of any conceivable gesture and/or body-movement on the vocal tone or to test the efficacy of the gestures and movements used by other voice teachers in their teaching. Similarly it was not surmised that participants' vocal tone would improve no matter what they sang or that the same effect could necessarily be achieved with any person at all. This experiment – as all experiments –could only ever be a model of reality and of a relatively narrow aspect of reality as such. The decisions taken in order to come up with a workable model necessitated restrictions so that a generalization of the results calls for greatest caution. The experimental design had however grown from extensive professional teaching practice, has been embedded in existing research and every endeavour had been made to emulate real teaching situations as far as possible. It appears therefore not entirely unreasonable to presume that the

experimental results as well as the survey results might still warrant – albeit tentative – conclusions beyond their narrow framework.

Depending on which aspect of the findings is emphasised there are a number of potential implications of this study: Summarising the core experimental results as 'carrying out specific gestures and/or body-movements can help to improve vocal tone quality' and the core survey results as: 'a significant number of voice teachers in Germany and Australia uses a great variety of gestures and body-movements in their teaching and find them to be efficient teaching and learning tools' urges rather direct implications for vocal pedagogy: Although there is not – and never can be – proof for the efficacy of every single gesture or body-movement conceivably employed in the teaching of singing, the study as a whole affirms the validity of the incorporation of gesture and body-movement into the teaching of singing. It stands to reason that this finding will resonate with the larger singing teacher community and add a new facet to the 'imagery versus science' (Miller, 1996, 1998; Hemsley, 1998; Michael, 2012; Ware, 2013) and 'learning-to-sing as a motor-skill-acquisition' (Verdolini, 1997, 2002; Helding, 2007, 2008; Nisbet, 2010; Maxfield, 2011) debates. The findings may also be considered to have implications on instrumental teaching and learning as well as teaching and learning in general (Goldin-Meadow, 2004, Kelly et al., 2008).

The Nafisi-system that categorises movements encountered in the teaching of singing as physiological gestures, sensation related gestures, musical gestures and body-movements has been validated. In the absence of any other nomenclature, let alone one of comparable coherence and comprehensiveness, this system may well become the commonly used terminology in this field.

The experiment set a number of precedents which may have an impact on future research designs: As a by-product of the evaluation procedure which had sourced professional voice teachers from four different countries as expert listeners it could be shown that differences arising from the diversity of listeners' backgrounds are easily outweighed by the commonality of all being voice teachers – provided that the subject under investigation falls within this common ground. While the exact definition of what constitutes vocal tone improvement still remains difficult and controversial, bypassing the debate by asking for a simple comparison of the same person singing the same phrase three times resulted in remarkable consent.

The same core experimental result – 'carrying out specific gestures and/or body-movements can help to improve vocal tone quality' – also suggests potential applications in speech pathology and speech therapy. Gestures have long been utilized both for their capacity to communicate (Fast, 1970, 1977; Beattie, 2003; Goldin-Meadow, 2003; Kendon, 2004; Pease, 2006) as well as their ability to help word finding (Seitz, J., 1993; Goldin-Meadow, 2003; Marshall, 2012). However, in current speech pathology practice, gestures are mostly used in their capacity to replace speech (Marshall, 2012) or in what is called "cued articulation" (Passy, 1990) in which hand gestures are used to denote the physiological mechanism behind consonants. Although further research would need to be done in this area, the experimental results evoke the possibility that gestures and body-movements may have an equally beneficial effect on the vocal tone in speech and may be used to address physiological/mechanical problems or weaknesses affecting the speaking voice.

Stretching the argument even further and considering that vocal tone was dependent on and determined by a number of intricate physiological mechanisms (Vennard 1967; Miller 1996; Titze, 2000; Thurman and Welch, 2000; Sundberg, 1974, 1987; 2006; McCoy, 2004; Himonides 2009) one might venture to propound that carrying out gestures and/or body-movements might also help in the learning and performance of other bio-mechanic mechanisms, particularly those that, like vocal tone production, share autonomic and consciously controlled functions. This hypothesis opens the door to more and even farther reaching implications like the contention that specific gestures and body-movements might be able to influence the breathing or swallowing mechanism and may as such be useful therapeutic tools in dealing with a variety of medical or psycho-somatic problems.

Future research

Like most studies, this study has answered a few questions but posed many more: Considering the positive response to the survey and the intriguing insights it offered, it would be good to conduct the same survey – or possibly a slightly simplified version – in other countries and particularly in the US and Canada so that it could be directly correlated with other studies out of that area (Maxfield, 2011; Ware, 2012). One might also consider designing a survey to generally assess the prevalence of practical

methodologies (imagery, scientific/factual teaching, demonstration, gesture/movement, audio/video feed back) used in current teaching practice.

In order to gather more accurate information about the actual gestures used by voice teachers in explanation and demonstration and the gestures and body-movements teachers instruct their students to carry out to facilitate their learning, a large scale observation could be carried out possibly at a number of different universities and conservatories. Considering the evidence that even the most expressive gestures are often carried out without the full awareness of the gesturer (Beattie, 2003; McNeil, 1992) the objectivity and comprehensiveness of data coming from a video-taped observation constitutes a clear advantage over self-reporting questionnaires. The obtained data would need to be analysed, the observed gestures categorised (using the Nafisi-system) and potentially correlated with data from a simultaneous survey. This may serve to compile a structured list of the most frequently used gestures in explanation and demonstration and the gestures and body-movements teachers instruct their students to carry out to facilitate their learning. While it will be virtually impossible to gauge the efficacy of the first, an experiment similar to the one conducted for the current study could be carried out to measure the effect of the latter.

For reasons detailed in Chapters 6, 7 and 8 the voice recordings coming out of the experiment had been evaluated by expert listeners. In a consecutive study the ratings given by the listeners could be correlated with spectral changes in the recordings. There are already numerous studies that show a strong correlation between perceived vocal quality and acoustically measurable features of the vocal tone, namely intonation and vocal timbre (Sundberg 1974, 1997; Vurma & Ross, 2003; Watts et al., 2006; Kenny & Mitchell, 2006; Himonides, 2009; Collyer, 2010). Yet matching conventional labels of various vocal tone qualities with scientific explanation remains an ongoing challenge (Titze and Story, 2002, see Chapter 2). If it was possible to identify which changes in the LTAS typically correlated with a positive perceptual rating might be a step towards defining in what vocal improvement consists acoustically.

Another experiment could be conducted to explicitly test the change in LTAS as a result of specific gestures being carried out during tone production. Wiring up participants to monitor the movements and a strict recording regimen would yield data highly suitable for acoustic analysis although there is a chance that the rigidity of the experimental conditions might turn out to be counterproductive.

The results tie in well with other findings regarding the beneficial effect of gestures for learning in general (Goldin-Meadow, 2004; Kelly et al., 2008) and music-learning in particular (Spector, 1990; Caldwell, 1997; Baney, 1999; Levinowitz, 2004; Liao, 2007, 2008) but it is also notable that the effect of gesture and body-movement on the adult musical novice or even self-proclaimed 'un-musical' or 'tone-deaf' person remains yet to be investigated. As the voice constitutes arguable the most primal musical instrument, and given that this study has demonstrated that gesture and body-movement have a definite and positive impact on the singing voice, a study could be designed to investigate if gestures and movements can be helpful tools to break down the barriers that keep the 'non-musical' from making music and the 'tone-deaf' from singing.

The element that most crucially distinguished this study's experiment from real-life voice teaching was arguably the recruitment strategy that favoured volunteers who were at ease with the notions of singing and moving. As has been pointed out in Chapter 8, in actual voice teaching practice one will always find students who harbour an outright resistance against gesturing and moving. In a real voice studio, a singing teacher will in any such case simply revert to another teaching strategy but it appears that a strong aversion to movement and especially expressive movement may be indicating a deeper lying problem. An investigation into the reasons behind a strong resistance to using gestures or movements would make an interesting if extensive study; and one may further attempt to determine if in overcoming the inner blockades to the point of embracing the prescribed gestures and movements carries an equal or possibly even greater benefit for the singing student. In other words: might gestures and body-movements – which are relatively easily taught because they are visible – be used as a catalyst to overcome inner blockades – which are notoriously difficult to tackle because they are invisible?

The most intriguing questions however remains this: Why does this work? How may the movement I do with my hand set in motion or modify a number of intricate and interconnected physiological and possibly psychological mechanisms that are involved in vocal tone production? It appears that answers may lie in the realms of neuro-science and require further research in brain-mapping where it is already possible to trace the change in brain activity whilst moving and gesturing (Leiner & Dow, 1993; Seitz, J., 1993, 2000, 2005; Perkel, 2013). Particularly research initiatives like the Brain Activity Map are set to discover the "mechanisms of perception, action, memories, thoughts, and

consciousness" (Alivisatos et al., 2013, p. 1284) and it would be fascinating and to map a brain's activity whilst its owner sings and moves.

This study has established the prevalence of gesture and body-movement in the teaching of singing; it has validated the Nafisi-system of categorizing movements encountered in the singing studio and has demonstrated that these can be efficient tools to improve vocal tone. As is the case with many investigations, this study has opened more questions than it has answered which testifies to the depth and complexity of a topic that overlaps disciplines as diverse as vocal pedagogy and neuro-science, learning theory and acting, music education and gesture studies. Survey and experiment have – each in their own right – contributed substantially to existing knowledge by gaining and presenting new insights into the role of gesture and body-movement in the teaching and learning of singing and vocal tone production. Apart from immediate implications for vocal and also instrumental pedagogy, these insights might also be of consequence for learning in general and motor-learning in particular as well as speech pathology, psychology and neuro-science.

Appendices

A. Ethics approval form

B. Survey respondents' comments

C. Explanatory statement (experiment participants)

D. Consent form (experiment)

E. Pre-experimental questionnaire

F. Post-experimental questionnaire

G. Invitation (expert listeners)

H. Home practice diary

I. Track sheet

J. Explanatory statement (experiment expert listeners)

K. On-line evaluation explanations

Appendix A: Ethics approval form

MONASH University

Monash University Human Research Ethics Committee (MUHREC) Research Office

Human Ethics Certificate of Approval

Date: **27 August 2010**

Project Number: **CF10/1991-2010001114**

Project Title: **Gesture and body-movement as teaching tools in the voice lesson Chief**
Investigator: **Dr Jane Southcott**

Approved: **From: 27 August 2010 To: 27 August 2015**

Terms of approval

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, and a copy forwarded to MUHREC before any data collection can occur at the specified organisation. **Failure to provide permission letters to MUHREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research**.
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affectingthe ethical acceptability of the project.
5. The ExplanatoryStatement must be on Monash University letterhead and the Monash University complaints clause must contain your project number.
6. **Amendments to the approved project (including changes in personnel):** Requires the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an auditor any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

Professor
Ben Canny
Chair,
MUHREC

cc: Assoc Prof Neil Mc Lachlan, Mrs Julia Nafisi

Appendix B: Survey respondent's comments

There were 13 questions with an "Other – please specify"- option where respondents could leave their own answer and or comment. Here is a transcription of these answers in their entirety. The BDG responses have been translated in to English with the German original is given as well.

Question 4 (professional training)

ANATS

1) Dip. Spec Ed Sydney. A Mus. A L. Mus A. FFCSME.
2) trained also in choral conducting and theatre
3) Theatre, Composition, Research into various areas of performance studies and perfoming arts policy.
4) M. Mus (ACARMP) Syd. M. Mus (NSW) P.Grad Dip Ed (Syd) DALCROZE Lic. L Mus (P) Ltcl(S/T)LFIBA. (Cambridge) ABIRA(USA)MACE. DIP ED
5) piano teacher
6) I was trained as a classroom music teacher and as a performing artist.
7) M.Mus, B.Mus. Ed, LTCL, Tomatis Audio Vocal Training
8) high school music teacher
9) Trained equally as singer, composer & teacher
10) I am currently training as a Speech Pathologist

BDG

1) also speech pathology, specializing in voice
   außerdem Logopädin, Spezialgebiet Stimme
2) training to be a Certified Rabine Teacher
   zusätzlich in Ausbildung zum Certified Rabine Teacher
3) Rhythm teacher, spiritual healer and naturopath
   Rhythmikerin/Geistheilerin/Heil-Praktiker-Ausbildung
4) Function based method (after Rabine), NLP practitioner and NLP Master
   Funktionale Methode (nach Rabine), NLP Practitioner und NLP Master
5) German literature, music studies

Germanistik Musikwissenschaften

6) Emphasis on function based work

   Schwerpunkt funktionales Arbeiten

7) Church musician

   Kirchenmusikerin

8) Class room music teacher, secondary school

   Musiklehrer für Gymnasien

9) Highest level of church music diploma

   A-Kirchenmusik-Diplom

10) Trained repetiteur/vocal coach

    ausgebildeter Korrepetitor

11) also Speech scientist and speech pathologist

    außerdem Sprechwissenschaftler und Logopäde

12) courses in vocal pedagogy

    Fortbildungen in Gesangspädagogik

Question 5 (professional degrees)

ANATS

1) Certificate IV

2) Unfinished diploma of music singing major

3) speech level singing[92] methodology

4) AMusA

5) ATCL teachers, LTCL performer, AMus

6) vocal pedagogy

7) Currently undertaking Masters of Music

8) LTCL (Teachers); PhD (Current)

9) L.Mus.A

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[92] SLS is a singing technique founded by the US American vocal coach Seth Riggs

BDG

1) State certified examination for music teachers, artistic maturity graduation examination

   Staatliche Musiklehrerprüfung SMP, Künstlerische Reifeprüfung

2) State Exam in School Music

   Staatsexamen Schulmusik)

3) attended lectures at the padaudiological and ear-nose-throat department of the University of Frankfurt/Main plus various master classes to complement my own singing training and singing pedagogy

   zusätzlich Vorlesungen an der pädaudiologischen/HNO Abteilung der Universität Frankfurt/ Main teilgenommen, sowie verschieden Meisterkurse einerseits zur Vervollständigung der eigenen Gesangsausbildung als auch für Gesangspädagogik)

4) vocational school

   Berufsfachschule

5) Study of school music/secondary classroom music, then voice with graduation concert

   Studium Schulmusik, dann Gesang mit Konzertexamen)

6) Artistic maturity examination

   Künstlerische Reife

7) Secondary school teaching for middle level secondary schools

   Lehramt an Realschulen

8) Academy of Music, pedagogical examination

   Hochschule für Musik Konzertexamen Pädagogisches Examen

9) Final examination

   Examen

10) Both state certified examination and private further education

    Sowohl staatliche Prüfung als auch private Fortbildungen

11) State certified examination for music teachers (singing)

    Staatliche Prüfung für Musiklehrer (Gesang)

12) State certified examination

    Staatsexamen

13) Performance examination after the diploma

    nach dem Diplom Konzertexamen

Question 6 (professional status)

ANATS

1) I am musical director for a community choir

2) I am teaching in a primary school and sing at wedding ceremonies

3) I will be singing professionally in a new opera workshop in April, not singing currently. I mainly coach young opera artists for performance.

4) and teaching professional singers too.

5) Only just retired following successful students overseas & in Australia in BOTH PIANO & SINGING One student currently in Paris Opera 14 Yrs 2 others Uk& most successful pianist Canada currently amongst many others.

6) I am also a casual performer

7) Currently preparing for professional performance in Adelaide Festival Fringe

8) Also teaching composition, aural training, theory

9) I regularly perform in amateur musical theatre productions.

10) I am currently studying at university

11) for clarification: currently able to work professionally but for work being sparse. Sing professionally given opportunity/ or having created it

12) Pro-Am classical and musical theatre performer, but currently not performing much due to small children

BDG

1) Director of live music broadcasts (TV)Film

   Regisseurin für Musikübertragungen live (TV/Film)

2) Privately owned voice institute, speech-pathological patients, professional speaker

   eigenes Stimminstitut, logopädische Patienten, Sprechberufler

3) independent/self-employed singer and voice teacher

   selbständig als Sängerin und Gesangslehrerin

4) I am casually employed as singer in music theatre

   ich bin als Sängerin im Bereich Musical/ Theatre freiberuflich tätig

5) 40 years in concert and 15 years in opera as professional singer

   als professionelle Sängerin: 40 Jahre Konzert und 15 Jahre Oper

6) Lecturer for Breathing-(muscle)tone-tone after Maria Höller-Zangenfeind in Germany, Austria, Japan and Switzerland

   Dozentin für Atem-Tonus-Ton nach Maria Höller-Zangenfeind in Deutschland, Oesterreich, Japan und in der Schweiz

7) Professional independent singer

   Professioneller Sänger als Freiberufler

8) 30 years tenured lecturer in voice at a state run music academy (University) and 7 years as opera singer at various theatres

   war 30 Jahre als Gesangspädagogin an der Staatl. MHS angestellt und 7 Jahre Opernsängerin an verschiedenen Theatern

9) Lecturer for voice, voice anatomy and physiology and teaching methods of vocal pedagogy at a state run music academy (University), before that for 8 years and continuing as voice teacher at a local music school, voice teacher at a girls'-school- choir and a boys' choir. Concert singer for oratorio, Lied, Early music and modern classic.

   Lehrauftrag im Hauptfach Gesang, für Anatomie/Physiologie der Stimme und Didaktik des Gesangsunterrichts an einer deutschen Musikhochschule, vorher 8 Jahre und immer noch Gesangslehrerin an einer Kommunalen Musikschule, Stimmbildnerin bei einem Mädchen-Schulchor und einem Knabenchor. Konzertsängerin im Bereich Oratorium/Lied/Neue Musik/Alte Musik

10) Independent concert singer

    freiberufliche Konzertsängerin

11) Singer of sacred music (Cantatas, Oratorio) and concert/recital; also independent/casual singer and speaker (voice talent), vocal coach for singing and speaking

    Sängerin im Bereich der Kirchenmusik (Kantaten,Oratorien...) sowie mit Konzerten. Zusätzlich: - Freiberuflicher Sänger - Freiberuflicher Sprecher (Voice Talent) - Stimmtrainer für Singen und Sprechen

12) Independent opera/concert singer as well as voice teacher

    Sowohl als Opern-/Konzertsängerin, als auch als Gesangspädagogin freischaffend tätig.

13) Teacher at a vocational music theater school

    Lehrer an Berufsfachschule für Musical

14) I was for many years professor at the music academy in Hamburg, since having retired, visiting professor in three Japanese music universities and in Poland, Singapore and China

Ich war viele Jahre Professor an der Musikhochschule Hamburg, als Rentner dann Gastprofessor an drei japanischen Hochschulen und in Polen, China, Singapur

15) University lecturer and course coordinator

Dozent an Akademien und Kursleiter

16) Choral conductor

Chorleiterin

17) I work as independent/self-employed concert singer, voice pedagogue and ensemble conductor

Ich arbeite als selbständige Konzertsängerin, Gesangspädagogin und Ensembleleiterin.

18) Private Studio for singing, piano and coaching

Privatstudio Gesang, Klavier, Korrepetition

19) retired, former university lecturer and private studio, now just private voice teaching and voice therapy

früher Hochschule und Privatunterricht, derzeit noch Privatunterricht und Stimmtherapie

20) currently mainly parenting, therefore only some teaching, church boys' choir and private teaching

vorwiegend Elternzeit, derzeit nur wenige Stunden Gesangsunterricht für kirchlichen Knabenchor sowie einige Privatschüler.

21) Used to teach 10 years at university, after relocation only private teaching

An der Uni habe ich 10 Jahre unterrichtet,seit meinem Wohnort-Wechsel mache ich nur Privatunterricht

Question 11 (Examples of gestures in communication)

ANATS

1) Two hands placed palms together at the fingertips to represent narrowing in the passaggio or the arch of the palate Two hands spread apart widely

to indicate the resistance to collapse in the body on the outbreath, or to represent the thought of broadening in the lower register

2) Visually modelling intervallic relationships

3) Drawing up hand from low in front of torso, as if stretching up a tapering, elastic substance to depict the sensation of engagement of core muscles through the musical phrase.

4) For forward placement - describe sensation behind the bridge of the nose using index & second finger, other fingers & thumb tucked away, palm face down coming forward in front of the face as 'hooks'. - Elevated soft palate - describe as a jellyfish in propulsion using both hands, rounded, palms facing down, hands pulsing upwards and outwards together, sometimes followed by taking left hand above head, fingers to the rear, palm facing down, large opening between thumb and forefinger, travelling up from the crown of the head and described as a funnel.

5) Many gestures to indicate leg legato lines. Steady release of breath over a phrase, shape of the mouth, position of the tongue etc.

6) Fingers laced so arms form dome shape of diaphragm. Fingers laced, body represents backbone, arms showing rib positions in relation to posture.

7) Pointed finger moving away from face in a straight line, indicating smooth phrasing and consistent forward placement.

8) Index finger lightly touching side of face where shape of palate is for palatal resonance teaching

9) Hand held at level of folds and opening out the fingers laterally to indicate opening of throat and false folds

10) Lifting hand up vertically alongside face toward back of face to demonstrate ascending notes

11) Often a hand gesture from behind and above the head to elevate the height of vocal tone and upper register (head) placement

12) I've done several Estill Voice courses and mostly use palate, tilt, larynx movement gestures and facial expressions as required

13) I believe very strongly in the SURPRISE breath & support of the lower muscles

14) Hands moving high behind the head, pointing back and spinning swirling for resonance and resonance mix Hands lifting at the end of a note to encourage lifting rather than pushing

15) Prefer arching gesture for legato phrase

16) Fingers at base of throat to 'feel' resonance of pharyngeal vowels

17) Hand gestures that represent the accurate movement of the structures within the larynx to enhance independent control

18) Moving the index fingers of both hands in a 'spinning' action to illustrate the sensation of resonance 'spinning' in the vocal tract.

19) Both hands palm down beginning mid-chest "pushing" down to hip (like getting out of a pool) while singing upward intervals of a fifth or larger *Hand movement in the opposite direction of pitch "The Monkey" - Alexander technique

20) A sweeping gesture (of the arm) to indicate a flowing line;

21) outward hand movements-breathing hand back and up -sensation pitch indication with hand-not Kodaly etc

22) Drawing a bow and arrow to open the chest and facilitate stretching/lengthening the vocal folds to achieve higher pitches. Assume the "sumo wrestler" position when needing strength in the body.

23) Use both arms and hands curved into body and lower and extend outwards to depict lowering of diaphragm and breadth of rib expansion. - hands at face level, in thumbs up position, moving to angle thumbs slightly forward and outwards as a reminder to lift the soft palate and open and widen the vocal tract. - palm curved face forward, as we move up the scale the palm moves to a curved, face down position to imitate tilt and forward placement of sound. - one arm moves forward to show a continuation of airflow. All of these are used regularly.

24) numerous gestures according to how that particular student responds to stimuli - eg 'drawing' the path of sound leaving the body in a continuous flow _ NB I frequently get the student to gesture ...

25) Estill Voice Training gestures to indicate raising larynx, forward tongue position, etc. "Port de bras" adapted so as arms are raised a deep breath occurs, as arms move to sides, legato singing is encouraged.

26) those gestures used sometimes vary with regularly depending on the kinesthetic understanding and activity of the pupil

27) Hands palm-facing each other and moving apart to demonstrate wide space sensations in the throat

28) Upward hand movements near the face to indicate 'brightening' of the tone. Hands to the heart to indicate 'feel' the emotion.

29) Circular or spinning motion to indicate they maintain connection to breathe and to placement on top of notes in exercises or melisma. "infinite" sign to again to delineate legato connection. Circle to emphasis balanced onset. Miming a 'Trombone' movement to help student practice varying placement. Many more ...

BDG

1) gestures specific to singing mechanisms that are developed individually with the student to help him/her with certain exercises

   gesangsspezifische Gesten, die individuell mit dem Schüler entwickelt werden und im/ihr bei bestimmten Übungen helfen

2) supporting the student's movements as a reminder and to help concentration

   die Bewegung des Schülers begleitend unterstützen, zum dran erinnern und dran bleiben

3) Touch the sternum, feel vibrations, *Appogiarsi in Petto* (Italian term to depict support in singing, translates literally to "lean out with/in the chest"), possibly a lowering of the larynx

   Brustbein berühren, Vibrationen spüren,Appogiarsi in Petto, evtl. Kehltiefstellung

4) Sometimes a hand movement that depicts an even and relaxed breath flow. Sometimes arm movements while standing upright to initiate a more relaxed or more rhythmical breathing. Sometimes body-movements from kinesiology to improve brain function/thinking/coordination

   Manchmal eine Handbewegeng, die einen gleichmäßigen und entspannten Atemfluß darstellt. Manchmal Armbewegungen im Stehen, um eine entspanntere oder rythmischere Atmung zu intiieren. Manchmal

Körperbewegungen aus der Kinesiologie, um das Gehirn/Denkvermögen/Koordination zu verbessern

5) the described gestures with slight variations

die beschriebenen Gesten in etwas variieter Form....

6) gestures to feel the lip ring muscle, feel the jaw joint, easy/light feeling of the larynx position

Gesten zum Erfühlen des Mundringmuskels, Fühlen des Kiedergelenkes, leichtes Fühlen der Kehlkopfposition

7) Other gestures are used more frequently

andere Gesten werden häufiger verwendet

8) one hand held at mouth-height moves from front to back in order to demonstrate the opening of the backward pharynx/resonance chamber

die hand bewegt sich auf mundhöhe von vorn nach hinten um den hinteren Resonanz / Rachenraum zu verdeutlichen 'öffnen'

9) Hand signs spell out the functions of the larynx

Handzeichen zur verdeutlichung der Funktion des Kehlkopfes

10) Movements from *Atem - Tonus – Ton* (breath − (muscle)tone − tone, a holistic voice teaching method) that connotate the resistance of the feet towards the ground

Bewegungen aus Atem-Tonus-Ton, die den Widerstand der Füsse/Beine zum Boden hin andeuten.

11) Feel for resonances everywhere in the body; feel one's own breathing, demonstrate physiological mechanisms with gestures

Resonanz überall im Körper ertasten; Atmung bei sich selber ertasten; Mit Gesten körperliche Abläufe demonstrieren

12) I use gestures almost constantly, always specific to the situations. Particularly the incorporation of exercises from Qigong and Tai Chi has proven very helpful to demonstrate to a student his/her connection to the ground, to breathing, to the body

Ich verwende Gesten fast fortwährend, immer gezielt für eine bestimmte Situation. Vor allem die Hinzunahme von Übungen aus Qigong und Taiji hat sich als sehr hilfreich erwiesen, um ein Schüler seine Verbindung zur Erde / zur Atmung / zum Körper zu verdeutlichen.

13) I avoid conducting gestures because the sometimes contradict the thought of legato and lead the student to "pump". Demonstration of "Inhalare la voce" (Italian term from the *bel canto* school, literally: "inhale your voice"): the hand comes from afar towards the "third eye". The body opens and the voice-onset happens exactly on the forehead. During singing the hand moves backwards over the head and then moves *"sul fiato"* (Italian term from the bel canto school, literally "on the breath") forwards. Air goes, air comes and takes over all resonating chambers. "Hugging a big bear": As the voice goes up, the knees bend, the pelvis tilts, the back becomes long and strong, the diaphragm descends and provides the optimal amount of air for the height. The arms hug roundly and softly a tree or bear; intercostals muscles stay wide.

Ich vermeide Dirigiergesten, da sie dem Legatogedanken manchmal widersprechen und den Studenten zum "Pumpen" bringen. Veranschaulichung des "Inhalare la voce": Die Hand kommt beim Einatmen aus der Ferne zum "dritten Auge". Der Körper öffnet sich für den Atem und die Stimme setzt punktgenau an der Stirn an. Beim Singen wandert die Hand über den Hinterkopf, über den Oberkopf und geht "sul fiato" nach vorn. Luft kommt, Luft geht und nimmt alle Resonanzräume mit. "Einen dicken Bären umarmen": Beim Gang der Stimme zur Höhe beugen sich die Knie, das Becken kippt, der Rücken wird lang und stark, das Zwerchfell senkt sich und gibt die optimale Luftmenge für die Höhe. Die Arme umarmen rund und weich einen Baum oder Bären, die Zwischenrippenmuskulatur bleibt geweitet.

14) It seems that every teacher uses his/her individual gestures

Jeder Lehrer hat wohl die ihm eigenen Gesten.

15) Gestures that indicate the phonation-direction of the respective breathing-type: e.g. backwards-upwards for the inhalers, forwards-downwards for exhalers. Gestures that demonstrate the musical impulse and breathing impulse of the respective breathing-type: spontaneous and brisk for the inhaler and rather drawn out and thought towards the end of a phrase for the exhaler.

Gesten, die die Phonationsrichtung des jeweiligen Atemtyps angeben: Z.B. Nach hinten oben bei den Einatmern, nach vorne unten bei den Ausatmern.

Gesten, die den musikalischen und Atemimpuls des ATemtyps verdeutlicheh: Impulshaft und zackig für Einatmer, eher gedehnt und zum Ende der Phrase gedacht für Ausatmer.

16) Fluttering hands as gesture for vibrato; draw tone heights into the air
mit den Händen flattern als Geste für Vibrato Tonhöhen in die Luft malen

17) For legato rarely a movement on chest level but a large round sweeping movement starting on hip level, like a sow man sprinkling seeds
Für Legato selten Bewegung auf Brusthöhe, sondern großer Bogen wie beim Sämann, der Korn aufs Feld streut, beginnend auf Höhe des Beckens.

18) The term mask easily leads to nasalizing. I try to focus the sound in front of the lips; my aim is to have the student experience the overtones and beauty of his/her voice; timbre is more important that strength !!
Der Begriff Maske verführt leicht zum Näseln. Ich versuche, den Ton vor den Lippen zu fokussieren, mein Ziel ist, den Schüler die Schönheit seiner Stimme zu erleben, zu suchen, den Obertonreichtum erlebbar zu machen, Timbre ist wichtiger als Power !!

19) Both hands form a circle with thumbs and index fingers to illustrate the "open pipe".
Beide Hände bilden mit Daumen und Zeigefinger einen großen Kreis zur Verdeutlichung der "offenen Röhre"

20) I find terms like mask, cover, forward position not very helpful because too imprecise
Halte Begriffe wie Maske/Deckung/Vordersitz für wenig hilfreich, weil zu unpräzise

21) A rounded hand, palm down moves upward-forward in an upward scale; going down the hand opens and starches upwards, palm up in the passagio (Italian term from the bel canto school: transition from one register to another)
Führung der gerundeten Hand (handfläche unten)bei Aufgehenden Skalen gerundet nach oben vorne, beim Abgang im Passagio öffnet sich die Hand zur Streckung mit drehung handfläche oben

22) Hand gestures of the Estill Voice Training Model
Handzeichen des Estill Voice Training Modells

Question 12 (Why use gesture in communication)

ANATS

1) Unconscious reflexes

1) Gardner's Multiple Intelligences theory - many people learn best from visual/spatial info

2) A gesture can illuminate a mechanism, making it physical and real to the student. I feel gesture should be used in conjunction with and after a lucid verbal explanation. It can later be used as shorthand but one must check regularly that the student continues to identify the correct sensation with the gesture.

3) I try not to teach with my hands but by using vowels, consonants and scale patterns to help achieve the result I am looking for.. I feel that gestures are subjective to personal opinion and a student may miss understand and use a different interpretation..

4) I teach mainly young students who require simpler concepts therefore I do not always refer to the diaphragm at this stage but find hand gestures useful and useful for the students to use on themselves.

5) Gesture represents visual stimulus, an important sense to employ, and draws attention away from the seat of activity.

6) musical rhythms are based on dance and gestures can indicate the dance-like nature of the music in a way that words do not

7) It is important to have some discussion and reach shared understanding about the gesture to avoid misunderstanding. Asking the student to gesture what they are attempting can also be helpful to give the teacher and idea of what's happening - thinking in the right place/direction? Sometimes I think a gesture is a distraction which stops the student 'trying too hard' and allows the body and voice to work.

8) Often play piano at same time as student singing.

9) Gesture can allow 'doing' without or before explanation

10) Depends on what makes a teaching point easiest for the singer I am teaching to understand.

11) I find that most of my "favourite" gestures create an automatic physiological response in the muscles we are targeting thereby allowing the student to get a feel for the action we wish to achieve while diverting their thoughts away from that area / the muscles sufficiently to allow the action without interference.

12) Some students are different 'learners' than others, so respond differently to gestures than others. Other students require you to explain the issues with words; others with require both.

13) Physical movements can sometimes bypass the rational/logical mind and assist the student to just let the tone flow.

14) It is useful as all students have different learning styles and this can be very beneficial to the visual learners. It is also another way of demonstrating a technique if the student has not understood or been able to take on other methods.

15) A gesture can help a student to access an idea or sensation at a later occasion. ie. by performing a certain gesture, a student can access forward placement better.

16) It is an outward demonstration of an inward feeling or motion/action and keeps it in the student's conscious mind while singing

17) concepts are good for 'visual' learners when we cannot see our instrument

18) Gestures really assist students who conceive of the world in a more kinesthetic manner

19) Kinesthetic sensation is an additional learning tool that is very important for some students and helpful to all.

BDG

1) I work functionally i.e. I train primarily to listen and to listen ahead and thus use gestures that underline these; I never use gestures that distract the focus away from listening or deal with pedagogic misconceptions such as covering, mask etc
   Ich arbeite funktional, d.h. trainiere überwiegend das Hören und das Voraushören, und somit Gesten, die diese unterstützen; also nie Gesten, die den Fokus vom Hören ablenken oder mit pädagogischen Misskonzepten wie Decken, Maske, etc. zu tun haben.

2) A gesture comments or supplements a verbal explanation or sung example

   Die Geste kommentiert oder ergänzt die wörtliche Erklärung oder das gesungene Beispiel.

3) For me words are no substitutes for gestures and gestures no substitutes for words but they function well in combination particularly as what matters is the student's

understanding and not the teacher. Thus the student can take out of the offered explanations (words or gestures) whatever helps him/her best

Worte ersetzen für mich die gesten nicht und gesten nicht grundsätzlich die Worte, aber in der Kombination funktioniert das gut, zumal es nicht um den Lehrer sondern um das verständnis des Schülers geht. So kann er sich aus meinem Erkärungsangebot" die Art (Wortoder Geste) nehmen, die ihm weiterhilft.

4) Though certain gestures it is easier to maintain energy through phrases

Mittels mancher Gesten ist es leichter spannungsbögen zu halten.

5) I only use gestures with beginners, as a pitch-hearing aid – until they can take their pitch accurately off the piano

wende ich nur bei Anfängern an, als Hilfe für Gehörbildung - bis sie die Tönhöhen eindeutig vom Klavier abnehmen können

6) A gesture supports and illustrates the spoken word and thus can help avoid misunderstandings. Gestures are a natural part of language that also precede the advent of (spoken) language

Eine Geste unterstützt und verdeutlicht das gesprochene Wort und kann so auch Mißverständnissen vorbeugen. Gesten sind natürlicher Bestandteil der Kommunikation und waren ja auch früher da als die Sprache.

7) A gesture gives very good feedback about a student's thoughts about a phrase, his/her sensation for voice positioning, breath, etc. Hand and body show a student's unconscious thoughts, with which inner image he guides his voice. Adjusting a movement to a desired gesture also alters voice positioning and breath. The causal connection between brain and hand never ceases to astonish

Die Geste gibt mir besonders gute Rückmeldung über die gedachte Phrase beim Studenten, über seine Empfindung für Stimmsitz, Atemführung, etc. Die Hand und der Körper zeigen mir, was der Student (unbewußt) denkt, mit welchem inneren Bild er die Stimme führt. Gleicht er die Bewegung an die erwünschte Geste an, verändern sich auch Stimmsitz und Atemführung. Der Effekt der Kopplung Hirn-Hand ist immer wieder verblüffend.

8) Body is voice! Therefore are body-movements helpful in the process of vocal change. Every change process needs accurate perception and awareness; these are pre-requisit for any change. This is also the reason why bodily movement is good for the voice-pedagogic process.

Körper ist Stimme! Insofern sind körperliche Bewegungen hilfreich für stimmliche Veränderungsarbeit. Für jegliche Veränderungsarbeit bedarf es einer genauen Wahrnehmung. Wahrnehmung ist Voraussetzung für Veränderung. Auch deshalb sind Körperbewegungen gut für den gesangspädagogischen Prozess.

9) Vocal technique often induces too much tension and pressure, particularly in the beginner. I try, e.g. through a circular motion of the hands, one turning clockwise, the other anti-clockwise to focus concentration on the difficult movement in order to replace the "I am singing" with an "it is singing"

Gesangstechnik verführt besonders Anfänger häufig zu einem Zuviel an Spannung, an Druck. Ich versuche, durch z.B. Drehbewegung der Hände, eine links herum, die andere gegenläufig, während des Singens die Konzentration auf die schwierigen Handbewegeungen zu lenken, um so das 'Es singt' an die Selle des 'Ich singe' zu verlagern.

10) I use gesture mostly for physiological reasons

Geste werden von mir vor allem aus physiologischen Begründungen heraus benutzt

11) Gestures can initiate physiological mechanisms in singing

Gesten können körperliche Aktivitäten beim Singen initiieren.

12) Nonverbal communication is communication on an additional "channel".

Nonverbales Kommunizieren ist Kommunizieren auf einem weiteren "Kanal"

13) Gestures are stored in the brain alongside other parameters of motor-learning, leading to a greater learn effect than without gesture use (psychology of learning, psycho-motoric learning)

Gesten werden zusammen mit anderen Parametern des motorischen Lernens abgespeichert, wodurch der Lerneffekt höhe ist als ohne diese (Lernpsychologie, psycho-motorisches Lernen)

14) (Fine)-motor functions influence (directly or via a chain of muscles) larynx and larynx function

Grob u Feinmotorik wirken (direkt oder als Muskelkette) auf Kehlkopf u Kehlkopffunktion

15) Gestures as symbol/summary of a complex physiological mechanism can speed up the learning process as a mnemonic aid. See Estill Voice Training

Gesten als Symbol/Zusammenfassung eines komplexeren physiologischen Vorgangs können den Lernprozess beschleunigen - Eselsbrücke, siehe Estill Voice Training

Question 13 (Why not use gesture in communication)

ANATS

1) Not opposed.
2) I am not sceptical or opposed at all.
3) Images can be misunderstood, even some gestures.
4) As in all cases with these questions and actions, it depends on the psychology of the student, their awareness, their responsiveness and understanding. I choose appropriate actions/words in a wholistic fashion, more often than not, determined by the student his/herself.
5) I do feel that gesture can be unnecessary at times and I feel that too much gesture creates distraction from the actual purpose of a vocal activity.
6) I can express everything I want to say in words, however, most students benefit from additional visual input
7) I believe the gestures are complimentary to understanding the vocal mechanisms when trying to feel the movement of a laryngeal structure.
8) Close listening and proprioception are much more important tools for me.
9) Gesture can often be misinterpreted more than words can. I also believe that in order for a student to fully understand a concept, they should be able to explain it in words. I feel that gestures should be used to enhance what is being said.
10) I find gesturing enhances understanding by adding 'colour' and depth to the message being relayed
11) not all people learn the same way
12) To be a performer is to be expressive in all ways.

BDG

1) There are students who do not want to move and rather just "stand" – For them I demonstrate my movement and they translate it in their own way. This freedom is necessary because of different predispositions.
Es gibt Studierende, die sich nicht gerne bewegen und und "stehen" wollen- diesen mache ich meine Bewegung zur veranschaulichung vor, sie selbst übersetzen dies aber in ihrer Weise -diese Freiheit muss sein aufgrund verschiedener Veranlagungen

2) A singer without gestures is like a dried cod – after all a singer is instrument and instrumentalist all at once

   Ein Sänger ohne Gesten ist ein Stockfisch - der Sänger ist schliesslich Instrument und Instrumentalist in einem

3) Gestures can distract from what is being said but not necessarily.

   Gesten können vom Gesagten ablenken, müssen aber nicht.

4) In the function based methodology, gestures are always a means to an end not an end in themselves! This means in teaching: gestures yes – on stage, in concert: gestures absolutely not.

   Gesten in der Funktionalen Methode sind immer Mittel zum Zweck, nicht Selbstzweck! Das heißt in Unterrichtssituationen: Gesten, ja - in Bühnen- oder Konzertsituationen: Gesten - durchaus nein.

5) The more a voice teacher "does something", the more he shows that he has never experienced proper, correct singing.

   Je mehr ein Gesanglehrer 'etwas macht', umso mehr zeigt er, dass er selber eigenes, richtiges Singen nie erlebt hat.

6) I seek to be as reliable and clear as possible and therefore I consider the use of gestures very carefully.

   Ich möchte immer möglichst verbindlich und verständlich sein, deswegen überlege ich den Gebrauch von Gesten sehr wohl

7) See above – learning psychology. (S. Pezenburg. Stimmbildung. Verlag Wißner Augsburg 2007)

   siehe oben - Lernpschologie (s. Pezenburg. Stimmbildung. Verlag Wißner Augsburg 2007)

8) Gestures underline what has been said

   Gesten unterstreichen das, was gesagt wurde

Question 14 (Statements re gesture in communication)

ANATS

1) The quality of the gesture is of the utmost importance in conveying the idea. Also the ability of the teacher to modify gestures and or balance of gesture/verbal explanation to individual students is crucial.

2) the issue of whether gestures are effective depends on their appropriateness in terms of frequency, length, type, size, elevation, timing with the syllable etc

3) Over use of gestures or use of irrelevant gestures can become a distraction, however, relevant use enhances the spoken word.

4) This is all very subjective. Gesturing with the body is important if related to characterisation. It depends on what you mean by 'Talking with hands'.

5) No 8. This depends almost entirely on the student's preferred learning method. eg. visual or auditory. No 9. Everything can be overdone.

6) Gestures are an extra tool in helping students to understand new ideas. It is not used in isolation without the descriptions of speaking along side.

7) I use an anatomy chart to help explain physical aspects of singing then gestures to remind the student to focus on a particular aspect while they are singing.

8) I believe that gestures serve as a good teaching tool when teaching music/musicality i.e. legato etc. but that words serve a higher purpose when teaching technique i.e. diaphragmatic movement

BDG

1) The deployment of gestures must never be and end in itself but must always be carefully measured

   der Einsatz von den Gesten darf nicht per se sein sondern muss dosiert eingesetzt werden.

2) Also here: a solar type who gesticulates wildly is unconvincing, whereas a lunar-type doing the same is very convincing

   Auch hier wieder: ein Solarer, der wild gestikuliert wirkt nicht überzeugend, dahingegen ein Lunarer sehr überzeugend!

3) As long as gestures and words say the same, no problem. But whenever there are differences, the student has to make a decision and it shows that the speaker/demonstrating singer has no clear concept. A quasi ambiguous statement can however also be part of an interpretation (say one thing, mean something else). Last point: too many gestures can ruin everything, the main thing is always the right measure

   Solange Gesten und Worte das selbe aussagen, ist das alles kein Problem. -in dem Moment, in dem es Unterschiede gibt, muss der Zuhörer sich entscheiden bzw es zeigt, dass der Redner/Sänger keine klare Linie hat. - Eine quasi doppelzüngige

Aussage kann aber auch Teil der Interpretation sein (das eine sagen, das andere meinen). Letzter Punkt: zu viel Gesten können alles kaputt machen, es kommt immer auf ein gut dosiertes Mass an

4) Gestures are not always necessary although they can support an explanation as an add on, but only if they are well considered and carried out carefully

   Gesten sind nicht immer nötig, können aber die Erklärung eines Sachverhaltes ergänzend unterstützen, aber nur wenn sie genau überlegt und ausgeführt sind

5) This part of the questionnaire is tricky in the way the questions are put and the only possible answer is in most cases 'it depends'. Gestures can be helpful and convincing but also confused and distracting.

   Dieser Abschnitt ist in der Fragestellung schwierig und eigentlich meist nur mit: 'Es kommt darauf an' zu beantworten. Gesten können hilfreich und überzeugend sein, sie können aber ebenso diffus und ablenkend sein.

6) Imagery and gestures mean something different to everyone, because everyone has different experiences and a different background – this can lead to misunderstandings between student and teacher

   mit Bilder und Gesten verbindet jeder etwas anderes, weil jeder andere Erfahrungen und Hintergrund hat - das kann zu unnötigen Missverständnissen zwischen Schüler und Lehrer führen

7) Non-verbal communication, experiencing the musical world in the whole expression of a person that is physically liberated in his/her gestures, is a great enrichment for the teacher-student relationship. If a gesture stands in connection to the music and the physical perception and is precise, then it contains a whole musical world, a world of expression and passion for the phrase, connected with the physiological function. If one also pours emotions into the gesture, breathing and voice, then voice and expression will be multiplied. Obviously within limits. Not in exaggeration.

   Die nonverbale Kommunikation, das Erleben der musikalischen Welt im ganzen Ausdruck eines Menschen, der sich körperlich in der Geste Raum schafft, ist eine große Bereicherung für die Lehrer-Schüler-Beziehung. Wenn die Geste Beziehung zur Musik und zum körperlichen Empfinden des Sängers hat und präzise ist, ist darin eine ganze musikalische Welt enthalten, eine Welt des Ausdrucks und der Leidenschaft für die Phrase, verbunden mit der physiologischen Funktion. Gießt man in die Geste, in die Stimme, den Atem noch die Emotion, multipliziert sich die Stimme und der Ausdruck. In Grenzen natürlich.Nicht im Übermaß.

8) Each student has to be dealt with individually. Observe learning-types!

   Man muß individuell auf jeden Schüler eingehen. Lehrntypen beachten!!

9) Also here is the wording to rigid. It would for instance be better to say: "Gestures and gesticulation can distract from the spoken word". It all depends always on how much and how extensively I gesture.

   Auch hier ist die Formulierung zu statisch. Zum Beispiel wäre es besser zu sagen: "Gesten und Gestikulieren können vom gesprochenen Wort ablenken". Es kommt immer darauf an, wie viel und wie groß ich gestikuliere.

10) The body always responds to inner expression with movement and gesture – if one submits to it (the expression).

   Der Körper antwortet mit Bewegung und Gesten von selbst auf inneren Ausdruck, wenn man sich dem hingibt.

11) Gestures must always be adequate and sincere then they will carry conviction. Superimposed gestures are insincere and unconvincing with such gestures one can 'lie'.

   Gesten müssen inhaltlich adäquat und ehrlich sein, dann sind sie überzeugend, aufgesetzte Gesten sind unehrlich und nicht überzeugend, mit solchen Gesten kann man sogar 'lügen'

12) Singing is bound to the body – if the physicality is missing there is usually also no conherence. Of course it can, depending on the situation, be more or less.

   Gesang ist an den Körper gebunden- fehlt die Körperlichkeit fehlt zumeist auch Stimmigkeit. Das kann je nachdem ja mehr oder weniger sein.

Question 19 (Examples of gesture as a learning tool)

ANATS

1) Moving a finger quickly on the palm of the hand or the sternum to keep the air flowing Drawing the hands apart to demonstrate appoggio Bringing the palms together to facilitate glottal closure Drawing an arc in the air for legato phrasing and airflow Bringing the palms together to represent narrowing at the passaggio Widening the arms (drawing the hands apart) to represent broadening in the lower register

2) I use a high level of body movement integratively with singing.

3) Once again, dependent on the student and the way in which she/he learns, interprets and responds...

4) Fingers touching the face to feels vibrations of different placement options. hands on hips back or stomach to feels lungs expanding.

1) painting with a large flat brush along an invisible wall to show the legato line making curves in air to show full phrase bowling the sound by lunging and singing at the same time to get air flowing freely use Curwin hand signs regularly to show solfa for intervals

5) I prefer the whole body movements to experience PHRASING,RHYTHM, TOUCH, DYNAMICS, EACH OF THE 16 subjects within music may be experienced by the whole body & specific resonators by body @ times And hand movements. PROVEN during a most successful career.

6) using a throwing eg javelin action to release tension in high notes

7) Mimicking a throwing movement to engage the body when learning to belt, indicating the sound being thrown forward and loosening the body.

8) As for question 11. - sometimes

9) breathing gestures, down and out

10) I have student touch their fingers together in a wide hand stance, facing upwards, as a tilt is required students imitate the tilt with the hands and tilt the hands so the pinky finger is angled down and the thumb is facing upwards.

11) Pendulum swinging down when singing high

12) I use a different movement to indicate staccato, but now have been given a couple of new ideas

13) "Throwing darts" - to get a sense of precise onset "Picking up heavy buckets of water" to get a sense of being grounded when breathing Bouncing a ball - staccatto Spinning hands around each other - constant airflow

14) I get them to practice in the mirror making a whole range of appropriate and inappropriate 'emotional' movements to see which ones they are most comfortable with.

BDG

1) A lying "eight" and other kinesiological gestures
   die liegende Acht und einige andere kinesiologische Gesten

2) Swinging and spreading/opening of arms

Schwingen der Arme, Ausbreitbewegung der Arme

3) Describing the change of direction from horizontal to vertical, describe lines of diction as wave forms

   mit einer Hand Wechsel von horizontaler in vertikale Richtung beschreiben, Wellenformen für Diktionslinien beschreiben

4) There are hundreds if not thousands! Enough to fill three books; a gesture must always be applied individually and for a specific moment

   Es sind mindestens Hunder wenn nicht Tausend! Das würde drei Bücher füllen; die Geste ist immer individuell und FÜR DEN MOMENT anzuwenden.

5) Moving one or both hands in opposite direction as the pitch, like a "lift and its weight". What is high, becomes low and vice versa to unify registers and prepare leaps

   Gegenbewegung mit der Hand oder beiden Händen zu den Tonhöhen, wie der "Aufzug und sein Gewicht". Was hoch ist, ist tief und umgekehrt, zum Lagenausgleich und Vorbereiten von Sprüngen.

6) I use elastic bands, balls of different sizes, round wood, straws and many other aids

   Ich verwende Gummibänder, Bänder, Gymnastikbälle und Bälle, Rundholz, Strohhalme und viele andere Hilfsmittel

7) Walking in the beat, turning/swinging the pelvis, kicking balls

   Gehen im Takt. Beckenschwingen. Bälle kicken.

8) Walking, pacing etc; gymnastic exercises for chest expansion

   Gehen, Schreiten etc. Brustkorberweiternde (Gymnastik) Übungen

9) For a light onset of high notes: tap your scull lightly with your finger on onset. Thus tones will always be sung from above

   Für die Leichtigkeit der hohen Töne im Ansatz: Mit einem Finger leicht auf die Schädeldecke tupfen, wenn der Toneinsatz kommt. So werden die Töne immer von oben angesungen.

10) No horizontal lines but rather round ones in front of the body (sow-man)

    keine horzitontale Linien, sondern bogenförmige Linien vor dem Körper für mehr Legato (Sämann).

11) As self-awareness and perception, particularly aural awareness are central to tonal work (instead of continuous corrections from outside), there are many possible gestures not mentioned above

Da die Eigenwahrnehmung, besonders das Hören, im Mittelpunkt der Klangarbeit steht (statt der permanenten Außenkorrektur!), bilden sich viele, oben ungenannte Möglichkleiten von Gesten heraus

12) With a crescendo hands and arms are spread open with an elastic tension

bei cresc. Hände/Arme m. Spannung weit auseinander führen

13) Play staccati on the body like one plays upwards on a cello that is downwards from the diaphragm. Pushing fingers lightly in the area of the ovaries to feel the connection between consonants and pelvic floor

Staccati am Körper spielen, wie wenn man eine Cellosaite in die Höhe spielt, sprich vom Zwerchfell nach unten. Einen leichten Fingerdruck in der Eierstock gegend, um die Verbindung von Konsonanten und Beckenboden Muskeln wahrzunehmen.

14) Moving the wrist as illustration of tongue root flexibility

Handgelenksbewegung als Bild Zungenwurzelfelxibilität

15) Throwing movements to give impulses etc

Wurfbewegung bei Impulsgebung u.Ä.

16) rising vocal lines are drawn downwards with the hands (up to the body centre), tones are drawn or scooped towards the mouth, various movements for distraction or to increase muscle tone

aufsteigende Linie mit den Händen nach unten ziehen (bis Körpermitte), Töne heranziehen oder hereinschaufeln in Mundhöhe, verschiedene Bewegungen für Körpertonus oder Ablenkung, ...

17) Hand gestures of the Estill Voice Training Model

Handzeichen des Estill Voice Training Modells

Question 20 (Why use gestures as learning tool)

ANATS

1) Carrying out specific Gestures enhances understanding of musical phrasing by giving it a corresponding physical sensation.Not only visible, but also kinaesthetic form!

2) use Curwin hand signs regularly to show solfa as it improves intonation especially when singing tis and res which often go flat

3) Externalising rhythm can help singers to feel a beat. Singers can show me what they are trying to do internally through gesture. Muscle association is useful for learning soft palate elevation - I've seen an improvement in students fine muscular control when they make a similar external movement with their hands. A lot of these answers above use the word "visual"... but rather than see it, I think the most important aspect for a singer, is that they learn to feel it.

4) See earlier remarks

5) Moving while singing is a great way to memorise specific instructions - technique, words, music because it uses more parts of the brain at once and gets into deeper parts of the brain.

6) Some students respond more easily to the use of gesture. It seems to depend on their level of connection with their own body and their level of self consciousness and ability to 'give it a go'.

7) Occasionally students need a distraction from the singing process, especially if they are prone to overthinking and trying too hard.

8) rather kinesthetic form movement could be with eyes closed

9) As 75 percent of learners process information mostly through visual means it can be useful to use this perception. Again it depends on the singer.

10) Using body movement and gestures engages the entire body and draws the singing process away from just 'the voice' to a whole body act.

11) My only hesitation in answering the above questions is that it would depend on the type of student/learner you were teaching. Every student is different and therefore, you can't generalise about how the application of gesture with EVERY student will work. It would be nice, but we're not in an ideal world!

12) assits those who learn visually and or kinesthetically and others to develop that appraoch

13) Sometimes 'distraction' from over-intellectulising the singing process is what the student needs, and gesture, as for actors, can help to find a deeper level of engagement.

14) It is a training tool which needs to be reduced/absent during performance depending on musical style.

15) carrying out 'gestures' distracts not so much the singing actual process, but distracts from the negative distractions preventing us from concentrating on the freedom of singing correctly an/or the singing process

16) Gestures during exercises and practice helps open a student to better technique. It helps shy students start to be aware and to use their bodies which later helps with performance.

BDG

1) On one hand gestures facilitate "transfer" and on the other (although this might seem like a contradiction) the serve as a distraction so that a difficulty can be (psychologically) circumvented so as to get to its core.

   Gesten dienen einerseits der "Übertragung" und andereseits (mag es sich auch wie ein Widerspruch lesen) der Ablenkung bzw um die Schwierigkeit (psychologisch) zu umgehen und auf den eigentlichen Punkt zu kommen.

2) Physical exercises can distract from unnecessary difficulties in singing, e.g. bending of knees at the highest (not sustained) note of an arpeggio; throwing an imaginary ball energetically when singing a long sustained top note intensifies the tone's brilliance; or a relaxed swinging of arms when the student becomes stiff in a difficult coloratura etc.

   Körperübungen können von unnötigen Gesangsschwierigkeiten ablenken, z.B. beim höchsten (nicht gehaltenen)Ton im Dreiklang leicht die Knie beugen, oder beim langangehaltenen höchsten Ton einen imaginären Ball kraftvoll werfen intensiviert die Strahlkraft des Tones.Lockeres Armschwingen, wenn sich der Schüler bei schwierigen Koloraturen "festsingt"usw.

3) A gesture can help to commit a voice-technical mechanism to the physiological/kinesthetic part of the brain so that it can later be called upon. Also – very importantly – a gesture can (particularly when used to replace useless, tense, habitual gestures) help to get rid of faulty old habits. Yet in performance one must avoid all gesture based aids – here only expressive gesture are desirable so that a piece of music may be better understood.

   Eine Geste kann ein gesangstechnischer Vorgang im körperlichen/kinetischen Gedächtnis speichern helfen, damit er später wieder gefunden werden kann. Auch--SEHR WICHTIG!!!--eine Geste (vor allem, wenn er eine eingefahrene, nützlose, verspannte Geste ersetzt) kann von schadhafte alte Gewohnheiten befreien helfen. Allerdings sind in der Aufführung sämtliche Hilfsmittel gestischer Art zu vermeiden--da sind nur noch ausdrücksvolle Gesten gewünscht, um dem Publikum das Musikstück besser zu verstehen.

4) Carrying out specific gesture makes singing more precise, creating greater awareness for the singing process.

   Das Ausführen bestimmter Gesten präzisiert den Gesang, schafft größere Bewußtheit für die Stimmführung

5) Estill Gestures

   Estill Gesten

6) Support and training of physiological mechanisms and heightened awareness

   Unterstützung/Training funktioneller Vorgänge Wahrnehmungsfähigkeit

7) Rhythmical exercises like snapping fingers are not really gestures in my mind, but more rhythmical movements. Obviously these increase the rhythmical sense. I did not understand the second last point "to distract from the actual singing process" and have therefore not answered it.

   Bei Rhythmusübungen wie zum Beispieldem Schnipsen mit den Fingern würde ich nicht von "Gesten" sprechen, eher von rhythmischen Bewegungen. Diese unterstützen natürlich das Rhythmusgefühl. Vorletzten Punkt "vom eigentlichen Gesangsvorgang abzulenken" habe ich nicht verstanden, deswegen nicht beantwortet.

8) Movements relax and release tension

   Bewegungen lockern und lösen Verspannungen

9) Learning psychology (s. Pezenburg. Stimmbildung. Wißner, Augsburg 2007, S. 143 ff

   Lernpschologie (s. Pezenburg. Stimmbildung. Wißner, Augsburg 2007, S. 143 ff

Question 21 (Why not use gestures as learning tool)

ANATS

1) Not opposed

2) I want the student to sing on internal sensation and to have no external props which they may come to rely on and substitute in a rote manner for focussed practice.

3) I am not sceptical /opposed

4) I think it is worth using gesture to get an idea working and then sing, retaining the feeling without the gesture so that it doesn't impact on performance.

5) Students often are uncomfortable or embarrassed but I encourage them to push through that.

6) RE forming a habit, I do point out to my students that the gesture is a temporary aid to establishing the required tone, effect, strength etc.

7) Teaching gestures can help a student to focus on a particular aspect of technique, but should be absent in performance.

8) IT is a learning tool to aid their technical understanding not part of performance and the two are easily separated. It helps give them confidence.

BDG

1) I use those gestures that come from the student unaided as an expression of his sensations/feelings, his soul. gestures that are being imposed from outside are often manipulative and not coherent to the student.
   Ich greife die Gesten auf, die aus dem Schüler von alleine kommen als Ausdruck seines Empfindens, seiner Seele. Von außen aufgesetzte Gesten sind oft manipulativ und sind für den Schüler nicht stimmig

2) Not every movement fits every student
   Nicht jeden Bewegung passt zu jedem Schüler.

3) Spontaneous, not-deliberate gestures: great, but all that is manufactured, deliberate is mostly insincere.
   spontane, ungewollte Gesten: prima, aber alles Gemachte, Gewollte ist zumeist unaufrichtig

4) Students must decide for themselves what they find helpful for their singing what helps their imagination
   Die Schüler sollen selber entscheiden, was ihnen beim Singen hilft, die Vorstellung zu verwirklichen.

Question 24 (Examples of Body-Movements as learning tools)

ANATS

1) Plus balance-board, swiss ball, etc.
2) Swaying and 'hula' movements

3) sparkler circles and 8s spray gun laser beam

4) walking the length of a phrase, (or turning the body) then changing direction when the next phrase starts.

5) bored with this survey now

6) Again, depends on the student and the music we're doing. It also takes trust to ask a student to move! Some students are VERY shy about moving, though I take it in my stride and do it with them. Other movements I don't worry about. If it's just too embarrassing for them, I let it go and come back to it at another time.

7) connecting the breath to tone gesture -upward one hand sometimes elbows out to assist diaghragm stability one hand to assist lenthening the neck

8) -feet/legs crossed in slightly uncomfortable position, hips move in figure of 8 to keep balance.

BDG

1) Instructions depend on the breathing-type and cannot be generalized
   Die Anweisungen erfolgen je nach Atemtyp und nicht generell für alle geltend.

2) I recommend a total 'hanging' position, head nearly touching the ground, knees slightly bent. Strike of genius!
   Ich empfehle das total Aushängen, Kopf fast am Boden, Knie leicht gebeugt. Genial!

3) For the advanced, a combination of dance training elements with singing
   für Fortgeschrittene Kombination von Tanztrainingselementen mit Singen

4) A number of exercises from the Breath – (muscle)tone – tone methodology
   eine ganze Reihe von Übungen aus Atem-Tonus-Ton

5) function oriented exercises according to Michael Heptner[93]
   funktionale Übungen nach Michael Heptner www.heptner.org

6) Also here: hundreds or thousands – depending on situation, student, requirement
   Auch hier: hunderte oder tausende--je nach Situation, Schüler, Bedürfnis.

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[93]Heptner-method is a holistic approach to singing

7) Energetic standing, slightly shifting the weight from one leg to the other, like waiting for the serve on the tennis court – high muscle-tone, elasticity, flexibility.

   Energetisches Stehen, leicht von einem Bein aufs andere, wie auf dem Tennis-Court, wenn man einen Aufschlag erwartet - hohe Grundspannung, Elastizität, Flexibilität.

8) Act to internalize the text

   Schauspielern um den Text zu verinnerlichen.

9) If working according to breathing types, then the monkey position is only appropriate for 'exhalers'

   Die Affenhaltung eignet sich wenn man nach den Atemtypen arbeitet nur für Ausatmer.

10) Put one foot behind you and distribute your weight evenly on both legs. Thereby the diagonal (top front – bottom back) becomes tangible and the singing tone goes more into the body.

   Einen Fuß nach hinten stellen und das Gewicht gleichmäßig auf beide Beine verteilen. Dadurch wird die Diagonale (vorne oben - hinten unten) im Körper spürbar und der Ton geht besser in den Körper hinein.

11) Although I don't put my clients onto the floor, I believe it is very helpful

   Auf den Boden mache ich zwar nicht mit meinen Klienten, halte ich aber für sehr hilfreich.

12) Dance to the music, following your own intuition

   Tanzen nach eigenem Empfinden für die jeweilige Musik.

13) Rotating of arms, balance on equipment, lift knees in a variety of ways and a combination of these

   Armkreisen, balancieren auf Geräten, Kniehebung verschiedene Formen, und Kombinatinonen von allem

14) Swinging of legs, throw arms upwards, shake hands, 'paint walls', 'clean windows', circular movement with elbows or nose, draw a '8 '... countless possibilities according to the physical disposition of the students.

   Beinschwingen, Arme hochwerfen, Händeausschüttel, "Wändestreichen"/"Fensterputzen", Ellbogenkreisen, "Nasenkreisen" 8Malen,... unzählige Möglichkeiten entsprechend auch der körperlichen Disposition der Schüler

Question 25 (Why use Body-Movements)

ANATS

1) Assists recruitment of "support" musculature with optimal body freedom

2) Singing is a whole body (and indeed, a whole person) experience.

3) Students sometimes need to be overloaded with information for more natural vocal production to result. Use of body-movements is one of these strategies.

4) I believe it is more natural to move when you sing than to stand still.

5) I use movement to allow the student to FEEL what is required thus aiding UNDERSTANDING THIS HAVING BEEN ACHIEVED THEN TO SING (or play) ZEXPERIENCING THIS FEELING APPROPRIATELY.

6) Occasionally students need a distraction from the singing process, especially if they are prone to overthinking and trying too hard.

7) How much use this approach is depends on the singer and the teaching point.

8) My hesitation with some of those answers stems from the same place with other questions I've answered above. Not all students are the same type of learners, so not ALL will achieve enhanced learning from moving in a lesson. They're generalised statements that I believe should be qualified.

9) No 4. Distracting students who think too much about how they sing is a good idea. It enables singing to happen in a more natural way.

10) helps to engage core muscles

11) Movements can help to distract a 'one-tract 'mind from over-doing the wrong thing and helps dissipates tension. I will try anything that will make them learn about their instrument (which includes the body) and helps them understand technical and musical aspects. I once had a girl practice her Tai CHi routine whilst singing to help get her over her passagio as she would just freeze up and anticipate it and then not attempt to blend muscle actions and mix. It worked a treat as it distracted her mind from thinking about the upcoming notes and she breezed on through it. The mind often talks them out of something before they even try!

BDG

1) I support movements of the stretch-movement-areas of the respective breathing type (Terlusollogie) upon which I can categorize and organize a voice easily.

Ich unterstütze die Bewegungen der Dehnungs-Bewegungszonen des jeweiligen Atemtyps (Terlusollogie), woraufhin sich die Stimme gut ordnen und organisieren kann

2) Relaxing is easier said than done

locker lassen ist leichter gesagt als getan.... ;-)

3) Carrying out body-movements increases stamina and coordination in preparation for simultaneous singing and dancing (musical theatre)

Das Ausführen von Körperbewegungen trainiert die Kondition und die Koordination zur Vorbereitung auf gleichzeitiges Singen+Tanzen (Musical)

4) Some body-movements divert physical energy away from the body instead of maintaining the necessary energy for singing. I find pulsing movements detrimental to legato but potentially good for coloratura. Some movements do not help singing.

Manche Körperbewegungen leiten Körperspannung aus dem Körper ab, anstatt die Grundspannung fürs Singen zu halten. Wippende Bewegungen halte ich für dem Legato abträglich, können aber für Koloraturen gut sein. Manche Körperbewegung hilft dem Singen nicht.

5) Problematic: the absolute wording. Obviously everything always depends on which specific body-movements are being carried out and how they are being instructed. In addition to that the perception of the individual student. Correct wording would be: Carrying out certain body-movements can, under certain circumstances increase body-awareness. And similarly for all other questions.

Problematisch: die unbedingte Formulierung. Es kommt natürlich immer darauf an welche genauen Körperbewegungen ausgeführt werden, außerdem wie sie angeleitet werden. Dazu kommt noch die Wahrnehmungsfähigkeit des Schülers. Korrekt würde ich formulieren: Das Ausführungen bestimmter Körperbewegungen kann unter bestimmten Bedingungen das Körperbewusstsein fördern. Und analog für alle weiteren Fragen.

6) Tense, splayed out hands, indicate tension, unnecessary pressure often, also fear. In this case distracting relaxation movements are helpful.

Verspannte, gespreizte Hände zeigen an, dass Verspannungen, unnötiger Druck, oft auch Angst Auslöser ist. Dafür sind ablenkende Lockerungsbewegungen förderlich.

7) I differentiate between two movement-types: momentum emphasized or leading emphasized. For the first (momentum) movement exercises can be very helpful, for the leader-types, they tend to be an inhibition for a long time.

Ich unterscheide zwischen 2 Bewegungstypen: Schwungbetont oder Führungsbetont. Für erstere (Schwung) können Bewegungsübungen sehr hilfreich sein, für die Führungstypen jeweils für lange Zeit eher hemmend.

8) Body-movements can facilitate the "allowing"of the voice

   Körperbewegungen können das "Erlauben" der Stimme erleichtern

9) Releases external tensions and blockages as well as bad habits; affects, depending on the respective movement posture, breathing, Appoggio, neck muscles and secondary breathing muscles etc etc, generally a liberating effect on tone and timbre

   Löst äußere Spannungen und Blockaden sowie schlechte Angewohnheiten, wirkt sich - je nach Bewegung- positiv auf Haltung, Atmung u Apoggio, Nacken/Atemhilfsmuskulatur etc etc aus, allgemein "ton u timbrebefreiende" Wirkung,

Question 26 (Why not to use Body-Movements)

ANATS

1) I am trying to establish a neutral body with no 'ticks'. That said, when developing operatic repertoire, I encourage the student to move around and find the physicality of the relevant character. Any body movements are carried out separately and then the student is encouraged to take whatever body memory is necessary into their stance etc.

2) I am not sceptical or opposed

3) I do not get my students to repeat any action too often as I have had students memorise actions and find it difficult to do an exercise without the action. I prefer to use actions as a way of making the student become aware of something they were not otherwise aware of (ie tension in the body)

4) See remarks above

5) As previously stated, students can become embarrassed or uncomfortable but need to work through that.

6) In my experience, students struggle to make these actions applicable. Even if they are able to achieve a better/more energised sound, they are unable to recreate this feeling without complete the full gesture again, making it inapplicable for the actual performance.

BDG

1) The question is always which movement is helpful for which student. In this regard, I find the methodology of breathing types after Wilk/Hagen
   Es fragt sich immer, welche Bewegung bei welchem Schüler. Dabei hilft mir das Instrumentarium der Atemtypen nach Wilk/Hagena

2) it means overcoming a certain barrier, but singing itself means overcoming barriers
   es kostet den Schüler zwar Überwindung, aber zu Singen ist auch oft eine Überwindung

3) I don't think total physical stillness to be advantageous even in Lieder recital unless the music demands it of the body.
   Nicht mal beim Liedvortrag halte ich völlige Körperstille für förderlich, wenn die Musik es dem Körper nicht abverlangt.

4) Re the last question: using these exercises very consciously and with a specific objective means that they can hardly become habitual – but "habitually congruent" is how the body functions if it has, through movement, become used to being free and relaxed and to produce free and relaxed tones.
   ad letzte Frage: dadurch, dass die Übungen sehr bewusst eingesetzt werden sollen u ja auch einen speziellen Zweck dienen, können diese Bewegungen selten Gewohnheit werden- "gewohnt stimmig" kann aber der Körper funktionieren, der durch die Bewegungen darauf konditioniert ist, frei und entspannt zu bleiben u ebensolche Töne zu produzieren.

Question 27 (Statements re Gesture and Body-Movement as learning tools)

ANATS

1) To use gesture and body movements to clarify and enhance production of good tone and musicality, especially in the initial stages of learning technique and specific songs helps the student to internalise the correct sensations for the desired vocal outcome. As these become familiar and habitual, the gestures can be 'internalised' so that the tone and musicality are achieved by the thoughts, emotions and physical memories of those sensations.

2) It is not clear to me whether by 'learning with gesture' you mean that the student is using gesture whilst learning or that the teacher is using gesture whilst the student is learning. Therefore some of these questions are difficult to answer.

3) The statements above are well designed yet some appear to be 'absolute' and while we work with individuals, each teaching tool will have a qualification relating to the needs and nature of that individual.

4) The key here is "whilst singing" I prefer to give movements to allow them to feel & to understand each concept THEN they will feel it whilst singing.

5) Gestures as a learning tool are very useful, but eventually each singer needs to be able to sing without external gestures as well. Again depends on style.

6) No 12 and 15. Nonsense. Singing is never completely static. There must always be the ability to move which doesn't mean you HAVE to move. The teacher must train the singer to have the feeling of being about to move, even when being still. Flapping your arms while performing is ridiculous!!

7) Singers should be able to sing whilst standing still and so need to practice this as well as learn with gesture

8) There are differing learning styles which means teachers need to be able to teach using differing techniques for their various students.

BDG

1) One has to differentiate between doing exercises or singing a piece in a performance situation

man muss unterscheiden, ob Übungen gemacht werden oder ein Stück vortragsreif gesungen werden soll

2) The question is worded in a very solar way. Exhalers need external piece and quiet in order to be alive inwardly and to be able to express this in their voice. But if you having an inhaler stand still will take away all liveliness and his singing performance will not be free and convincing (yet he will not be perceived as an arm-flapping singer but as simply coherent)

Die Fragestellung ist sehr solar. Ausatmer brauchen die äußere Ruhe, um innen lebendig zu sein und dies auch über die Stimme rauszubringen. Stellt man einen Einatmer ruhig hin, nimmt man ihm jegliche Lebendigkeit und sein Gesangsvortrag wird nicht frei und überzeugend (man wird ihn aber nicht als arme-rudernden Sänger wahrnehmen sondern als mit stimmig)

3) Some gestures are part of an interpretation, other gestures and movements (not staged) are part of the teaching process to achieve better understanding, relaxation etc, but these should be reduced after a certain point to avoid the

student depending on them. An defining experience in my first year at Uni was that I was supposed to bend my knees with every high note. Unfortunately the professor had forgotten to tpoint out to not do this in my public performance examination – and so I must have looked like a chicken laying an egg...:-) The audience was amused and the notes were good!!

Einige Gesten sind teil einer Interpretation, ein Teil der Gesten und Bewegungen (nicht inszeniert!) sind Unterstützung des Gesangunterrichts zum bessern Verständnis, Lockerung usw, doch diese sollten an einem gewissen Punkt wieder reduziert weren und der Schüler nicht abhängig. Eine prägende eigene Erfahrung aus meienm ersten Studienjahr war, dass ich bei jeden hohen Ton in die Kinie gehen sollte. Dummerweise hatte meine Professorin vergessen mir zu sagen, das beim öffentlichen Semester-Vorsingen an der Hochschule nicht zu machen, so dass ich wohl aussah, wie ein Hühnchen, das versucht ein Ei zu legen.... ;-) Das Publikum hat sich amüsiert und die Töne waren gut !!!

4) Gestures as aids should not be automatic but it must be clearly demanded to abstain from these pedagogic supporting movements in performance

   Gesten sollen als Hilfsmittel nicht automatisiert werden und immer wieder klar gefordert werden, beim Vortrag diese pädagogischen Hilfsbewegungen nicht zu machen

5) The point is not so much to think the gestures or movements, but rather to transform the external movement into an internal one. Then the external movement will not be necessary anymore.

   Es geht weniger darum, die Gesten oder Bewegungen zu denken, als darum, die äussere Bewegung in eine innere zu verwandeln. Dann ist die äussere Bewegung nicht mehr notwendig.

6) Regarding the last point: the teacher must be very careful that the student abandons helpful body-movements one after the other before a public appearance, as in performance there must only be gestures that fit the piece simply naturally.

   Zum letzten Punkt: hier muss der Lehrer sehr achtgeben, dass der Schüler bis zum öffentlichen Auftritt nach und nach die hilfreichen Körperbewegungen einstellt, denn beim Auftritt darf es nur noch Gesten geben, die zum Stück passen, eben ganz natürlich.

7) Just like a gesture needs practice, one must also practice reducing (omitting) the gesture to a mere thought that controls the mechanism. In singing, the body is always supple and not rigid.

   Genau wie die Geste selbst muß auch das Reduzieren der Geste und das Weglassen der Geste bis zum bloßen Gedanken, der den Vorgang steuert, geübt werden. Der Körper ist aber immer flexibel und nicht statisch beim Singen.

8) Careful: gestures can also cause tensions if not chosen competently

   Vorsicht: Gesten können Spannungen geradezu erst schaffen, wenn sie nicht kompetent ausgewählt sind.

9) Hands illustrate the inner mechanism and also reveal the actual, unconscious desire

   Hände verdeutlichen den inneren Vorgang und verraten zugleich das tatsächliche, unbewußte Bestreben.

10) I find the distinction between learning-tool, training-tool etc and final goal very important

   Ich finde wichtig zu unterscheiden zwischen Lernmittel, Trainingsmittel usw. und Ziel.

11) Some things can but must not happen. Gesture and Body-movements can help experiencing certain vocal functions (kinaesthetic sensations, control of voice apparatus, see Pezenburg. Stimmbdilung. Wißner, Augsburg 2007, S. 143 ff)

    Manches kann sein, muss nicht. Durch Gesten und Körperbewegungen können bestimmte stimmliche Funktionen erlebbar gemacht werden (kinästhetische Empfindungen, Kontrolle der Stimmfunktion über die Kinästhetik, siehe Pezenburg. Stimmbdilung. Wißner, Augsburg 2007, S. 143 ff)

12) In my experience there is signiticantly less "flapping" and waving about and bad habits become rarer exactly because movements in the lesson help to avoid a manifestation of these. There is no contradiction between movement in the lesson, gesture in expression and an internalized, emotion and intention driven singing.

    Meiner Erfahrung nach, wird wesentlich weniger "gerudert" bzw gefuchtelt sowie sind schlechte Angewohnheiten seltener zu sehen, weil die Bewegungen im Unterricht eben sogar zur Vermeidung des "einschleichens" Ebensolcher führen. Dass der Gesang verinnerlicht sein soll u von Intention u Emotion geleitet u

getragen werden sollen, steht in keinerlei Widerspruch zu Bewegung im Unterricht u Geste im Ausdruck.

13) I explain the nature of the aid which is used until a mechanism has been internalized. Then the gesture is not necessary anymore and the mere though suffices to evoke the respective adjustment.

Ich erkläre die Hilfe ,die benutzt wird, bis der Vorgang verinnerlicht wird. Dann ist die Geste nicht mehr nötig, nur der Gedanke daran reicht aus, um entsprechende Einstellung hervorzurufen

Question 28 (Body-awareness/ breathing schools and methods)

ANATS

1) Speech level singing

2) Healing Touch Chakra Connection

3) Body Mapping (related to Alexander Technique)

4) Dance

5) A lot of vocalists who are dancers also use Pilates. Although this tech can inhibit vocal tech, teachers still have to work (especially in musical theatre) with vocalists who are also excellent dancers.

6) Estill Voice strongly influences my teaching methods.

7) DALCROZE EURYTHMICS[94] PROPERLY UNDERSTOOD SUPPLIES MUCH MORE THAN EACH OF THOSE LISTED!!!

8) Pilates

9) I havent heard of Middendorf.

10) Orff Schulwerk[95]

11) other approaches like appoggio and basic physiology

12) I have not studied these techniques enough to use them. I am not against them just unaware. - Influences come from my own teacher, a background in dance and working closely with a physio.

13) Pilates

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[94]developed in the early 20th century by Swiss musician and educator É.Jaques-Dalcroze (1865 – 1915) Dalcroze Eurhythmics teaches concepts of rhythm, structure, and musical expression using movement

[95] combines music, movement, drama and speech into a - predominantly but not exclusively - early music education concept, founded by C.Orff (1895 – 1982)

14) I have not studied any of these techniques, no doubt they could be very helpful. I am most strongly influenced by what I have learned through Estill Voice Training.

15) Pilates

16) Dalcroze Eurythmics

BDG

1) Qigong[96]

   Chi Gong

2) Kinesiology[97] - Eutonic[98] physical exercises

   Kinesiologie - Eutonische Körperarbeit

3) My work is strongly influences by Terlusollogie[99], which offeres a wonderfully differenciated instrument for voice, humans, posture, movement and imagery.

   Meine Arbeit ist stark beeinflusst von der Terlusollogie, die ein wunderbar differenziertes Instrumentarium für Stimme, Menschen, Haltung, Bewegung und Vorstellungswelt bietet.

4) Sport and every kind of gymnastic exercises are helpful

   Sport und Gymnastisches jeglicher Art ist förderlich

5) Kristin Linklater[100]

6) None

   Keine

7) Tomatis[101] and kinesiology

   Tomatis und Kinesiologie

8) Breathing – (muscle)tone – tone after Maria Höller-Zangenfeind

   Atem-Tonus-Ton nach Maria Höller-Zangenfeind

9) Rabine-Methode

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[96] A practice of aligning breath, movement, and awareness for exercise, healing, and meditation with roots in Chinese medicine, martial arts and philosophy

[97] An alternative and holistic therapy that involves the study of movement

[98] Eutony is a body-awareness methodology founded by the German dancer, choreographer and pedagogue Gerda Alexander (1908 – 1994)

[99] The term is made up of the Latin words terra = earth, luna = moon and sol = sun plus the Greek word λόγος = science/theory; an alternative-medical school which differentiates between two breathing types, lunar inhalers and solar exhalers.

[100] Scottish (later USA) actor and voice coach, founder of the Linklater Voice/Freeing the Natural Voice methodology

[101] A "pedagogy of listening" also known as Audio-Psycho-Phonology founded by the French ear-nose-throat specialist A. Tomatis (1920 – 2001)

10) Michael Heptner

11) Qigong – strongly

   Qigong – stark

12) Russion healing methods and other mental based methods. Sign language according to Marie Helle[102]

   Russische Heilweisen und andere Mentalmethoden Grundgebärden nach Marie Helle

13) Music-kinesiology and creative dancing

   Musikkinesiologie kreativer Tanz

14) In a non-dogmatic format: solar – lunar and Julius Parow[103]; in connection with singing: craniosacral therapy[104]

   in nicht dogmatischer Form: Solar-lunar und Julius Parow Begleitend zum Gesang: Cranio-sakrale Körperarbeit

15) Jo Estill method, Norma Enns[105], Vester[106] Acting techniques

   Jo Estill Methode, Norma Enns Vester Schauspieltechniken

16) Movements according to breathing types, Continuum movement[107], Eutony, Coblenzer-Muhar [108] (Intentional singing)[109]. I use images and movements from various breathing methods, but distinguish them according to breathing types

   Bewegungen nach den Atemtypen, Continuum Movement. Eutonie, Coblenzer-Muhar (intentionales Singen), Ich verwende aus einigen Atemlehren Bilder und Übungen, gliedere sie aber nach den Zwei Atemtypen auf.

17) Rabine

18) Finction based method after Rabine and Rohmert[110] -exercises. Exercises from the Schlaffhorst-Andersen[111] speech-pedagogy

   Funktionale Methode nach Rabine und nach Rohmert Übungen aus der Sprechpädagogik Schlaffhorst-Andersen

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[102] Lecturer at the University for Music and Performing Arts in Frankfurth am Main
[103] German medical doctor (1901 – 1985), founder of a function-based breathing therapy
[104] Alternative medicine therapy used by osteopaths, message therapists and naturopaths
[105] American opera singer
[106] Saskia Vester, german actress
[107] Movement education founded by the US American Emilie Conrad
[108] Viennese acting Prof H.Coblenzer and respiratory specialist Dr F.Muhar created a therapeutic breathing method to treat dysphonia. Core principle is the replenishing of breath by reflex action
[109] part of Coblenzer/Muhar's method, refers to the importants of connecting content with technique
[110] German singer and voice pedagogue, founder of the 'Lichtenberger Institute of Applied Voice Physiology'
[111] Oldest (early 19th century) in Germany developed breathing, voice and speech therapy

19) Schlaffhorst-Andersen's method facilitates good, natural breathing through 'swinging' – not enough known.

Schlaffhorst-Andersen macht mit 'Schwingen' gutes, natürliches Atmen, - ist zu wenig bekannt.

20) Eutony

Eutonie

21) Terlusollogie

22) Eutony

Eutonie

23) Autogenic training[112]

Autogenes Training

24) I also use the Catienica-method[113] for body-shape and posture. And I find it very important to know about Terlusollogie in connection to all body and breathing exercises

Ich verwende außerdem "Cantienica" Methode für Körperform und Haltung. Und ich halte es für sehr wichtig, bei allen Körper- und Atemübungen über Terlusollogie Bescheid zu wissen!

25) Eurhythmy[114], Eutony

Eurhythmie, Eutonie

26) Recently there is a lot of talk about breathing-types according to Terlusologie – unproven nonsense. I only use methods that can be physiologically explained. See: Böhme, G.: Komplementäre Verfahren bei kommunikativen Stimmstörungen. Thieme, 2010

neuerdings Atemtypen nach der Terlussollogie im Gespräch - unerwiesene Spinnerei Verwende nur physiologisch erklärbare Methoden Lit.-Hinweis: Böhme, G.: Komplementäre Verfahren bei kommunikativen Stimmstörungen. Thieme, 2010

27) Many students go horse riding. I make uses of this for many images regarding body-energy, alertness, posture, breathing, anchored stability...

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[112] Relaxation technique developed in the 1930s by the German psychiatrist J.H.Schultz. Parallels in yoga and meditation

[113] Body-shape, posture and movement concept developed by the Swiss B.Catieni

[114] 'Harmonious movement'-art/therapy originated by the German R.Steiner (1861 – 1925)

Viele Schülerinnen reiten. Da benutze ich viele Vorstellungen für Körperspannung, Aufmerksamkeit, Aufrichtung, Atmung und verwurzelte Stabilität...

Question 30 (Which expression enhancing gestures)

ANATS

1) Detailed text analysis Personalisation

2) Only use these concepts for song performance and stylising but not for vocal technique and development.

3) I sometimes use Laban movements as 'psychological gesture', as well as for rhythmic precision and articulation.

4) Choreography

5) expressivity comes from the singer's intellectual and emotional connection with the text and music

6) Swing their arms for the length of the phrases in the song (not singing, just breathing); ditto, then singing. Actively move in several different ways to a song, not necessarily complementary to its mood, eventually settling on a movement they feel IS complementary to it. Always, always, always conduct while learning repertoire.

7) Sometimes dancing is used.

8) Acting is very important for singers. It starts in the mind and is first expressed in the sound, then on the face before the rest of the body.

BDG

1) I sometimes encourage the student to discover his/her own gestures, but I am very careful not to prescribe gestures. Having taught a lot in China, I am very aware of copying. I really want to see the student's own gestures before mine are being copied. *Ab und an fordere ich den Lernenden dazu auf, eigene Gesten zu entdecken. Ich hüte mich aber davor, Gesten vorzugeben. Da ich viel in China unterrichtet habe, ist das Kopieren für mich ein wichtiges Moment. Gerne möchte ich von den Studenten eigene Gesten sehen, bevor meine kopiert werden.*

2) Gestures are often only aids that are used for practicing but should later be reduced.

    Gesten sind oft Hilfsmittel, die zum Üben genutzt werden sollen und später eventuell wieder reduziert werden.

3) Sign-language-tools by Mrs Marie Helle at the Music academy in Stuttgart: Very helpful and important gestures for my students to find an emotionality through the body.

    Gebärden-Tools von Frau Marie Helle an der Musikhochschule Stuttgart: Sehr hilfreiche und für meine Schüler wichtige Gesten, um über den Körper in eine Emotionalität zu kommen.

4) Walk-the-room (*Raumlauf*[115]) function based exercises whilst singing songs and arias for greater vocal self regulation

    Raumlauf funktionale Übungen während des Singens von Liedern/Arien für mehr stimmliche Selbstregulation

5) For instance whole body stretch with heightened expression etc

    z.B. ganzkörperliche Streckung bei erhöhtem Ausdruck usw.

Question 31 (Respondents' comments)

ANATS

1) I am very aware giving studentsphysical gestures to help understand placement etc can become a safety blanket and regularly used to produce the sound the gesture evokes. For this reason, I use it as a tool and then attempt to discard it such as quickly as possible.

2) To my mind there are two issues here. On one hand the student needs to be able to use their body freely & expressively. On the other hand the student needs to be able to achieve a 'neutral body' with no false support arising from superficial 'holding' or gesticulating. Knowing when to encourage one or the other mode is part of the art of teaching. Neither can be ignored.

3) My students have always gained confidence and involvement from the use of gestures and body movement. I teach singing as a whole body activity and

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[115] Warm-up exercises used in theater/improvisation workshops

movement and gesture promote this awareness of the bodily involvement with ease and confidence.

4) I feel strongly that movement and gesture are important internalisation techniques for my students who are younger, or newer at singing. Its use diminishes and/or changes as students become more accomplished. I am concerned that some of the movements described seem to be static and held, rather than flow.

5) You have made me think that I probably should use these techniques more often than I do.

6) Have an option button for "I don't know" ... some questions you present about the use of gesture are quite complex concepts.

7) Horses for courses for students. Most students respond well to gesture in my opinion, but some people are more language based than others, so it doesn't work for everybody.

8) When using any movement I feel that it is always important to explain why I am using it & what is the outcome I am trying to achieve. I always try to select movements/gestures that are relevant to the student level of development & comfort, building on these as appropriate.I keep aware that too much can detract from the enjoyment for an inexperienced student & often be confusing. Less is often more!

9) Fantastic work! I look forward to reading your results and conclusions.

10) Every student learns differently, so a teacher should have as many tools for teaching at their disposal so that they can provide many options for their students to learn the craft of singing.

11) Great study! I felt some of the questions needed a few positive/negative options thrown in. I felt only one or two had that (eg, Q27).

12) Very good aspect of teaching to be researched. Thank you.

13) Wonderful subject. Singing is so much more than just the voice. The emotions, dramatic content of the song, the cathartic effect etc. The whole body and spirit have to be involved.

14) Singing is a whole-body experience, and to access the full capabilities, we must use our bodies!

15) I teach contemporary/rock/pop/jazz, not opera, so my response may be somewhat different to others

16) What a great area of research. I have found gesture and body movement to be invaluable in unlocking my own voice, and in my teaching and conducting. However, doesnt work with all students. Some students are really locked up physically - and this is also reflected in their voice.

BDG

1) I'm glad about the internet-age and its possibilities to partake in current topics beyond one's own immediate cirle and to thus keep one's mind open

Ich freue mich über das Internetzeitalter und die Möglichkeit an aktuellen Themen über den eigenen Umkreis hinaus partizipieren zu können und so den Blick offen zu halten

2) I like to respond to the student's spontaneous movements and gestures because they originate in his/her system and spell out something that the student is otherwise not aware of. I might query certain aspects which can sometimes change the movement towards greater coherence and congruence. Prescribed movements can only ever be a first impulse, a point to start to search from (as Feldenkrais suggests)

Ich gehe gerne auf spontane Bewegungen und Gesten des Schülers ein, da sie aus seinem System kommen und etwas verdeutlichen, was der Schüler sonst nicht bewußt wahrnimmt. Dabei stelle ich Fragen, die die Bewegungen u.U. dann verändern hin zu mehr Stimmigkeit und Kongruenz. Vorgegebene Bewegungen können immer nur ein erster Impuls sein, mit dem dann gesucht wird (im Sinne von Feldenkrais).

3) The suggested 15 minutes are not enough to complete the survey!

Die angegebenen 15 min reichen nicht zur Bearbeitung!

4) A very exciting survey for me as the topic 'body' arises again and again in the voice lesson evoking greatly divergent opinions. I realized trough this survey that I would like to grapple with this subject once again and more intensively. Thanks for that!

Eine spannende Umfrage für mich, da das Thema "Körper" im Gesangsunterricht immer wieder auftaucht und es dazu wahnsinnig viele verschiedene Meinungen gibt. Durch diese Umfrage ist mir bewusst geworden, dass ich mich mit diesem Thema nochmals intensiver auseinandersetzen möchte. Danke dafür!

5) The problem is that many questions must be answered with a clear YES and NO, because pedagogic movements must never be ends in themselves but must be employed depending on the deficiencies of a student

   Das Problem ist ja doch, dass viele Fragen mit einem klaren JEIN zu beantworten sind, da die pädagogischen Bewegungen nie Selbstzweck sein dürfen, sondern je nach den Defiziten des Studenten eingesetzt werden sollen.

6) The wording of your questions suggests that colleagues encourage body-exercises without knowing their effect. I find this very worrying!

   Der Formulierung Ihrer Fragen entnehme ich, dass Kollegen Körperübungen ausführen lassen, ohne deren Wirkung zu kennen. Das halte ich für sehr bedenklich!

7) This cannot/hardly be done in 15 minutes if one wants to answer reasonably conscientiously. I'm looking forward to the result of your work

   In 15 Minuten ist das kaum/nicht zu schaffen, wenn man es einigermaßen gewissenhaft beantworten will! Ich freue mich auf das Ergebnis Ihrer Arbeit.

8) I wish you good luck and most importantly great joy with your future work. Never forget that thoughts are the first energetic movements of the mind that manifest themselves in the body. Mental-techniques are a large and exciting field! With friendly regards, M.E.K.

   Ich wünsche Ihnen bei Ihrer weiteren Arbeit viel Erfolg und vor allem große Freude. Vergessen Sie nie, dass die Gedanken die ersten energetischen Bewegungen des Geistes sind, die sich im Körper manifestieren. Die Mentaltechniken sind ein neues großes und spannendes Feld! Mit herzlichen Grüßen Margarete E. Klotz Stuttgart

9) Thanks for this survey about a subject that concerns me very much. I'm very interested in your results. Good luck with your research!

   Danke für diese Umfrage zu einem Thema, das mich sehr betrifft. Es interessiert mich sehr, von Ihren Ergebnissen zu erfahren. Viel Erfolg bei der Arbeit!

10) I find this survey somewhat unnecessary as I don't know an single singing pedagogue who doesn't use gestures in order to illustrate the invisible physiological mechanisms in the body, overcome technical difficulties or express emotions. Its all but logical!

   Ich finde die Umfrage etwas überflüssig, da ich keinen einzigen Gesangpädagogen kenne, der nicht mit Gesten arbeitet, um die unsichtbaren

physiologischen Vorgänge im Körper zu verdeutlichen, Technische Schwierigkeiten zu überwinden oder Emotionen auszudrücken etc. Das ist doch völlig logisch!

11) The answers depend on whether students sing oratorio (static posturs) or musical theatre/operatic arias.

Die Beantwortung der Fragen richtet sich danach, ob die Schüler Oratorien (statische Haltung) oder Musicals bzw. Opernarien singen.

12) Firstly: Whenever I combine body-exercises with voice repertory or vocal exercises, I usually have the same phrase sung again without the body-movement but with a focus on its effect. Generally I recommend to always also sing phrases without movement. Secondly: It always depends on the individual if he/she wants to accompany a performance with gestures. There are boring performances with lots of gestures and exciting ones with total physical tranquility. It's got to be coherent. Thirdly: The critique that students who are being confronted with movements in their lessons cannot stand still on stage is irrelevant. A pedagogic means is only valuable for performance if it can be integrated. One also does not intersperse vocal exercises into an aria – only mentally. In the end its all about the inner attitude.

1. Wenn ich Körperübungen mit Gesangsliteratur oder Stimmübungen verbinde, mache ich in der Regel dieselbe Phrase anschließend ohne Körperübung, aber mit Fokus auf die Nachwirkung. Grundsätzlich empfehle ich immer wieder Phasen, in denen auch ohne Bewegung gesungen wird.2. Grundsätzlich hängt es von der jeweiligen Person ab, ob sie den Vortrag mit Gesten begleiten möchte, oder nicht. Es gibt gestenreiche Vorträge, die langweilig sind und solche mit völliger Körperruhe, die sehr anregend sind: es muss passen. 3. Die Kritik, das SchülerInnen, die im Unterricht mit Bewegungen konfrontiert sind, später auf der Bühne nicht still stehen können, ist nichtssagend: jedes didaktische Mittel ist im Konzertfall so viel wert, wie es integriert ist. Auf der Bühne werden auch keine Stimmsitzetüden in eine Arie eingeschaltet - höchstens mental. Im Endeffekt muss die geistige Haltung da sein.

13) It sings with me, I show myself in the songtexts, I enjoy myself (experience of bliss) in beautiful singing and in the internalization of the text.

Es singt mit mir, ich bekenne mich in den Liedtexten, genieße mich (Lusterlebnis) im schönen Singen und in der Verinnerlichung des Textes.

14) It is highly commendable that young singing pedagogues grapple with methodological questions in such detail

Es ist sehr lobenswert, wenn angehende Gesangspädagoginnen sich derart detailliert mit methodischen Fragen auseinandersetzen.

15) For some students body-work is a great help, but there are also students for whom it is rather a detour. In any case the human should have a good feeling with and for his/her body.

Es gibt Schüler da ist Körperarbeit eine große Hilfe, es gibt aber auch Schüler für die ist es ein Umweg. auf jeden Fall sollte der Mensch ein gutes Gefühl mit und zu seinem Körper haben.

16) Body-language can be very helpful, a few students however are emotionally and physically blocked to an extend that makes this aid useless for them

Körpersprache kann sehr helfen, einige wenige Schüler sind emotional und körperlich sind blockiert, dass ihnen diese Hilfsmittel überhaupt nicht hilft.

17) In performance I find gestures that don't grow from the inner dramatic composition nonsensical and obstructive.

Beim Vortrag halte ich Gesten, die nicht aus der inneren Dramaturgie entstehen, für unsinnig und hinderlich.

18) Some questions are (at least in German) not clear enough. I want to point to my commentary to question 25 ("I differentiate between two movement-types: momentum emphasized or leading emphasized. For the first (momentum) movement exercises can be very helpful, for the leader-types, they tend to be an inhibition for a long time.If the movement-type has not been determined correctly, a gesture can also be detrimental.

Manche der Fragen sind nicht eindeutig genug formuliert (jedenfalls in Deutsch) Ich möchte ausdrücklich auf den Kommentar zu 23 verweisen, hier kann wirklich der Einsatz von Gesten, wenn der Bewegungstyp falsch eingesetzt wird, auch negative Wirkungen zeigen. Ich unterscheide zwischen 2 Bewegungstypen: Schwungbetont oder Führungsbetont. Für erstere (Schwung) können Bewegungsübungen sehr hilfreich sein, für die Führungstypen jeweils für lange Zeit eher hemmend")

19) I find this study very important and am very interested in the result

Die Studie finde ich sehr wichtig und bin an deren Ergebnis sehr interessiert

20) I wish you great success!

Ich wünsche Ihnen viel Erfolg !

21) Very interesting topic! Are you also looking into functional connections between movement and larynx? I would be very interested to hear any conclusions! Many thanks for the interesting questionnaire!

Sehr interessantes Thema! Beschäftigen Sie Sich auch mit den funktionalen Zusammenhängen von Bewegung u Kehlkopf? An den Schlussfolgerungen wäre ich sehr interessiert! herzlichen Dank auch für den interessanten Fragebogen.

22) Good survey, many thanks for your work! I have learned according to Martienßen-Lohmann[116]-technique and the 'Functional voice training". Gestures must lead an independent existence – or one would come to depend on them. Used targeted they were always a part of my teaching. Communication is 90% body-language!

Gute Umfrage, vielen Dank für Ihre Arbeit! Ich habe nach Martienßen-Lohmann-Technik studiert und dann "Funktionales Stimmtraining". Gesten dürfen sich nicht verselbständigen- sonst würde das in eine Abhängigkeit führen. gezielt eingesetzt gehört das immer in meinen Unterricht. Kommunikation ist zu 90% Körpersprache!

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[116] F. Martienßen (1887 – 1971) and P. Lohmann (1894 – 1981) renowned German voice pedagoagues

Appendix C: Explanatory statement (experiment participants)

![Monash University logo]

June 7 2011

Explanatory Statement – Participants (students and staff at Monash University and The University of Melbourne

Title: **Gesture and Body-Movement as Teaching Tools in the Voice Lesson**

This information sheet is for you to keep.

Student research project

My name is **Julia Nafisi** and I am conducting a research project with **Dr Jane Southcott** a **senior lecturer** in the Department of Education a B.Mus., B.Mus.Hons., Grad. Dip. Ed., M.A. (Music Education), PhD at Monash University and associate supervisor **Associate Prof Neil McLachlan** (B.Sc. (Hons), PhD), University of Melbourne, Faculty of Medicine, Department of Psychological Sciences. I will be writing **a thesis which is the equivalent of a 300 page book.**

Why did you choose this particular person/group as participants?
Participants have been recruited from Monash University Faculty of Education as well as the Melbourne Conservatorium of Music, University of Melbourne in order to invite participants of diverse singing backgrounds to take part in the experiment.
The sole initial selection criterion is the participants' interest in taking part in the study, which implied a general openness to the notions of singing and movement.

The aim/purpose of the research
The aim of this study is to investigate the validity of the use of gesture and/or body movement as teaching and learning tools in Western Classical Singing.

Possible benefits
The benefit for the participants lies in having an opportunity to try out a number of vocal exercises in conjunction with gestures/movements that are potentially conducive to tone production and in gaining an interesting insight into the teaching of singing.
The benefit for society as a whole will lie in increased knowledge about the way body and mind interact in the learning of intricate motor skills such as those necessary for producing a singing tone.

What does the research involve?
The study involves four one-on-one sessions with the researcher of approximately 30min for the initial session and 15min for the three consecutive ones. In these sessions a number of simple vocal exercises will be worked on using different approaches. These sessions will be audio and video taped.

How much time will the research take?
Each participant will be asked to participate in one 40min and three 20min voice lessons with the researcher (total time commitment: 1 hour 15 min).These sessions will be held at Monash University and the Melbourne Conservatorium of Music during semester 2, 2011

Inconvenience/discomfort
There will be no discomfort nor inconvenience incurred

Payment
There will be no payment

Can I withdraw from the research?
Participation in this study is completely voluntary meaning that you are under no obligation to consent to participation and you are free to withdraw your consent at any time during the course of the study.

Confidentiality
Participants will be identified by number codes, the key of which will remain in the hand of the researcher at all times. Extracts of the audio recordings of each participant will be analysed using computerized acoustic analysis methods and will be played to a panel of expert listeners for evaluation but there will be no way for the panel to connect a voice to a name. The video recording is made chiefly for the internal use of the researcher and her supervisor. Images that might be used in the thesis will be made unidentifiable by blurring the participants' faces.

Storage of data
Storage of the data collected will adhere to the University regulations and kept on University premises in a locked cupboard/filing cabinet for 5 years. A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report.

Results
If you would like to be informed of the aggregate research finding, please contact **Julia Nafisi** on **0414 812 089** or Julia.Nafisi@ monash.edu.au The findings are accessible for **5 years**

If you would like to contact the **researchers** about any aspect of this study, please contact the Chief Investigator:	If you have a **complaint** concerning the manner in which this research**<insert your project number here, i.e. 2006/011>**is being conducted, please contact:
Dr Jane Southcott ███████████ ████████████████	Executive Officer Standing Committee on Ethics in Research Involving Humans (SCERH) Building 3e Room 111 Research Office Monash University VIC 3800 ██████████████ ████████ ████████████ ██████████████

Thank you.

████████████████
████████████████

Julia Nafisi

Appendix D: Consent Form (experiment participants)

Consent Form – Experiment Participants

Title: Effects of Gesture and Body-Movement of the Singing Tone

NOTE: This consent form will remain with the Monash University researcher for their records

I agree to take part in the Monash University research project specified above. I have had the project explained to me, and I have read the Explanatory Statement, which I keep for my records. I understand that agreeing to take part means that:

List all procedures relevant to your data collection – delete those not applicable

I agree to engage in four experimental singing lesson with the researcher

☐ Yes ☐ No

I agree to allow the experimental singing lesson to be audio-taped and video-taped

☐ Yes ☐ No

and

I understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without being penalised or disadvantaged in any way.
and
I understand that any data that the researcher extracts from the experimental singing lessons for use in reports or published findings will not, under any circumstances, contain names or identifying characteristics.

and
I understand that data from the experimental singing lesson transcript and audio/video-tape will be kept in a secure storage and accessible to the research team. I also understand that the data will be destroyed after a 5 year period unless I consent to it being used in future research.

Participant's name , Signature, Date

Appendix E: Pre-experimental Questionnaire

Participant Name_____ No_____

1. You are
    a. Male
    b. Female
2. Your age
    ____years
3. You singing background
    a. You have **no singing experience** but enjoy singing around the house, under the shower, to your kids, along with the radio or you never sing but would like to give it a go in any case
    b. You have **some singing experience** like you used to sing in a choir/school musical and/or you sometimes sing karaoke...etc
    c. You have **rather substantial singing experience** as you sang in a choir for years and/or currently do so, used to have singing lessons for at least a few months and/or still sing regularly
    d. You are an **active singer** that is singing is an important part of your life as you are e.g. voice major at University or have regular private lessons and/or are currently involved (as singer) in a musical production
4. Movement... (multiple answers possible)
    a. You love to move and consider yourself very well coordinated
    b. You love to dance
    c. You hate sporting activities
    d. You love the out-doors
    e. You love sporting activities
    f. You are basically a "couch potato"
    g. You love to move but are unsure about your coordination and sometimes feel rather clumsy

h. You talk "with your hands" a lot

i. You do not particularly like to move and prefer quiet activities

j. Your learn best by "doing"

k. You learn best by reflection

l. You find the notion of expressing yourself in movement rather embarrassing

Appendix F: Post-experimental questionnaire

Participant No_____

1. Did you do any home practice?
    a. Yes
    b. No

2. Did you find any development/improvement in the how you sang the four exercises over the course of the four weeks?
    a. Yes
    b. No (please go to question

3. In what way have the exercises (i.e. the quality of your vocal tone in singing them) changed? (multiple answers possible)
    a. Voice has gained in resonance
    b. The required vowels have become more defined
    c. It was easier to maintain an even legato line
    d. Vibrato has become more even and consistent
    e. The onset in staccato has become clearer
    f. Less physical tension when singing
    g. My breathing became deeper
    h. Other (please describe)

    _____

    _____

    _____

4. Two were taught and practised with verbal instruction only. This approach has been called *NGM* (*No Gesture and Movement*). The other two were taught and practised with the incorporation of certain gestures and body-movements. This approach has been called *GM* (*Gesture and Movement*).

    Did you find that there has been a difference in how the exercises have improved depending on whether the NGM or GM approach was used?
    a. No. Exercises have improved equally with both approaches.
    b. Yes. The NGM Exercises (words only) have improved more
    c. Yes. The GM Exercises (with gesture/movement) have improved more

5. Considering that both approaches might have effected *some* change in vocal quality, please indicate which changes you associate particularly strongly with one of the teaching/practise approaches. Please circle the relevant letter(s), corresponding to the possible changes in quality given in 3.

    a. NGM   a – b – c – d – e – f – g – h

    b. GM   a – b – c – d – e – f – g – h

6. Which teaching/practise approach did you prefer?

    a. NGM

    b. GM (Please go to question 8)

    c. None (No more questions - Thank you !)

7. Why did you prefer the NGM approach (multiple answers possible)

    a. Prefer to understand things just rationally

    b. Feel awkward moving

    c. Found the instructions and gestures/movements confusing

    d. Found the gesture/movement distracting

    e. Found the gesture/movement embarrassing

    f. Other (Please explain)

    _____

    _____

    _____

8. Why did you prefer the GM approach (multiple answers possible)

    a. The gesture/movement helped me relax

    b. The gesture/movement helped me visualise the sound and phrase

    c. The gesture/movement provided something to do and to focus my attention on

    d. The gesture/movement helped my body understand what specific sound I wanted to produce.

    e. The gesture/movement gave me better breath control

    f. Other (please explain)

    _____

    _____

    _____

    THANK YOU !!

Appendix G: Invitation (On-line listeners)

Dear Colleague,

May I ask you to lend me your expert ear.

I am a researcher, voice teacher and singer from Australia investigating the *role of gesture and body-movement in the teaching of Western classical singing technique* for my PhD. In this context, I am seeking expert listeners in the US, Canada, Australia, the UK and Germany (selected members of NATS, ANATS, AOTOS and BDG) to anonymously evaluate recordings that came out of a recently conducted experiment.

Evaluation consists of listening to and comparing a group of brief voice files and will take 5 - 6 minutes.

If you wish, you can however evaluate more than one file group by clicking on "do another evaluation" after submitting your first evaluation.

Your help is highly appreciated!

To access the evaluation, please click on the following link:

http://edu.monash.edu/research/projects/listener-evaluation/

For more information, please contact ▉▉▉▉▉▉▉▉▉▉▉▉▉▉ or my supervisor Associate Professor Jane Southcott ▉▉▉▉▉▉▉▉▉▉▉▉▉

Many thanks and best regards,

Julia Nafisi

Appendix H: Home Practice Diary

(First page of the Home Practice Diary same journal was given in the three subsequent weeks)

Home Practice Diary

Participant Name _____No __

Exercises with Gesture/Body Movement (GM): a – b – c - d

Exercises without Gesture/Body Movement (NGM): a – b – c - d

Home practice is <u>optional</u> and but if you practise, it is requested that you practise each exercise in same the way in which the exercise has been introduced and taught i.e.

exercises which have been taught incorporating gesture and body movement (GM) should also be practised with gesture and body movement, whereas

exercises that have been taught with verbal explanation and without the incorporation of gesture and body movement (NGM) should also practised that way.

Please refer to the handed out description of your exercises

It is important that the two approaches are not mixed in practice.

Please make a note of the date and time spent on each individual exercise and include any thoughts or comments you might have in regards to your practice, vocal progress etc.

Date	Warm-up time spent and comment	Exercise I NGM/GM time spent and comment

Continuing for every day of the participant's trial

Appendix I: Track Sheet

(Sample of track sheet for session 1, data of subsequent sessions have been recorded on similarly laid out forms)

Date: 2011

Participant Name: _____ (No___)

Exercise I   a   b   c   d   NGM   GM
        a

Exercise II   a   b   c   d   NGM   GM
        b

Exercise III   a   b   c   d   NGM   GM
        c

Exercise IV   a   b   c   d   NGM   GM
        d

Start time:_____   Warm up: ___min

Base Line Value (first recording)

Exercise I range _____   File No _____

Exercise II range _____   File No _____

Exercise III range _____   File No _____

Exercise IV range _____   File No _____

1st Intervention: Second recording:

Exercise I _____min   Range _____ File No _____

Exercise II _____min   Range _____ File No _____

Exercise III _____min   Range _____ File No _____

Exercise IV _____min   Range _____ File No _____

End Time:_____

Comments:

Appendix J: Explanatory statement (expert listeners)

MONASH University

Feb 4 2012

Explanatory Statement – Expert Listeners

Title: **Gesture and Body-Movement as Teaching Tools in the Voice Lesson**

This information sheet is for you to keep.

Student research project

My name is **Julia Nafisi** and I am conducting a research project with **Dr Jane Southcott** an Associate Prof in the Faculty of **Education**, associate supervisors **Associate ProfNeil McLachlan**), University of Melbourne, Faculty of Medicine, Department of Psychological Sciences and Dr Sally Collyer. I will be writing **a thesis which is the equivalent of a 300 page book.**

Why did you choose this particular person/group as participants?
These participants have been specifically chosen because of their expertise as professional voice teachers as they will be asked to listen to and evaluate a number of voice recordings.

The aim/purpose of the research
The aim of this perceptual study is to gauge any effect of on the quality of the vocal tone.

Possible benefits
This study will help to assess the benefits of the use of gesture and body-movement as a teaching and learning tool in the voice lesson.

What does the research involve?
The study involves listening to a number of very short voice files and marking any perceived change in vocal tone quality on an evaluation sheet. This evaluation can be done online.

How much time will the research take?
The research will take about 5-10 min.

Inconvenience/discomfort
There will be no discomfort nor inconvenience incurred

Payment
There will be no payment

Can I withdraw from the research?
Participation in this perceptual study is completely voluntary and participants can withdraw from the study before submitting the evaluation. Once the evaluation has been submitted it will be entered in the pool of data.

Confidentiality
The online evaluation is completely anonymous.

Storage of data
Storage of the data collected will adhere to the University regulations and kept on University premises in a locked cupboard/filing cabinet for 5 years. A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report.

Results
If you would more information or like to be informed of the aggregate research finding, please contact **Julia Nafisi** on ▓▓▓▓▓▓▓ or ▓▓▓▓▓▓▓▓▓▓▓▓ The findings are accessible for **5 years**

If you would like to contact the **researchers** about any aspect of this study, please contact the Chief Investigator:	If you have a **complaint** concerning the manner in which this research **CF10/1991 - 2010001114** is being conducted, please contact:
Dr Jane Southcott Faculty of Education Monash University VIC 3800 ▓▓▓▓▓▓ ▓▓▓▓▓▓▓▓	Executive Officer Standing Committee on Ethics in Research Involving Humans (SCERH) Building 3e Room 111 Research Office Monash University VIC 3800 ▓▓▓▓▓▓▓ ▓▓▓ ▓▓▓▓▓ ▓▓▓▓▓▓

Thank you.

▓▓▓▓▓▓▓▓

Julia Nafisi

Appendix K: Online evaluation explanations

Dear colleague,

Thank you for volunteering your expertise as a voice professional and teacher of singing by acting as an expert listener in this perceptual study.

The study

An experiment was conducted to determine the effect of different teaching interventions (with or without incorporating Gesture and/or Body-Movement) on the quality of the vocal tone in Western classical singing. Participants - ranging in terms of their singing backgrounds from 'very little' to 'substantial' - were led through some simple vocal exercises which were then worked on over four consecutive sessions. Each participant's first attempt (before any teaching intervention) at an exercise was recorded as base line value A. Consecutive attempts after various teaching interventions were recorded as B and C.

Evaluation procedure

Each listening unit consists of three tracks; on track A-A you hear twice the same two phrases of a participant's first attempt at a particular vocal exercise. This establishes this singer's base-line value of a particular exercise.

On track A-B, you hear A again followed by a recording of the same two phrases by the same singer after a teaching intervention has taken place: B. **Comparing B to A, please indicate any perceived change in vocal quality by marking it on the rating scale.**

On track A-C, you hear A again followed by a recording of the same two phrases by the same singer after another teaching intervention has taken place: C. **Comparing C to A, please indicate any perceived change in vocal quality by marking it on the rating scale**.

The term 'vocal quality' has deliberately been left open to your own interpretation..

The rating scale goes from '-5' (change for the worse) to '5' (change for the better). As a guide: '1' (or '-1') would be a very small change and '5' (or '-5')a dramatic change within the limits of what can be expected as an immediate result of a teaching intervention.

The file units A-A, A-B and A-C are organized into Listening Evaluation Groups (LEG) consisting of five listening units each. A minimum of one LEG must be completed for your evaluation to be submitted. **Evaluation of one LEG will take about six minutes**

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