

Brass Tax

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Brass tax: the musically and physically painful consequences of unintelligent breathing. Ten years after beginning my studies at the Royal Academy of Music I began training with Don Burton in Cumbria to become an Alexander Teacher. I have sometimes wished I could have done it the other way around, but looking back now, I see that it couldn't have been any other way. Many moments from both periods of study have taken on greater significance, influencing my approach to working with brass players nearer the beginning than the end of their playing life.

I am still gaining insights into what my horn teacher; Derek Taylor had tried to impart to me in my earlier training. One of his phrases was 'Minimum effort with maximum effect'. I liked the idea at the time, but I didn't have a clue how to put it into practice. A few times it happened inadvertently. For a couple of days at a time I experienced total ease at the horn and couldn't play a wrong note. These times did not last long and were usually brought to an end by bouts of continuous, long, loud (Derek would have said 'coarse') playing. I would now add 'end-gaining', 'tightening' and 'shortening' as descriptions of what I was doing.

As a performer, inhibiting such tendencies is one of the biggest tasks at hand, not helped by many conductors who can't get enough of the brass (especially the horns) and will egg them on beyond the boundaries of taste and reason. I recall Derek's voice urging me to think of 'quality' in my playing (I would now translate that as 'keep freeing the neck'). He talked to me of tension in my shoulders interfering with my playing but through faulty sensory appreciation I couldn't feel that they *were* tense. He suggested I strive for absolute accuracy each time I played a note *and* think about what I was doing before I did it but my reactive and impetuous nature had not yet been introduced to the concept of inhibition. So I continued to practice my mistakes until they were, unfortunately, second nature.

The consequences of my lack of understanding came to a head four years after leaving the Academy. A slight vibrato in my playing, which fellow students had noticed but I had been unaware of, had over time become a huge uncontrollable wobble affecting my every performance. The freedom to turn my head was severely restricted and I had continuous shoulder and neck pain. Like a time bomb waiting to go off, it duly exploded late one night when I tried to play a quiet solo after successfully competing in volume with the rest of a 13-piece jazz group.

It was at this point that I met the horn player Pip Eastop and asked him for help. He suggested I go to an Alexander Teacher for lessons. I immediately felt the benefit and a few years later started to train as an Alexander teacher with Don Burton. Thinking back, one day in particular sticks in my mind. Don used to get students to strip down to their underwear and observe each other's backs. He studied mine and then asked

the rest of the students to say what they could see. Many observations were made but none of them got to the crux of the matter. What Don observed was that the left side of my back was vast and muscular and the right side was very collapsed and narrowed. He then gave an inspirational anatomy lecture, indicating the exact nature of my mis-use and proceeded to get my back working with hugely improved use. He ended by saying something to the effect of: "This is a lifetime's work, Patrick. Good luck!"

I think it was soon after this that I began to harbour grandiose ideas of revolutionizing the brass world with insights from the Alexander technique, thereby helping its players to achieve truly effortless playing. I wanted to be able to say that it was solely the Alexander training that had transformed my approach to playing. At a certain point it dawned on me that I needed the help and experience of someone who already straddled both worlds. I turned once more to Pip, this time for horn lessons with a difference, for he had also trained with Don. So I have really had three trainings, which have brought me to where I am now and which go on inspiring me in my work.

All the damned fools in the world believe they are actually doing what they think they are doing. (F.M Alexander)

When working with music students' two issues come up most often; breathing and supporting the instrument. I will go into the first at some length because it provides the foundations for the second. In the Alexander world, we take the view that breathing functions in relation to the overall use of the individual. In brass playing, it is often dealt with as a subject in its own right, with little recourse to its place in the whole functioning of the body - here I generalize, for there are both teachers and players who are in tune with our way of thinking. Central to this way of teaching, and common to the curricula of wind players and singers, is that the student needs to be *taught* to use their diaphragm. Working with anyone who is trained in this way we have, as Alexander teachers, to be able to counter-balance these ways of thinking about the breath and use of the diaphragm.

Considering the diaphragm

The first thing about the diaphragm that needs to be made clear is that we cannot actually stop it from working. The second thing that needs to be established is that when its muscle fibres contract, the movement that is brought about is of the diaphragm descending. It sucks air in; it does not blow it out. So, anatomically, the diaphragm is the principal muscle of inspiration, yet many eminent performers and teachers would have us believe that we should consciously activate the diaphragm to control expiration. In reality, it is the muscles that make up the front of the abdominal wall that we need to conscript.

I always ask students to indicate on themselves where they think the diaphragm is, how high and how low. There is always a fairly wide variation in placement. During this talk, I took the liberty of asking my audience the same questions. There was unanimity on the initial part of the question whereas, on the height and depth of its extremities, there were

some variations. The unanimous showing of its position was at its costal origin, the internal surfaces of the lower six ribs and their costal cartilages. Its muscular filaments reach up and insert into the domed central tendon. Its height and depth brought a few variations.

The height of the dome of the diaphragm can be found by placing the tip of a finger in the relatively soft intercostal muscle between the fourth and fifth ribs on the right, and between the fifth and sixth ribs on the left. Because of this disparity between the two levels of the diaphragm's dome, (they are called the right and left "cupolas") its foundations need two different depths, too. The forces at work create demands for deep and powerful muscular attachments onto the spine, called the crura. The right crus has a more extensive origin (onto the bodies of the first three lumbar vertebrae) than the left (onto the first two). The right side needs greater strength because the descending diaphragm has to pull down upon the greater bulk of the liver (1/24th the body's weight) while, on the left side, there is sometimes an empty stomach. To get a tactile sense of where this lowest part of the diaphragm reaches, the body of the third lumbar vertebra is at the height of the belly button. If you find the brim of your pelvis and follow it round into the back, the spinous process of the same vertebra can be felt a little lower.

Breathing more easily

In quiet breathing the diaphragm can work adequately on its own, the central tendon descending about 1.5 cm. In deeper breathing the diaphragm increases all three dimensions in the thorax and is aided by the external intercostals, which help to open the ribs. This happens with great ease when these muscles form part of a lengthening and widening back. One part of the lungs in particular that suffers in the "collapsed state" is the back of the lower thoracic area, the costo-diaphragmatic recess. If the movement of the ribs here is not free, the descending diaphragm's ability to maintain the length of its muscular component while contracting is inhibited. What is lost is the expanded diameter of the lower margins of the ribs. Also, if the central tendon descends as far as it can go, meeting resistance from the abdominal contents, then the diaphragm lifts the ribs up and out. I'd like to underline at this point that although we talk of a muscle contracting this does not mean that the muscle has to shorten. With the Alexander work we have the potential to use a muscle at work or at rest without it changing its resting length. During deeper inspiration, the scalenes and sternocleidomastoid elevate the upper ribs and greater activity occurs in erector spinae and muscles connecting the upper limb to the trunk.

The diaphragm's relative position in the thorax is lower in individuals who are habituated to a collapsed and shortened condition. In this state, one way to achieve a satisfactory descent is to balloon the belly out. In some cases when this happens, the downward and forward movement of the abdomen can create a pull on the third lumbar vertebra which results in it being moved in and out like a drawer. This was observed in me when I first arrived at Fellside. I can demonstrate it still, though repetition leaves me in some discomfort. Once, when trying to convince me of what was happening, Don put all his body weight onto my belly while I was in semi-supine on a table. He was easily lifted with no discernable effort or discomfort on my part. At that time, I could not breathe in

any other way!

We are all familiar with the comparative ease of awareness that pupils have with the front of their bodies compared with their backs even in the simplest Alexander work. The soft tissue of the anterior abdominal wall (the belly) is, by its very nature more yielding than the posterior abdominal wall, even though in most people these muscles are in a contracted state. Therefore, expansion into the back needs to be encouraged over and above that of the belly during inspiration. I am not advocating the total abnegation of abdominal movement, rather a redressing of the balance where the forward component is more present than the backward. The progress that I have made in achieving a more refined use has improved the sound that I am able to make on my instrument as well as the ease with which I am able to produce it.

The abdominal muscles, with the help of the internal intercostals, play a larger part in expiration than the diaphragm, though in quiet expiration they need not participate at all. These two muscle groups work antagonistically, constantly taking over from each other in their respective roles.

Raising awareness of 3D breathing

It is in the nature of all brass instruments that they provide resistance to the flow of air being put through them. This resistance becomes greater the higher and louder the music. In putting hands on bellies of musicians who have met these demands successfully for twenty or thirty years, I have sometimes felt what I can only liken to body armour. True abdominal walls? There are tales like that of the legendary horn player Dennis Brain having a conversation while a woman stood on his belly, just to show what control he had! As a horn student I was inspired by such stories, and practiced in a similar fashion, probably beyond the call of duty. As we know so well in our work, it is more difficult to switch muscles off than turn them on. We need to cultivate awareness in our brass-playing pupils of how much effort they are using. Nowhere is this more needed than in how they control the air stream with the abdominals. Because of their enormous combined strength, when these muscles are maximally contracted they have the ability to pull the whole physical structure down into them including muscles like *lattissimus dorsi*. This can happen during long sustained passages at high dynamics. It took me some years before I could reliably release these muscles after engaging them strongly while playing. They are brought into play in more harmonious ways when used for unvoiced consonants, so I get pupils to experiment with “shh”, “fff” and “sss”(in order of degree of strength). Gradually, they become aware of the different physical sensations that arise in the neck, chest and abdomen during this exercise. Eventually, awareness of the muscles brought into play also arises. Ultimately, the aim is for the player to be able to more consciously bring such combinations of muscular activity to bear in his or her playing.

The truth about the jazz pelvis

For some years I have observed subtle rhythmic flaring movements of the larger bones of the pelvis in pupils, synchronous with the expansion and contraction of the ribs during breathing cycles. It occurs to a greater or lesser degree with everyone I work with. Curiously, I have found no explanation of this phenomenon in any publications that I've read. I gained greater understanding through working with one pupil in particular. She'd

had her lowest four thoracic vertebrae fused together in an effort to halt an inherited degenerative spinal condition. I found her pelvis moved, but her lower ribs did not (hardly surprising given there was no movement possible through the related vertebrae). This suggested to me that it was the relationship to the diaphragm that was of more importance. Further study of the related anatomy revealed any number of connections responsible for my observations. A picture emerged for me that yet again confirmed the reality of connected thinking that is at the root of all our Alexander work and that the nice, neat, clean margins of muscles shown on anatomical charts do not really exist. In this part of the body, as in all other parts, where two muscles meet, fibres from both mingle together to form configurations unique to the use of the individual.

The relevance of this diaphragm-pelvis relationship to brass playing also started to change for me. The true extent of the furthest reaches of the diaphragm is much greater than I suggested earlier. Muscle fibres from the diaphragm meet and intertwine with muscle fibres of both quadratus lumborum and psoas. Quadratus lumborum has its origin on the iliac crest (you would have run your finger along this when finding the spinous process of the 3rd lumbar vertebra earlier) and inserts onto the 12th rib, stabilizing it to allow the diaphragm to exert greater downward thrust. The origins of psoas are from the 12th thoracic to the 5th lumbar vertebrae inclusive, and insert into the tendon of iliopsoas. Together they become iliopsoas and insert onto the lesser trochanter, high up on the inner surface of the shaft of the femur. It is the flexor of the thigh, and helps among other things, in balancing the trunk in sitting. It is a muscle of movement and is also an extension of the diaphragm. If we extend this trail of connection (with a strong spiral element) to its end, we go down the legs to the knee and end up on the big toe. The torso is basically an inflatable structure with the movement of the breath having influence wherever it is allowed to freely go. The “big” joints of the limbs (hips and shoulders) are probably the greatest obstacles to such freedoms.

I had often pondered why the pelvises of those who’ve been brass players for many years are frequently tightly held and with these ideas I had my answer. Recently, I witnessed a performance of Janacek’s Sinfonietta with ten young trumpeters standing in a row behind the orchestra. Nearly all of them showed the archetypal pose struck by so many of their antecedents (especially in the jazz, blues and rock worlds); pelvis thrust forward, knees locked back (I have to say, it still sounded fantastic!). This is the equivalent of tethering a stallion to a couple of posts, something has to give, and in the case of many players, it is the back that gives; though it may take years in some cases for the cracks to appear.

Sitting or standing?

Few brass students will end up performing standing up all the time, though they do usually stand when giving solo recitals or concertos, especially as part of their final studies. However, nearly all spend their instrumental lessons standing (excepting the larger instruments like the tuba), the reason given that the breathing works better and they are more able to move freely. We know that use plays a larger part here than whether they are seated or stood. Yet the major part of their playing life is going to be spent sitting down. There are also many whose breathing is freer when sitting because of poor use in standing, especially those women whose choice of footwear is decided more by fashion than practicality. This is particularly so in professional life where formal footwear is

concerned. So we need to work with players in standing *and* sitting; in both, one of the most helpful directions is “knees forwards and away”. This classic direction fits so perfectly with the rib and pelvic flaring movements I described earlier, that it is really just a continuation of them. Also, it’s useful for pupils to become aware of the ebb and flow of these movements, so that their directing is not just thrown over the proceedings like a blanket, but is kept alive, renewed and re-initiated.

Two more factors are important here. Firstly, when sitting, the hips need to be higher than the knees to enable the back to maintain a balanced state and also to take the weight off the thighbones and thus off the hip joint, a prime consideration when deciding on the appropriate height of any chair. This contributes to the second factor, that of making good contact with both sitting bones, bringing about the stimulation of the support reflex in the spine and giving the direction to drop the sacrum. These in turn create what has variously been described as an earthing, grounding or centering, which is subtly (but sometimes overtly) reflected in the sound. The degree to which this is maintained is a fairly good indicator of how far “out of centre” a player has been taken by their reactions. I always ask pupils whether they notice one sitting bone lifting off more than the other. I remember many years ago, going to hear Tchaikovsky’s 5th Symphony at the Royal Festival Hall with its big horn solo at the beginning of the slow movement. The player sat evenly on his seat with his feet on the floor for the 7 and a bit bars of introduction and then just before he played, both feet suddenly shot underneath the chair and crossed at the ankles! At that point, both sit bones were off the seat and his weight, instead of being transferred smoothly down through the pelvis into the chair was going through the thigh into it. Despite that it was beautiful playing, and when he’d finished, those feet went back on to the floor.

Besides all our usual ways of working in standing, getting students to play while balanced on wobble or balancing boards is helpful and standing on a small trampoline or “bouncer” produces a similar effect (especially when they return to the floor). Sometimes I will even ask the student to play while walking around (military and brass bands do it all the time). I often have Don’s voice echoing in my head saying, “we are designed first and foremost for movement”, and nowhere could this be more apposite than in talking of our breathing system. Working in the saddle can also produce surprising results with respect to finding the sitting bones. Experimentation with ways of picking up a pupil’s legs whilst playing in sitting can illuminate many aspects of the over use of the legs in sitting. I worked in the latter way at the end of my talk at the conference with a horn player called Kai Hoffman. Most impressively, she played the Tchaikovsky solo I mentioned earlier and there was a marked improvement in her sound - noticed by everyone - when she allowed her legs and back to release as I worked with her. I will come back to this change later. The procedure I used was to kneel beside her, lift her right leg by placing my right hand on her left knee and straighten my arm into the crook of her leg. I was able to monitor her lower back with my left hand. At one point, as she rushed a breath, I felt her leg being pulled back (as she did also) into the torso by those muscles connecting directly to the diaphragm.

Looking at supporting the instrument, the musculature providing connection of the arms

into the back shares its foundations with the moving and breathing structures I have described. Integration of the shoulders into these is vital to create reliable long-term support. Without this kind of understanding, many players and teachers opt for an approach based on increasing muscle strength to improve this area leaving the underlying use unchanged. Physical stamina is an obvious necessity and is often built up without any conscious decision on the part of the student, merely by putting in practice and performance time at the instrument. If unchecked, this kind of use can lead to over-developed muscles lacking freedom and flexibility with impaired functioning. Undoing the worst of the effects can be a lengthy process. I am reminded of another of Don's remarks that I find helpful: "our shoulders are still based on a design to swing us through the trees!" (In idle moments I fantasize about music colleges providing a room with a climbing frame for students to do just this!). Jamie McDowell does this, albeit in a more sophisticated way, teaching students as they hold the bars of specially constructed frames. One experience I had some years ago highlights for me the movement aspect of the whole arm/shoulder area. I had to conduct a wind sectional in the first half of a rehearsal and play a taxing horn solo in the second half. The ease and comfort I found in supporting the horn was similar in result to having just had a turn from the great Don himself!

Getting back to the head and neck

The relationship of the head and neck to the shoulders is of the greatest importance when looking at how a student supports their instrument whilst playing. Bringing our observational skills to bear on the moments of preparation for playing, and on into playing, reveals a wealth of information about our pupils' use. If we have an on-going working relationship with them then we can usefully investigate any extraneous movements that repeatedly occur with musical events and look at them in the light of maintaining primary control. Merely asking questions about a particular habit; whether they realize they do it, do they have any choice over it, does it interfere in any way, can be helpful.

The throat area can unwittingly be over-used, so softening needs to be maintained through the musculature, especially sternocleidomastoid and the scalenes. Attention needs to be given to sudden changes of register and extremes of dynamics. While it may be obvious that loud playing leads many players into strong physical mis-use, quiet playing also brings about interference, fixing and stiffening. A hand on the back of the neck can reveal important information, especially during slurring and tonguing, highlighting the connection of the tongue and jaw to the skull behind its point of balance on the neck.

Bringing the instrument to the body, refraining from coming forward and down into it and keeping the front of the chest open are concerns for all brass players. Also some questions I find useful to bear in mind are; how are the shoulders in relation to the back? Are they maintaining their widening? Are the pectorals contracting the upper chest or allowing it to stay open? Are the upper parts of trapezius over-working and interfering with the neck? Is latissimus dorsi working to connect the arms into the back? Here I would also like to underline the connected thinking into the sacrum, pelvis and on into the legs.

Individuals and their use while playing differ so greatly that any attempt to talk about working with specific instruments can do little more than scratch the surface. However, I would like to mention a few observations. The trumpet has the greatest potential of all brass instruments for maintaining balanced symmetrical patterns of use. The likes of tenor horn, baritone horn and tuba follow after with the trombone and French horn presenting the greatest challenges to symmetry. For both trombone and French horn, the use of the arms is asymmetrical; with the trombone, the bent left arm needs to maintain the length of each successive part (to the elbow and then to the wrist). The joints of the right arm moving the slide need to stay free, especially the articulation between the scapula and the humerus, and particularly when the arm is fully stretched. Care also needs to be taken here to avoid interference with the head and neck.

With the French horn, too, the differing roles of the arms create potential for asymmetry. Maintaining width across the front of the shoulders and allowing the head to balance centrally when playing are important issues. All too often, the left shoulder is pulled forward and the right pulled back and collapsed.

In praise of being nosey

One question of great interest to me but which remains contentious in the brass (and woodwind) world is that of mouth versus nose breathing. The predominating view is that it is not possible to get enough air in quickly through the nose during passages of continuous playing. In talking to players about this, the majority uses the mouth unquestioningly and the rest nasal breathes only sparingly if they feel they have enough time. Yet we are designed to nose breathe from birth (we would not survive otherwise) and mouth breathing is really for emergency use. I would go so far as to say that remnants of the startle reflex are going to be present whenever mouth breathing is practiced. That players overcome such things (without ever knowing of their existence) through years of skilful practice goes without saying. Ultimately I am looking here to show pupils that they have a choice and invite them to choose consciously for themselves. Those who have been able to utilize this most effectively are oboists and bassoonists whose double reeds prevent large amounts of air being used. In contrast, some in the brass world are always working on perfecting techniques that encourage over breathing (which only reflects our culture's obsession with "deep breathing"). This is basically hyperventilation. I always ask pupils if they ever get dizzy whilst playing and if they answer yes then I suggest that they need to breathe less through the mouth.

The air we breathe through the nose is filtered; its humidity, temperature and speed are regulated appropriately for entry into the lungs, which are essentially a moist environment and we avoid the mouth drying out (of great significance in relation to performance nerves!). In the words of the Yogi Ramacharaka in "Science of Breath", "One should no more breathe through the mouth than eat through the nose!"

When a player forms their embouchure, the muscles used are connected to those of facial expression, part of a continuous sheet wrapping around the skull. It takes less energy to

smile than to frown and these muscles are more efficiently connected into the whole head-neck balance when a sense of humour is present. (“We always lose it when we need it most and get it when we need it least”!). Nose breathing is enhanced when we have the thought of a smile by the nostrils and nasal passages opening up slightly. This is often accompanied by a “twinkle in the eye” (for which FM Alexander was renowned, I tell my students). When this happens, the intake of air is noticeably quieter (and through entering a hole of larger diameter, more air enters quicker) in contrast to a face that is masked or frowning. At this point I wish to underline that I am not saying that breathing through the mouth should never be practised. Rather, that it be used as and when appropriate through choice and not at the mercy of uncontrollable habit.

I would just like to end by referring back to a moment when working with Kai Hoffman during the conference. At the point of greatest change and expansion in her sound there was a muscular release and lengthening. What also occurred just before this was a flicker of light in her eye brought about by the sense that seems to me to be necessarily present in all great and aspiring musicians; a sense of humour.

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