

The Changing Female-To-Male (FTM) Voice

Alexandros N. Constansis
University of York

Introduction

‘At the end of last millennium’, Stephen Whittle states when introducing *Reclaiming Genders*, ‘[...] transsexuals were rarely documented, except in myth and legend, or in documents from the church courts after their trials for blasphemy or sodomy.’¹ Though this is not the case anymore, the new level of attention is, at most times, a mixed blessing. Largely derived from a non-transsexual perspective, be it medical, general academic or tabloid sensationalism, this is one of the rare cases when attention equates to less visibility. Those who get noticed are those least compliant to a binarian, male-female, perspective. Considering that the purpose of ‘treatment’ provided to trans-individuals is to make them conform more easily within the binary, it is not surprising that insider views consider that ‘[...] transsexuals are continually and perpetually erased in the cultural and institutional world.’² This attitude has only recently begun to be counteracted by the increasing number of transacademic or activist works. However, most of these works frequently succumb to broad generalisations. My research project, ‘The Changing FTM Voice’, since its very conception in 2002, has aspired to help the new transvocal persona to be recognised and treated as a rightful individual, neither a subcategory nor an inconvenience. The history of this work, like other experimental material, bore an initially personal character. This article will reflect this quality when referring to the author’s own experience between 2003 and 2004. 1

Like most transsexuals, the writer started having clear indications of his gender dysphoria in early childhood. Gifted with an unusually deep speaking and singing voice as well as masculine manners from the start, he had to overcome issues of harassment and discrimination before reaching adolescence. Growing up in the transgender-unfriendly Greek capital during the late sixties and seventies, however, this led to introversion. The future author avoided the use of his voice in public. Fortunately, that struggle never turned him against his voice, which became his only solace until 1983 when he became a professional singer. Whether amateur or professional, though, his singing voice has always remained associated with his true self. Therefore, when in 2002 transitioning from ‘female’ to male became the only viable option, he became determined to take his voice with him on his journey. This article describes the methods and results of his own as well as other participants’ transition to a vocal manhood. The initially personal account, when first presented in public in 2004 following the completion of a one year programme,³ challenged conventional views about the inevitability of the loss of singing FTM voices during transition. The author 2

anticipated his own changes by initially focusing on academic works dealing with the closest possible equivalent – the vocal and general passage from childhood to adolescence and consequently to adult biomasculinity. However, other significant factors, such as age and laryngeal structure, started coming to the surface and needed to be taken into consideration. The challenge, as presented here in extended form, might be thought to have wider implications as well, to do with the relationships construed between constructions of gender, of voice quality and of the (vocalising) body; to do with – we might say – the ‘biology of culture’; or, to put it another way, with conceptions of ‘the natural’.

The present article might also be considered unconventional in basing its account to a substantial degree on autobiographical experience (though there are precedents for this in some branches of musicology) and, more radically, in founding itself in a method that could be described as an example not so much of a musicology of practice as one of practice as musicology. Is it possible that ‘practice’ might not only be informed by ‘theory’, but also work as theory?

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Personal Account

Anticipating my vocal changes, I had started research on changing voices based on *Working with Adolescent Voices* by John Cooksey. Nonetheless, attending my first FTM group meeting in August 2002 brought me face to face with two cases of what I now call ‘entrapped FTM voice’. This, as will be explained in detail in the next section, implies the disturbed analogy between growing vocal folds and *the encasing* of them in an established laryngeal structure.

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The two individuals were both over the age of fifty and had been on testosterone for an average of a year and a half. The speaking voices were characterised by permanent hoarseness, lack of control and colour, and limited power. Both resultant voices were in the end utterly unconvincing for transmen – singing was altogether out of the equation. At the end of the gathering, I managed to meet them in person and listen to their speaking voices in more detail. I slowly started to realise the full extent of the problem. At the next meeting, I finally got the opportunity to have a brief ‘touch’ of their larynxes (which surprised them both). This is a technique I had first seen demonstrated during a vocal osteopathy workshop in the final year of my BMus studies. The sizes of their larynxes were only slightly greater than those of average sopranos but were less supple to the touch, a factor not necessarily associated with their ages. Also the laryngeal structures were not properly descended but were somewhere in between adult male and female positions. I more or less anticipated the outcome, but was still surprised by the extent of underdevelopment.⁴ In fact, the incident can now fairly be considered to be the starting point for this research.

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The starting position for my 2004 paper was the statement that ‘most transmen report the loss of their singing voice, as well as of the effective use of their speaking voice, soon after the start of testosterone injections.’⁵ This was such a well-established truth within the field that it has rarely been scientifically challenged. For example, Gorton *et al.* clearly advised that ‘professional or amateur singers and speakers should be warned that frequently voice changes

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occur that may be significantly detrimental to vocal performance. These changes are both unpredictable and irreversible.’⁶

Though there are international variations in the prescribed hormonal regime, most FTMs are likely to start from the highest recommended intake. Even though the suggested hormonal preparation has been changed or amended since the days of my transition, the attitude supporting the abrupt testosterone start for FTM transsexuals has not been challenged sufficiently for a variety of reasons. These can include cost and waste, especially true when the transman is allowed to transition on Nebido, which is ‘a long acting testosterone undecanoate injection offered at 3 monthly intervals’.⁷ The remaining reasons, however, can be attributed mainly, as in the past, to inadequately individualised provision of care for transpeople worldwide. 7

During the days of my official transition in the UK, back in 2003, Levy *et al* stated that ‘the usual hormonal treatment [was] Sustanon 250mg intramuscularly every two weeks, or testosterone enanthate (Primoteston Depot) if the patient [was] sensitive to peanut (arachis) oil’.⁸ The reasoning was – and remains – that this will produce the testosterone levels able to quickly effect maximum masculinisation of the voice and body.⁹ After all, ‘the goal of treatment in female-to-male transsexuals,’ as Louis Gooren suggested, ‘is to induce virilisation, including a male voice pitch’, as well as produce general ‘male physical contours’.¹⁰ Similarly, during the same period, in the Netherlands, ‘the most commonly used preparations [were] testosterone esters in doses of 200 – 250 mg intramuscularly every two weeks’.¹¹ In the US, Gorton *et al* indicated in 2005 that the regime had more variation and ‘injected testosterone [was] started at a range of doses (25 – 125 mg / week depending on the patient and clinician) and titrated upwards based on clinical effects and trough levels.’ And the above continued by mentioning that ‘if lower doses are used initially, titration should probably be considered more frequently’.¹² However, we have to understand that lower doses, either in the UK or abroad, are often associated (especially by the TS community) with medical bias. As the following citation shows, this has even been recognised by medical practitioners. Here the writers indicate that ‘doubts about the integrity of transgender individuals and the authenticity of gender dysphoria as a diagnosis [...] may lead some members of the medical profession to withhold treatment or prescribe inadequate doses of cross-sex hormones on safety grounds’.¹³ The results for the transitioning transman can be socially and psychologically detrimental. However,, the present author decided to transition on a lower than usual testosterone intake. 8

This different stance was based on research as well as vocal experience.¹⁴ Not only my professional singing background but also my teaching had revealed to me that abrupt changes are rarely beneficial to the vocal instrument. Even in a flexible adolescent laryngeal structure and with gradual hormonal changes, the voice is tendered uncontrollable and of limited use for a certain period of time. This process could not but be aggravated when transferred to an almost fully-developed laryngeal and bodily structure and accompanied by abrupt and maximum hormonal alteration. The choice for me to accomplish my changes gradually, apart from potentially advantageous vocal results, for which I had no proof until later in 2003, had many important consequences. The most 9

significant of them was that I did not ‘pass’ and retained my visibility as a transperson for longer than usually expected. Many characteristics of the present work, especially its individual approach, are owed to this longer period of visibility. The methods described here were devised with the parameters affecting our voices in mind and then tested by me, a singing FTM in transition, during the years 2003 and 2004.

Voice Theory: Anatomy of the Vocal Tract

The vocal instrument truly involves almost the entire body, through mechanisms which include such factors as breathing, vibrations, *appoggio* (the muscular configuration underpinning breathing) and support. In fact, what we call vocal quality is associated with a variety of issues, such as the shape of the ribcage and lung capacity. Some of them can be highly differentiated by and dependent on a person’s bio-gender. Larynx – in iconic terms, the voice production centre of the human body – is particularly gender-reliant. Depending on its biological and hormonal imprint, size, shape and behaviour, for instance in terms of lowering, it can present us with significant differences. 10

As we read in Gray’s *Anatomy*, the shape of the human larynx ‘presents the form of a triangular box above, which is flattened behind and at the sides’. It is then ‘bounded in front by a prominent vertical ridge’. Below it the shape appears to be ‘narrow and cylindrical’.¹⁵ The laryngeal structure consists mainly of nine separate cartilages. These ‘comprise the single cricoid, thyroid, and epiglottic cartilages, and the paired arytenoid, cuneiform, and corniculate cartilages’.¹⁶ One very significant factor for the voice is that the cartilages behave differently during the ageing process. More specifically, as a person ages, even though these cartilages are all part of a common structure (i.e., the larynx), some of them tend to ossify early (e.g., the thyroid), while those that consist of hyaline cartilage converted to fibro-cartilage (e.g., the epiglottis) do not. Also, the process of ossification occurs at different stages in the person’s life for different laryngeal cartilages. For example, even though ossification starts only a few years after the full development of the larynx is completed (around age 25 for the thyroid cartilage and slightly later for the cricoid and arytenoids), these cartilages do not become truly osseous for most people until the person reaches the age of 60. By contrast, the corniculate cartilages (cornicula laryngis), which consist of fibro-cartilage, do not finally ossify until the person reaches about the age of 70. 11

Fundamentally, the larynx is the home of both the true and false vocal folds. A biological male’s true vocal folds are longer (20-25 mm) (a fact which is responsible for producing the lower fundamental frequency [Fo]) and thicker on average than those of a biological female (15-20 mm). In addition to that, a typical bio-man’s larynx is significantly bigger than that of a bio-woman.¹⁷ But what effect does the above information have on the FTM voice in transition? 12

As soon as an FTM person starts receiving testosterone treatment, he is always warned about the dramatic effects that it will have on his voice. However, when I began my own experimental work in 2002-2003, I had not encountered any transman who had also been given some means to properly deal with his 13

changing vocal instrument. The general consensus even relatively recently has been, as Shelagh Davies and Joshua Mira Goldberg characteristically state, that 'FTMs don't need speech services because testosterone will cause pitch to drop'.¹⁸ This, apart from being unfair to transmen, is also overtly simplistic as the writers admit very soon that 'testosterone doesn't always drop pitch low enough for FTMs to be perceived as male'.¹⁹ This had already been noted by Van Borsel *et al* in 2000 who reported that 'results from a sample survey involving 16 F-T-M individuals and longitudinal data from two clients suggest that the voice change [i.e. speaking] is not always totally unproblematic. A voice assessment and some counselling before the hormone therapy are recommended.'²⁰ Even so, the general consensus remains unchanged due to lack of understanding of all the parameters influencing male transvocality. There was no research on singing FTM voices during my pre-transition days, and I had to look for material that described the closest equivalent: the changing voice of an adolescent biological male. I then augmented this with my own experimentation with medication and on devising the best method from vocal techniques that I was already familiar with.

The starting assumption of my research was that I should try to imitate as closely as possible a male adolescent's vocal passage through puberty. The problems that I encountered were seriously aggravated by the fact that my body and subsequently the cartilages of my larynx no longer had that degree of flexibility at the age of 39 (I started on testosterone on 27 March 2003). My advantages were that I possessed an already-trained larynx that was larger than usual, as well as longer and thicker vocal folds than expected (my previous voice type was considered to be an alto with the capacity for very low notes, down to C3, an octave below Middle C).²¹ Another essential principle that I had to consider in regard to the hormonal treatment was that the secretion of testosterone in bio-males does not suddenly commence at the highest level. The boy does not turn into a man within six months or a year. The reasons why FTMs usually try to do otherwise are mostly sociological: we need to 'pass', in other words, to live more easily in our acquired gender and everyday environment. Nevertheless, I am not sure that this approach is physiologically best for our bodies. After all 'it is well known that sex steroid treatment', especially in high doses, 'is associated with various side effects'.²² Vocally – here I am more than convinced – this approach is definitely not in our best interest. 14

When testosterone levels increase within the body of an FTM person, both the larynx and, subsequently, the vocal folds begin to lose their bio-female characteristics. The vocal folds are attached, via the enclosed vocal ligaments, 'in front to the angle of the thyroid cartilage, and behind to the vocal process of the arytenoid'.²³ Testosterone during bio-male puberty initially creates oedema on the folds. Then, due to accumulated collagen, the folds' thickening and elongation become permanent and the voice acquires a masculine fundamental frequency. The difference now in our case is that due to the fact that our 'second puberty', i.e. transition, is happening later than expected in life, an FTM's vocal folds can thicken but cannot become as long as a bio-male's.²⁴ The reason is that the cartilage cannot grow enough at this stage in order to accommodate the changes. Moreover, testosterone is known to lead to early 15

ossification of the cartilage. Specifically, Mupparapu *et al* have found that ‘there was a preponderance of laryngeal cartilage ossification in men compared with women’.²⁵ This perhaps gives to the fully-grown bio-male larynx added stability and power. However, in an FTM voice, this fact becomes an added detriment. What is more, it seems that the difference in development of the non-ossified versus the abruptly ossified areas of the larynx is detrimental to the overall instrument’s structural balance, especially when the immediate high levels of testosterone do not permit the cartilage to adjust gradually. In this case, the new male vocal folds can become entrapped within a less-than-adequately enlarged larynx. The resultant voice will sound weak and permanently hoarse and lack the right harmonics. By contrast, when the vocal tract is given time to adjust and when a programme of carefully selected exercises is followed throughout the vocal transition, the results are not only more predictable but also very encouraging. However, I cannot stress enough the necessity for the individual transman to respect his limitations when following this programme: there is a certain period during which only mild exercises should be allowed, since vigorous ones during this time risk damaging the developing voice.

Method

Testosterone

From the beginning, I had decided to start with a level of hormones that is lower than the usual level for transmen. After I had fully explained my research, the consultant agreed to prescribe the lowest possible level of testosterone for me. He warned me though that in this case the full masculinising effects of the hormone would be seriously delayed. Because of my intention to preserve my voice, I considered that to be a risk worth taking. Due to the prohibitive cost of testosterone gel as well as the unavailability of lower than 100mg injectable testosterone forms, I initially started on 40 mg of oral testosterone (i.e. Restandol), administered daily. Within two weeks this amount was doubled, and I stayed on 80 mg for the rest of my first six months of hormone treatment. By the end of that period, my voice was clearly that of a tenor and had completely lost its pure head register. However, before I go any further, I would like to clarify here that I do not recommend the use of this specific drug to singing FTMs. My point here is to advocate the low start and gradual increase in testosterone intake as a method kinder to the whole vocal instrument. Oral forms of testosterone, in fact, can trigger heartburn and other stomach problems and much of the hormone is lost during the digestive process. Most important by far, though, ‘this is the form [...] most likely to cause liver damage if used at doses high enough to be effective’.²⁶ I knew that I was not going to use it for more than a year and never at its maximum dosage. 16

During the seventh month the consultant changed my medication to Sustanon 100, administered bimonthly, as well as one oral capsule (40mg), taken daily. Within two months, my ‘mixed’ register decreased to the point where I was no longer able to sing tenor arias. My larynx felt more open and, according to the measurements that I could make externally, was truly wider as well. 17

The next stage of my treatment – bimonthly injections of Sustanon 100 as well 18

as two capsules daily – caused my voice to ‘break’. Until that moment, even though I had noticed significant changes, my voice had nevertheless remained both manageable and musically usable to some extent. The next four months were very challenging, but also very rewarding, because the hormone treatment had finally started to produce my long-awaited masculine physical persona. Because of these gains in my masculine appearance, I used to pretend that I did not care about the loss of my voice. In any case, I knew that the next few months would be the moment of truth. I had taken a risk, and nobody could guarantee that what I had thought to be correct in the beginning about the FTM voice in transition would eventually be proven accurate; I only hoped that it would be so. In this frame of mind, accompanied by all my fears about the final loss of my voice, I finally switched to full potency injections (Sustanon 250) in March of 2004.

Within one month, I started to realise that my mild exercise regime was, strangely enough, producing two separate ‘voices’ instead of one. Though I could only explore them in a limited way at that moment, it was clear that I was developing both a high voice (falsetto) and a low voice (chest only). My low register, which was revealing itself to be that of a bass-baritone then, was very weak, and there was no mixed range to it: as soon as the pitch reached middle C, I had to change immediately to falsetto. My newly acquired high voice, on the other hand – in contrast to my previous head or mixed chest register – was proving to be both strong and truly flexible. In particular, I was able to reach higher notes than my previous alto tessitura used to permit. (See [Appendix: Graph 1](#); the two ‘voices’ are denoted by two different colours.)

Graph 1 is the diary of my vocal transition, as recorded in 2004. Since then, my voice has acquired new dimensions and manageability. Now, in November of 2008 and for the last four years, I have been teaching both FTM and MTF singers as well as cisgender female voices. My own vocal persona, a genuine example of hybridity as explained in my paper, ‘Hybrid Vocal Personae’, currently covers a range of almost four octaves.²⁷ In the following section, I would like to present some details of the vocal techniques I used during my transition. The daily programme is truly significant because gradual hormonal support alone cannot ensure that a voice will survive the ‘break’ (or maturation, as it is technically called), and be re-born in a new form.

Technique

After the singer has finished his or her vocal studies and knows the basic mechanisms of the vocal instrument, there remains a principle that must be respected at all times: the singer must listen to and respect his or her voice’s ‘inner voice’. Abusing one’s changing voice, for instance, by trying to stretch it unnaturally, will only produce ill effects. Thus, my first technical step when I began this process was to find exercises that would not only protect my voice from harm but also enhance it during its most difficult time. The most important safeguard for the FTM voice in transition – indeed, for any voice – is the development and use of the proper diaphragmatic breathing technique.²⁸ All human beings breathe diaphragmatically when they are newborns and infants, and humans never cease to use this form of breathing during their sleep. The

appropriate diaphragmatic breathing method is not only the most recommended for health, since it is the only one that utilises full lung capacity, but also has the advantage of better supporting the vocal change to a lower fundamental frequency (Fo). The reader can find detailed instructions suitable for FTMs in the appended [Pedagogical Notes](#).

I will now explain the combined method (i.e., both breathing and vocal exercising) that I myself used during my transition period, and which I consider to be both safe and rewarding for the changing FTM voice. As a trained singer, I had initially intended to try to follow my already-established practice regime, which I had been using for many years (this consisted of one and a half hours practice daily). When the changes in my voice were only subtle, I could still carry on with most of my regular practice. However I also had to accept the limitations of my changing vocal folds, as well as the accumulated fatigue in my lungs resulting from the prolonged use of a strong chest binder, which I had been wearing for almost three years (August 2002—May 2005). 22

Soon after the modifications in my vocal folds became more prominent, though, I started finding ‘open’ exercises (i.e., exercises based on open vowels and sung in full voice) not only very demanding but also extremely disappointing in comparison to my previously established standards. Therefore, I soon stopped using them, and only occasionally continued to employ them to ‘mark’ or test some comfortable areas of my voice. Instead, I started approaching my voice for most of my practice time through a set of exercises mostly based on consonants, especially fricatives. The Daily Practice exercises were selected from well-known contemporary sources, such as the Accent and Jo Estill methods, as well as more traditional material such as *Bel Canto* techniques.²⁹ However, my own contribution has been to carefully combine and test their effectiveness with regard to the FTM voice. The reader can find the detailed method in the [Appendix: Pedagogical Note 2](#). 23

Students / Participants

Even before the first presentation of this work in 2004, prospective participants had approached me and asked to participate in this research. In order to establish the necessary common ground, two conditions were stated: firstly, a commitment to one year’s involvement (which I called Stage 1 – Changing Voice) and, secondly, a minimum of one year’s previous singing experience. These conditions were followed rigorously but, as singing happened not to be among many transmen’s priorities in 2004, one compromise had to be accepted: participants were to join this research programme at different stages and from different locations, using a variety of communicational methods, such as Messenger or Skype. Nevertheless, they all followed exactly the same programme for the first year. 24

Participants exhibited from the start a wide age range (from early twenties to late fifties) as well as a range of transitional stages. Most importantly, they were divided into two major ‘groups’, according to methods of hormonal administration – abrupt or gradual (the lessons themselves were one-to-one: grouping existed only for study purposes). These groups (one following 25

traditional hormonal administration, the other submitting to low start-gradual hormonal increase; eight in the first group, seven in the second plus my own results, which were treated in the same way as those of the other participants) were each subdivided in similar proportions according to age. (See [Appendix: Graph 2.](#)) Currently (August 2008), all participants in this first stage have completed the allocated time of one year, which, according to combined results, may indicate an FTM voice's successful singing transition. Fifty per cent have chosen to continue on to the second stage of this research – The Developing FTM Voice.

Ethical considerations

Every contribution was anonymised and the progress, results and vocal samples appear only under code-names. Irrespective of variety of locations and participation methods, consent has been given and even when vocal progress proved to be inferior to expectations, improvement always occurred and no harm was caused to any participant. Overall, the principles of 'autonomy, beneficence, non-maleficence, and justice' have been observed throughout the various stages of this programme.³⁰ 26

For study purposes only, the results were grouped according to participants' age and stage in transition. Other factors, such as laryngeal and bodily structure and size, and previous voice type, were also taken into consideration when studying subgroups. For the results reported in Graph 2, the age groups were four (with age-ranges of 20-29, 30-39, 40-49 and 50-59 respectively), each subdivided into two by hormonal regime (traditional or gradual). 27

Results

Though changing voices bear common characteristics, FTM transvocality behaves less conventionally than the rest. Some parameters, such as testosterone receptors and cartilage response in adult transitioning larynxes, can create further drawbacks. These had to be taken into consideration when putting the programme together as well as examining the results. Anyone dealing with FTM voices should understand that the vocal reactions to artificial testosterone are rarely stable or smooth, especially during the first year. The vocal practitioner needs to be able to anticipate these effects as well as any added obstacles. 28

In particular, in three out of four case-singers under the age of 40 who followed gradual administration, there was a gain in range of between a fifth and a ninth as well as an improved quality. However, there were some less predictable results within the same group. The most characteristic one was that of 'entrapped vocality', as defined above, which pre-existed in one of the four case-singers under 40 and, though there was improvement through exercise, the process reached a standstill due to constant hoarseness and the singer's inability to access and control certain vocal areas. The participant, in his late twenties, had approached me after one year of traditional testosterone administration. His larynx had not been particularly enlarged and resembled that of a hybrid mezzo-soprano. This example may indicate that testosterone 29

administration instead of age alone can be another significant factor for the FTM transitioning voice.

On the other hand, singing participants over 40, who were not in their prime any more, might have been expected to produce less predictable results. Again, in all eight cases there was vocal range extension (from a fourth up to a sixth maximum). However, in four out of eight cases the students' voices did not transition smoothly and had some percentage of entrapped vocality, significantly higher than for the younger singers. Here, even though the voice improved in all cases, the improvement was not significant enough to produce a reliable singing quality; especially in those following traditional testosterone administration. There was an unexpected result from one of the participants over 50, who had started on a gradual hormonal regime but, for personal reasons, had been unable to have lessons during that period. As a result he suffered entrapped vocality too. However, when we managed to start, the participant exhibited significant progress and in the first six months acquired more than an additional fifth to his range and a reasonable singing quality. 30

The first phase of this research has indicated that voices on a gradual hormonal regime behave in a way that is closer to average bio-voices and can be extended without harm. The results designate a preponderance of more predictable results among those following the gradual hormonal regime together with carefully arranged exercising. (See [Graphs 3a and 3b.](#)) A second phase programme is currently in progress as well as the Developing Voice stage of phase one. 31

Conclusion

Even though the FTM speaking voice has been generally acknowledged to transition more convincingly than the MTF voice, male singing transvocality, to anyone who has seriously studied or worked with it, proves to be far more complex than its female counterpart. This is the reason why, whereas we nowadays have many examples of good quality MTF singers, there are so few singing transmen possessing voices of a semi-professional, let alone professional, standard. Nonetheless, after four years of my own as well as student-related experience, I can now demonstrate that a loss of singing ability is not inevitable for all FTMs. Even for those transmen who are beyond their twenties at transition, the work so far has shown that the combination of the right gradual testosterone intake together with soft exercising of the voice can help the voice not only to retain its singing quality, but also to acquire a new and aesthetically pleasing quality.³¹ Though the majority of FTMs do not possess bodies capable of supporting a masculine voice of operatic dimensions, there are many options that should not be neglected.³² After all, not many bio-men could claim that they have had a transman's range of dual-sided gender experiences. Also, no matter how useful it can be for transmen to obtain knowledge and techniques via the general community, no one apart from singing FTMs could possibly have their insight, or claim to know exactly how transvocality functions under hormones, in relation to 'binding' or to surgery-linked issues. Therefore, though help *ex cathedra* is advisable, male transvoiced individuals should also ideally obtain and develop the skill for themselves. No 32

matter how unnerving this can be, as Riki Ann Wilchins suggests, 'being oneself...is a performance of internal visualisation.'³³ Experimenting, researching, and, consequently, discovering the particulars is the only way that true vocal personae can be revealed, first to the singing FTMs, and then to the general public.

Acknowledgments

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Notes

¹ Stephen Whittle, 'Introduction 2' in Kate More and Stephen Whittle (eds.), *Reclaiming Genders: Transsexual Grammars at the Fin de Siècle* (London & New York: Cassell, 1999), 6-11: 6.

² Viviane K. Namaste, *Invisible Lives: The Erasure of Transsexual and Transgendered People* (Chicago & London: University of Chicago Press, 2000), 2.

³ Alexandros N. Constansis, 'The Changing FTM Voice', unpublished paper, 6th International Congress on Sex and Gender Diversity: Reflecting Genders, Manchester Metropolitan University, 2004.

⁴ Both individuals' voices are still exhibiting the same characteristics, even after speech therapy.

⁵ Constansis, 'Changing FTM Voice'.

⁶ Ryan Nick Gorton, Jamie Buth & Dean Spade, *Medical Therapy and Health Maintenance for Transgender Men: A Guide for Health Care Providers* (San Francisco: Lyon-Martin Women's Health Services, 2005), 59.

⁷ Rachel Smith, Niki Karavitaki & John Wass, 'Clinical Experience of Nebido: Monitoring the Efficacy and Safety of Intramuscular Testosterone Undecanoate in Hypogonadal Men', *Endocrine Abstracts* Vol. 15 (2008), 297.

⁸ Andy Levy, Anna Crown & Russell Reid, 'Endocrine Intervention for Transsexuals', *Clinical Endocrinology* Vol. 59 (2003), 409-418: 409.

⁹ Normal range for a biological male is 290 to 900 nanograms per deciliter (ng/dl). Around 500 ng/dl is the highest f-t-m achievable.

¹⁰ Louis Gooren, 'Hormone Treatment of the Adult Transsexual Patient', *Hormone Research* Vol. 64 [suppl. 2] (2006), 31-36: 33.

¹¹ *Ibid.* 33-34.

¹² 'Titration: The gradual addition of one solution to another until the amount of the reactant being added stoichiometrically matches the amount of the reactant initially present.' <http://www.chemeddl.org/collections/ptl/PTL/glossary/t.html>

¹³ Levy, Crown & Reid, 'Endocrine Intervention', 416.

¹⁴ I started singing ballads professionally at the age of twenty and, after years of performing in both styles, I obtained my Classical Singing Diploma in 1992, aged twenty-nine.

¹⁵ Henry Gray, *Anatomy of the Human Body* (New York: Churchill Livingstone, 1995), 1638.

¹⁶ *Ibid.*

¹⁷ For example, the vertical diameter is 44mm and the circumference 136mm in males, whereas in females the measurements are 36mm and 112mm respectively.

¹⁸ Shelagh Davies and Joshua Mira Goldberg, *Changing Speech* (Vancouver: Trans Care Project, 2006), 18.

¹⁹ *Ibid.*

²⁰ John Van Borsel, Griet De Cuypere, R. Rubens & B. Destaeke, 'Voice Problems in Female-to-Male Transsexuals', *International Journal of Language & Communication Disorders* Vol. 35, No. 3 (July, 2000), 427-442: 427.

²¹ A sizeable larynx is also the common characteristic of all my students with a good speaking and singing ability after transition.

²² Paul J.M. Van Kesteren, Henk Asscherman, Jos A.J. Megens & Louis Gooren, 'Mortality and Morbidity in Transsexual Subjects Treated with Cross-Sex Hormones', *Clinical Endocrinology* Vol. 47 (1997), 337 – 342: 337.

²³ Gray, *Anatomy*, 1644.

²⁴ See Davies and Goldberg, *Changing Speech*, 15.

²⁵ Muralidhar Mupparapu and Anitha Vuppalapati, 'Ossification of Laryngeal Cartilages on Lateral Cephalometric Radiographs', *Angle Orthodontist*, Vol 75, No 2 (2005), 192-197: 192.

²⁶ Alexander Blustin (ed.) with Andrew Levy, Russell Reid & Stephen Whittle, *Current Treatment for Female-to-Male Transsexuals and Transgender People* (London: FTM London & FTM Network, July 2005), 6.

²⁷ Alexandros N. Constansis, 'The Hybrid Vocal Persona', unpublished paper, Winchester: BFE Conference, 2006. The term, 'hybrid vocal persona', implies voices formed under the influence of more than one hormonal category, e.g. Intersex and Transsexual voices.

²⁸ Due to their well-known benefits, diaphragmatic breathing exercises have been included in the treatment for medical conditions such as COPD or asthma (e.g. by the Cleveland Clinic Foundation.). See also: M. Vitacca, E. Clini, L. Bianchi, & N. Ambrosino, 'Acute Effects of Deep Diaphragmatic Breathing in COPD Patients with Chronic Respiratory Insufficiency', *European Respiratory Journal* Vol. 11 (1998), 408 – 415.

²⁹ 'The Accent Method was developed by the Danish professor Svend Smith (1907-1985) [...]. It is a rational voice therapy that was developed to treat people with pathological or weak voices.

The Accent Method helps the student to coordinate breath, vocal function, articulation, body movement and language.' (Klaus Møller, 'The Accent Method',

<http://www.voicesource.co.uk/article/180> (17 December 2008). Jo Estill is a renowned educator, researcher and singing performer whose method assesses difficult technical aspects individually.

More information on her extensive research can be found at

http://www.trainmyvoice.com/about_research.html.

³⁰ T.L.Beauchamp and J.F. Childress, *Principles of Biomedical Ethics*, 5th Ed (New York: Oxford University Press, 2001), 12-13.

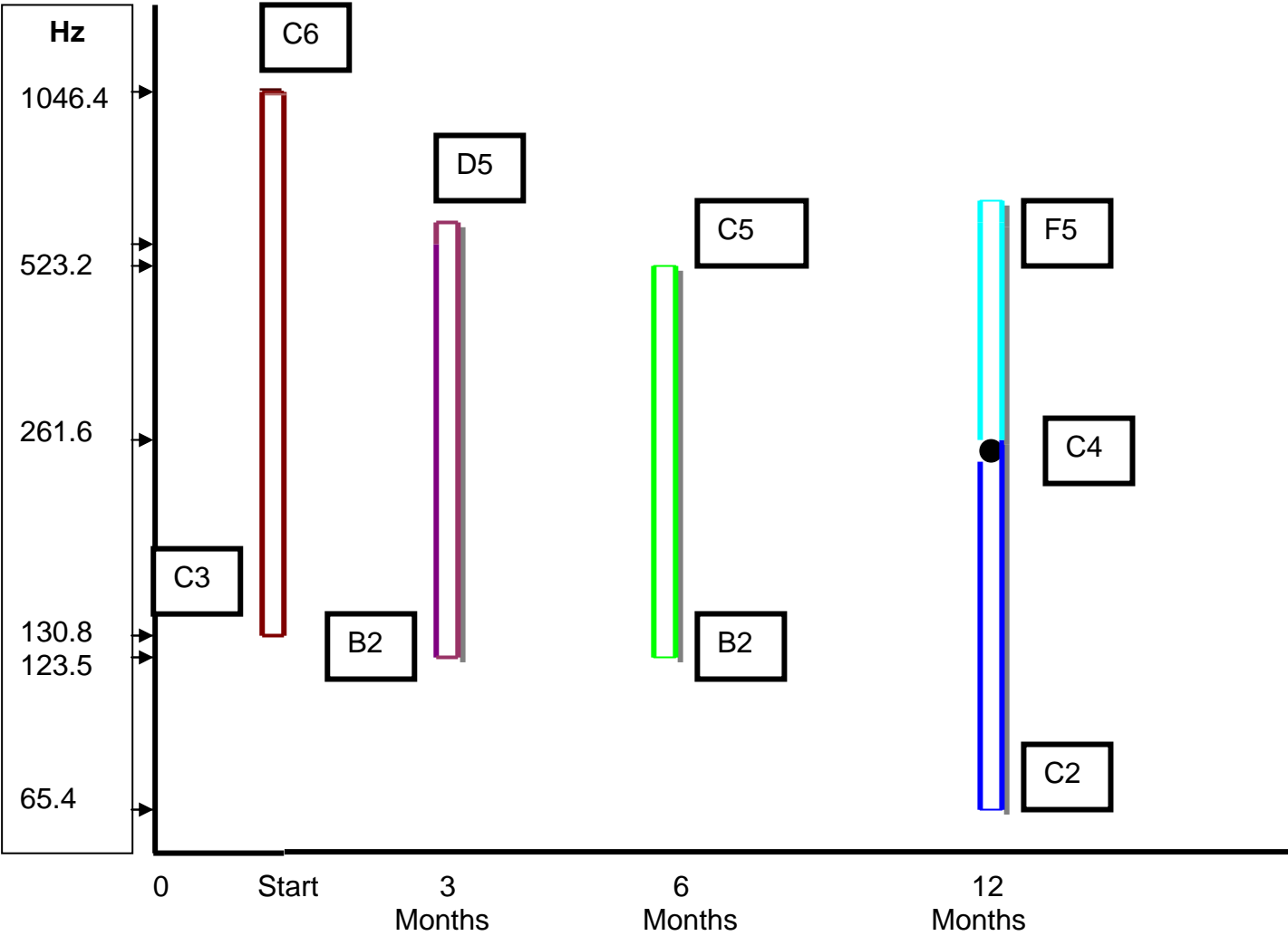
³¹ This work, because of advocating the lower testosterone intake for a start, has in the past been treated with suspicion by some members of the FTM community. I would like here to underline that what all papers reporting my research truly encourage is the importance of choice for those wishing to maximise their possibilities and retain their singing ability after transition.

³² One of the most obvious reasons for the above is that FTM thoraxes are on average smaller than those of bio-males and therefore have less capacity and strength.

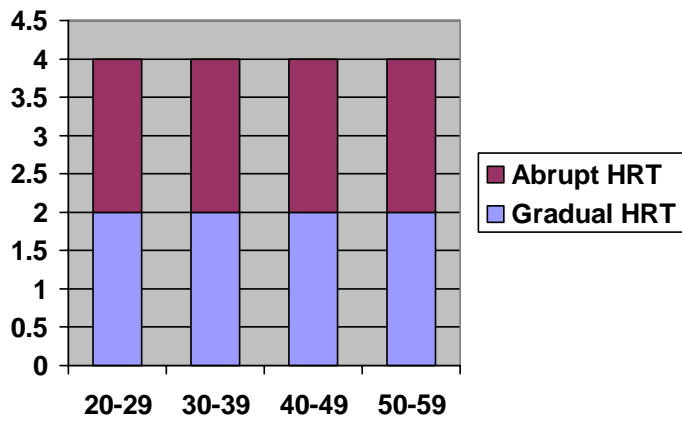
³³ Riki A. Wilchins, *Read My Lips: Sexual Subversion and the End of Gender* (New York: Firebrand, 1997), 155.

Appendix

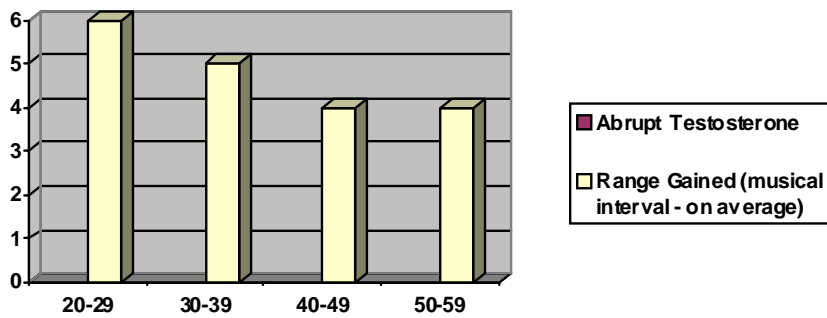
Graph 1 – Own Vocal Changes between March 2003 and March 2004



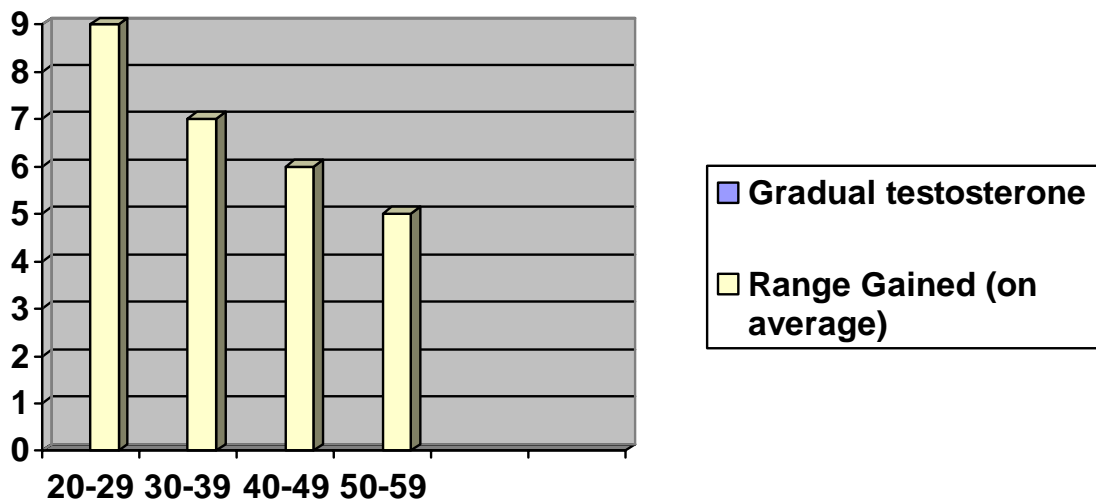
Graph 2 – Participants' Ages and Hormonal Regime



Graph 3a – Participants' Results (Abrupt HRT – 250mg bimonthly)



Graph 3b – Participants' Results (Gradual HRT – 100mg bimonthly for 6 months, 200 - 250mg bimonthly for the remaining six months)



Pedagogical Note 1: Retraining ourselves in diaphragmatic breathing

For the novice, the best way to start is by relaxing in bed or on the floor. The FTM participant can use either his hands or a book for a form of weight placed right below the end of the sternum, with hands resting alongside the body if not in use. Since this exercise can take quite a while in the beginning, it is advisable for the beginner to raise the knees with two pillows to avoid straining the lower back. While trying to establish abdominal (diaphragmatic) breathing, it is also important to ensure that the transman is not slipping back into the old habit of using the upper chest to breathe. My own experience is that, unless a teacher is actually overseeing the practice, the student needs to create visible and audible warning signs that will be activated if his technique is not perfect. I myself remember using various noise-making-if-moved props attached to my upper chest as well as correctly placed mirrors.¹ The second stage, after establishing the right type of breathing, is to attempt to control it. The best way to start is by fully exhaling and then letting your diaphragm do the inhaling 'automatically'. Then the FTM participant should try to hold his breath while initially counting to three, and then five, seven, ten, etc. Once again one should exhale fully, and repeat as before. When this stage has been perfected, the participant should stand against the wall with legs forming a 45-degree angle to the wall and repeat the previous stage's instructions. When comfortable enough, an upright chair can be used. Finally, one should stand unsupported and repeat the same exercise. During each stage the transman needs to make sure that old incorrect breathing habits do not reoccur. Mirrors properly situated can be the best assistants for this task.

Those confident enough with their breathing technique should take care because bad habits, especially during the most challenging times in the vocal transition, can easily go unnoticed. In truth, regular supervision by a knowledgeable practitioner is advisable so that the principles of diaphragmatic breathing are observed. This way the vocal progress would be more stable and remain uninhibited by other than transitional factors.

Pedagogical Note 2: Daily Practice

A. Five minutes of simple freestanding breathing exercises, to relax and warm up the whole vocal instrument. The student should exhale soundlessly through the mouth.

B. Perform the same exercise for five more minutes, with the difference that you should now exhale using the consonant V (formed by the closed lips). The pace should be initially slow and gradually accelerate.

C. Perform ten minutes of rhythmic breathing exercises using the consonants S, Z, soft S, and finally soft Z. You are allowed to improvise in the choice of rhythmic patterns. For example, I have been using a lot of dotted rhythms, as well as triplets and semi-quaver values in my daily routine. It is extremely important to remember that, no matter how vigorous the exercises are, when the method of exhaling is proper, inhaling should happen automatically and with no signs of stress. If you notice otherwise, it is better to stop immediately and relax for a few minutes before completing the exercise (Alexander technique can prove very useful).

D. The next phase involves five minutes of exercising using pitch: initially this means indefinite pitch, in the form of ‘sirens’ with the mouth shut or ‘Ng – sirens’ with the mouth open. Try to explore your full range after warming up – this exercise cannot harm you.²

E. Perform exercises with definite pitch, involving rolling the letter R or doing lip trills on music patterns of easy to moderate difficulty. Please note: if the continuation ‘line’ on the exercise is breaking that implies incorrect use of breathing patterns and *appoggio*/support.

F. Apply the previous principles and vocal placement to exercises with soft open and closed vowels. Do not try to produce loud or ‘full’ sounds – during the dramatic changes in an FTM voice, the pitch cannot be controlled if the dynamics are louder than *mezzo piano*. Nevertheless, remember to keep the throat open and the soft palate raised! Do not be afraid to use your falsetto when it is finally acquired – it can actually help your singing and, contrary to its reputation as being effeminate, is truly an innate male vocal ability.

G. Finally, apply the principles of the previous exercises in singing parts from simple folk songs and later pieces from the Niccolò Vaccaj method (Italian and English edition).³ It is better to obtain both high and low versions of the above book – your voice will change several times during your transition before reaching its final pitch. Therefore, feel free to transpose the pieces slightly, if required.

H. Only when you reach the final stages of your vocal transition should you try to sing something more demanding!

Notes

¹ For a more scientific method see Erik Peper and Vicci Tibbetts, *ELECTROMYOGRAPHY – Effortless Diaphragmatic Breathing* (San Francisco: Institute for Holistic Healing Studies, San Francisco State University, 1997).

² The technique means sliding up and down one’s vocal range, thus reproducing the sound of a siren (on ‘humming’ or ‘ng’ , as in si-**ng**-ing). This way, the singing student focuses on two different areas: his facial resonance and the palate. For FTM voices, it is important that the daily practice in sirens starts with their middle range before extending it gradually and gently to both ends.

³ See Nicola Vaccaj, *Metodo Practico di Canto*, ed. Elio Bataglia (Milano: Casa Ricordi, 1999) (Italian and English).

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