# A high-stretched minikin or a good strong mean?
## Young masculinity, identity and voice in the late sixteenth century

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I saw the Children of Pauls last night. And troth they pleased me pretty, pretty well.

**Abstract**

*A "good strong mean" was a boy chorister of St Paul's Cathedral, probably about twelve years of age. He would have lived during the latter part of the sixteenth century when the normal singing part for a boy was mean (not "treble" as it is today). He would have been invited to perform on stage during a play by John Marsden, as did the choristers in those days. But what was a high-stretched minikin? Some scholars of early theatre have assumed that this was a small boy with a high, squeaky "soprano" voice. This essay argues an alternative proposition. The minikin was not a small boy, but a scrawny teenager with cracking voice. The argument is based upon two foundations. First, what is known about vocal identity and masculinity during the sixteenth century and the probable ages of the boy actors of St Paul's. Second what is known today about puberty and voice change. There is no shortage of lessons for boys, young men and their teachers who struggle today with "sounding like a girl".*

**Introduction**

The "high stretched minikin" and the "good strong mean" referred to in the title are singers scripted to take part in a singing competition that occurs midway through Act 5 of John Marston's play *Antonio and Mellida*. They would have been chorister/actor boys from St Paul's Cathedral, known to London theatre goers at the end of the sixteenth century as the Children of Powle's or the Paule's Boyes. The dramatic activities of the St Paul's choristers between 1516 and 1590 and again between 1597 and 1613 have attracted much attention from scholars, perhaps more from the early modern theatre than the choral singing field. Despite their celebrated acting careers, however, there is little doubt that the primary occupation of the choristers was singing. Obviously, they were engaged in liturgical singing at the cathedral, but Roze Hentschell seems to think that their singing during the drama performances would have been a treat for Londoners who attended their parish churches and seldom if ever heard the boys in cathedral services.[1] It was also known to have been a treat for Queen Elizabeth, the Paule's boyes being her favourites at court, even above their rivals from the Chapel Royal.

Quite possibly, the boys had more opportunity for singing during plays than services. Whilst liturgical singing would have been much constrained by protestant sensibilities, singing in the drama, according to Jane Austern, ranged from polyphonic art song through

consort songs to popular ballads.[2] Parts for a "high stretched minikin" and a "good strong mean", however, reveal a peculiar tension between the singing and the drama which I intend to exploit in this essay. My aim is to capitalise upon a unique opportunity to throw a little light on a question that is seldom discussed in the musicological literature, that of whether sixteenth century choristers sang only with unchanged voices or whether puberty intervened to create a variety of different possible voices.

## Drama, Rhetoric and Speaking

"Squeaking" voices were a constant theme of sixteenth century children's drama and potentially tell us a lot about the timing of puberty and how this might be linked to the ages of the performers. Through this, we might learn more about how the choristers sang. Perhaps unsurprisingly, questions of singing technique and vocal colour have received little attention from scholars of the early modern theatre. Several seem content with the assumption that the boys' voices were "unbroken" and that as a result they sang "soprano". Reavley Gair, in a now classic text, uses this term[3] but it is simply not appropriate for the sixteenth century. Notwithstanding that most unchanged boys' voices today are more correctly described as mezzo-soprano than soprano, the terms used in the sixteenth century were "mean" for the majority of boys and "treble" for those capable of the highest range. Since the treble voice fell victim to protestant distaste of high, florid, melismatic, Papist singing after the 1549 prayer book, the mean voice would have been the norm at the time of Marston's plays and we cannot be sure how often, if at all, treble voices would have been heard.[4]

Considerable significance, therefore, attaches to the approval given to the second contestant in the singing competition by Piero Sforza, the Duke of Venice who presides at the competition:

> *Piero*: Trust me, a strong mean. Well sung, my boy.

This voice, that of a boy aged about 12, probably represented what was considered the best in chorister singing. It was not a particularly high voice – certainly not "soprano". The range would likely have been about C4 (middle C) to the D an octave above[5] at today's pitches.[6] This was not a squeaking voice. What, though, of the "high stretched minikin"? This voice certainly squeaked – "like a dry corkshoe". Hentschell assumed squeak to mean "soprano". She wrote:

> Of course, the actor playing the page would have been a prepubescent chorister, one of the younger members of the choir, and likely a soprano. Rosaline's critique, then, is less a jab at the boy's singing capabilities than a joke for the audience who knows that the sopranos were an integral part of the choir; the vain Rosaline does not appreciate quality singing when she hears it, is an unreliable 'umpiress', and cruelly mocks her suitor Castilio. [7]

She is likely correct to suggest that jokes were shared about the boys' voices, both by the audiences and the boys themselves. She is almost certainly correct in her interpretation that Rossaline is an unreliable "umpiress" who did not appreciate the quality singing of the mean. The assumption that the squeaks were made by a "soprano" voice, however is

quite likely wrong. It is not just that the word "soprano" is out of place it is also the case that voices that we should regard as high treble today were more commonly referred to in the sixteenth and seventeenth centuries as "shrill". Francis Bacon explains *in Sylva Sylvarum* (1626), that "Children, Women, Eunuchs have more small and *shrill* Voices, than Men."[8] Andrew Parrott suggests that the meaning of shrill did not mean as it might today the opposite of sweet but had the force of 'sonorously high'. He cites, amongst others, Roger Ascham in *Toxophilus* "All voyces, great and small, base & shrill". [9]

If the squeak was not made by a small boy with a "shrill" high voice, then by who was it made? Today, a voice squeak would be produced by an adolescent boy typically aged between 13 and 15. It results from an involuntary flip from a newly emerging young adult voice into a falsetto at the former child voice pitch. It is sometimes referred to as a "crack" and is most likely to occur during excited speech, such as when a boy calls out in class or shouts on the games field. Needless to say, such squeaks are the source of considerable embarrassment to the boy and much mirth to the witnesses. There is an obvious continuity here with the fact that ability to control the voice and avoid "squeaks" was considered a key indicator of masculinity in the sixteenth century. The significance of a squeak representing masculine failure has been examined in depth by Lucy Munro[10] and Gina Bloom[11]. Bloom appears to be very near the mark when she writes:

> For in contrast to today's audiences, early modern theatre goers had ample opportunity to hear unstable male voices. Whether the frequent enactments of squeaking voices in early modern plays point to a dramatic convention or offer evidence of a theatrical custom (that boy actors continued to perform while their voices were changing), there is much at stake in noting the role of these voices on the stage and in the culture at large. On stage or off, a squeaking voice announced a boy's transition into manhood at the same time that it indicated that the transition had yet to be completed.[12]

We know from the work of researchers such as John Cooksey when this is most likely to happen.[13] Cooksey associates involuntary register breaks in the speaking voice with stage 3 or the "mutational climax: Midvoice IIa". Table I shows the six puberty stages identified by Cooksey[a] together with the changing singing range (full and tessitura) and in the far-right column, abbreviated versions of Cooksey's descriptions of voice quality.[14] The second column, headed SF0, shows the all-important mean speaking pitch for boys at each stage. Speaking pitch and singing range are closely related, usually being a distance of 3-4 semitones apart. Thus, the average speaking pitch for boys with unchanged voices hovers around middle C, whilst the lowest note they can comfortably sing is the A three semitones below. It may be worth noting that since Cooksey compiled these data, some researchers have found evidence of a cultural shift with a tendency for boys to pitch their speaking voices lower, thus bringing the SF0 and lowest singing note closer together.[15]

[a] There is considerable ongoing confusion about the numbering of Cooksey's stages, depending on whether the unchanged or pre-pubertal stage is counted as 0 or 1 (as it is in Tanner's pubertal classifications). The Cooksey text used here counts it as 1, whereas more recent accounts of Cooksey's work, as used in the table, count it as 0.

**Table I**
**Mutational Stages and "squeaks"**

| Stage | SF0 | Full Range | Tessitura | Voice Quality and Part Assignment |
|---|---|---|---|---|
| 0 Unchanged (Pre-puberty) | 259 Hz [C4] [ | A3-F5+ | C#4 – A#4 | Full, rich, soprano like at "peak of beauty and intensity", though capable of second soprano or alto. |
| 1 Midvoice I (Peri-pubertal) | 226Hz [Bb3] | Ab3-C5 | B3 – G4 | Loss of tonal quality and richness above C5. Most desirable quality in mid-range area. Usually alto. |
| 2 Midvoice II (In-puberty) | 210Hz [Ab3] | F3-A4 | G#3 - F4 | Unique husky quality with weak spectral partials. Part assignment difficult with alto too high and tenor too low. |
| 3 Midvoice IIA (In-puberty) | 186Hz [F#3] | D3-F#4 | F#3 – D4 | Slight emergence of baritone quality on lower notes, higher notes highly unstable, difficulty in managing transition to falsetto. Part assignment very difficult. Most published music unsuitable. *Squeaks likely.* |
| 4 New baritone (Completing Puberty) | 151Hz [D3] | B2-D#4 | D#3 – G#3 | Baritone quality now more secure, but immature, light and thin. Falsetto begins to stabilize around D4-E4 but there may be a register gap. *Squeaks still possible.* |
| 5 Settling baritone (Completing Puberty) | 120Hz [B2] | G2-D4 | B2 – G#3 | Clearer, focused baritone but lacking physical richness of adult voice. Falsetto can begin around D3-E3 with upper passagio C4-F4. Not yet adult voice but can sing most bass parts. |

Missing from Table 1 are any indications of ages. Ages are omitted for a very good reason. Puberty is triggered by the hypothalamus and pituitary gland and, for reasons still not fully understood, the timing of this event is subject to a considerable degree of individual variation.[16] Moreover, although all boys pass through the same six stages in the same order, there is again considerable variation across populations regarding how long individuals remain at each stage. This is one reason why statements such as "Purcell's voice 'broke' at 14", sometimes used in musicological literature to make deductions about historic pubertal timing, are all but meaningless for such a purpose.

The actual ages, or age ranges, for boys at the six stages both now and in the sixteenth century will occupy us shortly. First, a little more must be said about "minikin squeaks" required by the drama. A key issue with the Paule's Boyes (as with their rivals at Blackfriars) was that boys were obliged at times to play the part of adult men. This set them apart from the boys indentured to adult companies of players where an unchanged voice and face that could be considered pretty or beautiful were simply the desired attributes for playing women's parts. We should not liken the sixteenth century child actors to mere schoolboys in a school play. Inasmuch as comparison can be drawn, their acting was considered "professional" in much the same way as their singing still is today. How then, could a thirteen-year-old be taken seriously in the role of an adult man?

The possession, or not, of facial hair or a beard was not unsurprisingly a key issue. It is well-recorded that the boys wore false beards and, following literary convention of the time, indicative comments about facial hair and beards were often written into the dialogue. Was this to be taken seriously? Will Fisher argues that boys wearing false

beards were "in drag" as much as when they played the parts of women – no more or no less credible, then.[17] In some instances, the false beard is clearly parodic as when the character Balurdo from the *Antonio* plays is directed to enter with his beard half on and half off. At other times, parody may have been less intentional. There were, of course, certain emotions that the boys could hardly be expected to engage with. The playwrights tended to avoid these. Instead, as R A Foakes has argued, the appeal and charm of the boy actors was the way they were able to parody the histrionic antics of adults.[18] Parody, and increasingly satire that *was* perhaps beyond the boys' ken was what kept the audiences amused. "Children from ten to fifteen years of age are known to be fond of poking fun at adults through imitating their behaviours" wrote Shen Lin.[19]

False beards or 'prosthetic masculinity' could be donned at will. The one key indicator of adult masculinity that could not be so manipulated or controlled was the voice. It is more than a little possible that instability in the voice mattered more than pitch. One of the most celebrated boy players of the sixteenth century was Salomon (or Salathiel) Pavey. A former Paule's boye, transferred to the rival Blackfriars company by dubious means, Salomon was loved for his ability to mimic old men. Tragically, he died in 1602 at the age of "scarce thirteen", the grief-stricken Ben Jonson writing a moving epithet for him. It is probable that, unless Salomon Pavey reached puberty well before the age of thirteen (possible but unlikely), his antics and movements allowed belief to be suspended as far as the voice was concerned. It is not until stage 2 that voices begin to lose what to the untrained ear is their obviously boyish quality and pitch. Before then, voices may be boyish in pitch but, paradoxically masculine in stability. What would then be important for Salomon would not be the pitch of the voice, but its stability. Had he lived beyond the age of thirteen, he might have needed to progress to other parts as his voice both deepened and entered a potentially squeaky phase.

Quite how common it was for boys at stage 2 or less to play mature adult parts remains a pressing and unsettled question. Perhaps Salomon's old men might be considered differently to more "serious" adult roles such as that of Piero. These might require a voice that was both stable and obviously deeper in pitch than that of an unchanged mean. The role of Antonio was clearly challenging. *Antonio and Mellida* begins with an induction, during which the boys, as themselves, discuss the parts they are to play. Antonio exposes through the script the challenge that has been devised for him.

> *Antonio:* I was never worse fitted since the nativity of my actorship; I shall be hiss'd at, on my life now.
>
> *Feliche:* Why, what must you play?
>
> *Ant.* Faith, I know not what; an hermaphrodite, two parts in one; my true person being Antonio, son to the Duke of Genoa; though for the love of Mellida, Piero's daughter, I take this feigned presence of an Amazon, calling myself Florizell, and I know not what. I a voice to play a lady! I shall ne'er do it.
>
> *Alberto:* O! an Amazon should have such a voice, virago-like.[20]

This episode points towards a voice that has passed the squeaking stage, a stage 5 or perhaps a stage 4. Such a voice would also be capable of an adult falsetto, an octave below

a boy's falsetto and thus "virago-like" (i.e. womanly but rather deeper than an unchanged child voice). It would certainly not be the potentially "shrill voice" of an eleven or twelve-year-old. The extent to which there might be a danger of an unwanted "crack" into baritone when feigning the virago would depend upon the extent to which the new voice had begun to settle. The attention drawn to the boy's discomfort may well be an exploitation of doubt as to whether his new voice really had begun to stabilise.

For the boys who were to play parts such as the effeminate courtier, Castillio, the worry might be rather different. These boys would *need* their voices to squeak at will, yet squeaking is normally involuntary and cannot necessarily be guaranteed. The boys most likely to be able to squeak at will are those at stage 3 – the midvoice IIa or high mutation stage. Reavley Gair describes how well the boys were known as individuals by the dramatists, who would have written parts with a certain expectation of how the voice was going to behave when the performance was given some months later.[21] The production of the play could surely not have relied upon chance squeaks. This consideration must rank amongst the surer evidence that the boys who acted in the plays were commonly older than the boys who sang mean in the choir.

Some scholars have offered consideration of homoerotic appeal as evidence of ages at which adolescent sexuality developed. Bloom cites Castillio's hope to please Rosaline through "warbling into the delicious concave" of his mistress's ear.[22] The result is only the awakening of Felice with yet more treble minikin squeaks – the failure in wooing women being "not just a weak command over language but an inability to master the physiological production of voice." [23]

Was the player of the first contestant in the *Antonio and Mellida* singing competition one such boy, or was he a "soprano" as imagined by Hentschell? He is described as "first boy" in modern editions, though the original does not specify this. It simply indicates "cantat". Ignorance of good singing may have played a part in Rossaline's response, but the underlying motive may have as much to do with suitability as a lover.

> Rossaline: By this gold, I had rather have a servant with a short nose, and a thin hair, than have such a high-stretch'd minikin . . . So help me, youth, thy voice squeaks like a dry corkshoe.

Rossaline's response to Piero's enquiry concerning her distaste implies that a eunuch may be even worse than an aging, ugly servant

> *Rossaline:* By the sweet of love, I should fear extremely that he were an eunuch.[24]

Elsewhere, evidence can point to a clear distinction between unchanged voices and players whose obvious progress through puberty was a matter for remark and probably amusement. For example, in *The Marriage of* W*it and Science*, the actor who played Wit was evidently a gangling youth, mid-adolescent and suffering from acne " . . what if she finde fault with these spindle shanks, or els with these blacke spottes upon your nose?" [25]. Perhaps a squeaking voice might be able to offer sex, or perhaps its owner will be laughed at. The 12-year-old page, though is safe. He is "too young to show her sporte in bed".[26]

Munro suggest that it is older boys, sometimes described as ganymedes, who would have stimulated homoerotic interest in certain sections of the audience. She cites a manual for Christian parents that warns that is from the age of 14 upwards that youths might be seduced – or "easily drawne to libertie, pleasure, and licentiousness". A "neast of Boyes, able to rauish a man" is available to the gallant who might call at the Blackfriars theatre[27]. Whether the Paule's Boyes suffered similar unwanted attention is a matter for conjecture, given the small size of their stage. The playwright and pamphleteer, Thomas Dekker (c1572-1632) described the life of city gallants and their behaviour in London theatres in the *Guls Horne-Booke* (1609). There he advised that the "deere acquaintance of the boyes" could be had by the purchase of a seat on the actual stage.[28]

Of course, we cannot entirely rule out homoerotic interest in the younger boys. Who exactly were the "rascally tits" mentioned in Ben Johnson's heavily ironic lines addressed to the gulls?

> By this light, I wonder that any man is so mad. To come and see these rascally tits play here. They do act like so many wrens or pismires, not the fifth part of a good face amongst them all. And then their music is abominable, able to stretch a man's ear worse than ten.[29]

Seduction from the age of 14 upwards, however, seems the more likely and the evidence that has accumulated does suggests that boys who perhaps began their careers at 6 or 7 had become strong and useful choristers by the age of 12. By 14 they were showing signs of sexual maturation that would have begun to cause instability in at least some voices. We are now able to consider the extent to which the age of 14 may have been pivotal in the transition between boy choristers singing mean and the various superannuated choristers and grammar school boys that have been postulated as key players in the dramas.

**Fourteene years of age: a turning point for the Paule's Boyes.**

It should, by now, be obvious that at least some of the key actors in the "children's dramas" could not have been choristers with unchanged voices. Some scholars and writers can seem quite reluctant to accept this. Centrewall goes so far as to accuse scholars of "generally assuming" that the children's companies, having evolved from schools for boy choristers, were comprised entirely of children. He proposes an alternative account in which the chorister players gradually evolve into a young adult company in which unchanged voices appear only in singing roles such as page boys.[30]

Centrewall's account is plausible in many ways but has weaknesses similar to the writings of musicologists who fail to distinguish between unchanged voices and voices part way through change when writing about "boys". If we are to understand the term "young adult" as meaning a male who has fully completed puberty and reached or closely approached his terminal growth in height, the difficult intermediate category of "squeaking voices" that are neither fully adult nor fully child is once again inadequately accounted for.

Failure to distinguish between unchanged voices and voices part way through change is attributable in part to the English tradition of boys remaining as choristers during

puberty, their singing voices gradually transitioning to falsetto in order to prolong access to the soprano range.[31] The practice, though frowned upon by a good many singing teachers and vocal coaches, remains quite widespread in English cathedrals today.[32] The origins of this way of doing things are difficult to trace. The injunction to eliminate the so-called "chest voice" from chorister singing is found in several important nineteenth century texts.[33] Following the prescriptions of these texts certainly resulted in a longevity of the chorister voice that greatly surpassed the normal span of an unchanged "treble" voice.

Difficulties can be encountered, however, with a tessitura that is lower than the soprano parts sung by boys today. A problematic passagio intervenes in the changing voice roughly between the notes C4 and E4[34] which gives grounds to suggest that sixteenth century choristers, singing mean, did not continue very far into puberty. Sixteenth century sources on voice change provide an interesting challenge to the present-day misconception, beloved of the popular newspapers, that a voice which suddenly "breaks" means the boy has "hit" puberty.[35] Bacon explained in 1597 that boys going through puberty *begin* to speak with graver voices. Although medicine was still firmly wedded to the theories of humours, it is evident in use of the term "begin" that the changing of the voice was recognised as an ongoing process rather than a sudden event:

> The Cause of Changing the Voice, at the yeares of Puberty, is more obscure. It seemeth to be, for that when much of the Moisture of the Body, which did before irrigate the Parts, is drawne downe to the Spermaticall vessells; it leaveth the Body more hot than it was; whence commeth the dilatation of the Pipes. An increase in the body's heat--which may be brought on by a decrease in moisture--causes the vocal pipes to dilate and a deeper voice to be produced[36]

Although the cause was wrongly attributed to heating of the body, the definitive relationship between testicular volume and larynx development was evidently known and the immediate effects were understood. A present-day understanding of "larynx" and "glottis" was in use by 1653 where an anatomical text associated shriller voices with smaller larynxes and graver voices with larger. Bruce Smith quotes a source that quite correctly states "the thynge that maketh the voyce bigge is partlye the wydness of the breast and vocall Artery". Such "bigge voyces" were not "*squekinge* and slender[b], but streynable, comely and audible".[37]

It is now time to confront the vexed question of ages, most particularly that of the difficult time between the shrill boy and the "bigge voyce" that conferred masculine adult status. What was the age range of the squeaking voice and what singing, other than parody of the effeminate by superannuated choristers, took place during that time?

Although reliable records of boys' ages (easily obtainable today from any choir school register) are so frustratingly hard to find for the sixteenth century, we do know a little about the Paule's Boyes. The following names are recorded in the Bishop of London's visitation books of 1598 and 1607.[38] In 1598, there were eleven boys; John Taylor, William Thaire, Richard Brackenbury, John Norwood, Robert Coles, John Thomkins,

[b] "Slender" describes well the thin, weak sound of the immature "schoolboy bass" which is well-known today and acoustically analysed by Cooksey.

Samuel Marcupp, Thomas Rainescrofte, Russell Gyrdler, Carolus Pytcher and Charles Pendry. Nine years later, in 1607, there were ten; Henry Burnett, Richard Kenede, John Mansell, Thomas Peers, Richard Patrick, Nicholas Crosse, Thomas Waters, John Dawson, Thomas Codbol and Lightfoot Codboit. Perhaps unsurprisingly, none of the boys present in 1598 was still there in 1607. So, had the youngest been seven in 1598, he would not have lasted as a chorister until the age of 16 in 1607.

The names "Rainescrofte" and Thomkins are familiar. "Rainescrofte" is the Thomas Ravenscroft of the 1621 *Whole Booke of Psalmes: With The Humnes Evangelicall, and Songs Spiritual.* "Thomkins" is half-brother of Thomas Tomkins.[39] His birth year is recorded as 1586, making him about twelve at the time of the Bishop's visitation. He was appointed organist of King's Cambridge in 1606, presumably aged about twenty.[40] Whether he remained associated with St. Paul's in the intervening years does not seem to have been recorded. Ravenscroft is thought to have been born no later than 1590, making him one of the younger boys, eight or perhaps nine during the first Bishop's visitation. From his absence at the second visitation, we might conclude that his dispensation as a chorister occurred before the age of 15, but probably younger. His going up to Cambridge in 1604, at the young (by today's standards) age of 14 or 15, suggests perhaps an earlier end to his chorister career than 15. That he preserved a significant number of songs and plays produced by the Paule's Boyes suggests his association with the cathedral may have outlived his choristership. These ages are confirmed by Shen Lin who adds a further name from the 1607 visitation book.[41] Henry Burnett, baptised 1595, was too young to join the troupe for 1599 but performed for King Christian IV in July 1606 when he would have been just over eleven.

This evidence suggests that most boys had left the choir by the age of 15 at the latest.[c] There is nothing to suggest voices lasted until the late teens -a persistently popular belief encouraged by writers such as David Wulstan who rely too much on what are probably individual cases, recorded by virtue of their very exceptionality.[42] Lucy Munro estimates the Paule's boyes' age range to have spanned 9 to 14[43] whilst Shen Lin estimates that "a fair number of the chorister actors would have been aged 9 to 12 when the Antonio plays, among others, were staged"[44]. He has traced from Grove's the ages of three further boys that Westcott would have employed. In 1574 Peter Phillipp was probably 13 and Thomas Morley 14. In 1582, Nicholas Charlton was between 7 and 12. There is evidence to suggest that boys probably began at younger ages in the sixteenth century than today, 6 or 7 being common.[45] Whether the youngest boys, like today's probationers, actually contributed much to the performances is conjectural, though the possible age of 6 or 7 provides a point from which to work out ages at leaving.

An important piece of near-contemporary evidence is Roger Bowers' study of St George's Windsor.[46] Unlike misleading conclusions drawn from exceptional individuals elsewhere,

[c]Westcott's will of 1582 mentions seven ex-choristers who remained at the cathedral and presumably must have performed some service, though what this may have been is not recorded. There is also uncertainty as to whether boys from the parallel Paul's grammar school were also involved, and whether these boys were a little older than the choristers.

this study is based a sufficient number of actual age records for normative boundaries to be reckoned. Bowers concludes that mutation occurred at the age of 14 or 15 around 1500 in England. He also mentions choir records from 1545 and 1547. All boys in those records are younger than 15 years old. Lucy Munro's upper limit of 14 would, then, seem to be entirely plausible, though this does not answer any questions about how the oldest boys were actually singing. Were their voices noticeably beginning to change? Were they past their best but tolerated on account of other qualities such as experience, reliability, knowledge of the repertoire or the example they were able to set to younger boys? Were they able to add useful weight to the lower ranges, particularly mean before 1549?

For all the exotic reports of eighteen-year-old sopranos, it is surprising how often the age of "about twelve" comes up as that of a sixteenth century chorister. For example, William Sim was noted third in order of seniority at Durham in 1541 and recorded as "about twelve years of age".[47] If Sim were third in order of seniority, the two boys above him could perhaps have been thirteen or fourteen. There is a telling piece of evidence in Kerry McCarthy's treatise on Byrd. The family portrait *Master of the Countess of Warwick* from the 1560s shows three boys holding part books, one of which is the *bassus* part of a Josquin motet. The age of the boys (13, 12 and 7) is carefully inscribed above their heads. The holder of the bassus part book is 13. McCarthy is uncertain as to whether this 13-year-old could manage a bass line on his own and bassus could refer only to the lowest part to be sung, not the same thing as a bass voice.[48] Nevertheless, this was almost certainly a boy with changing voice.

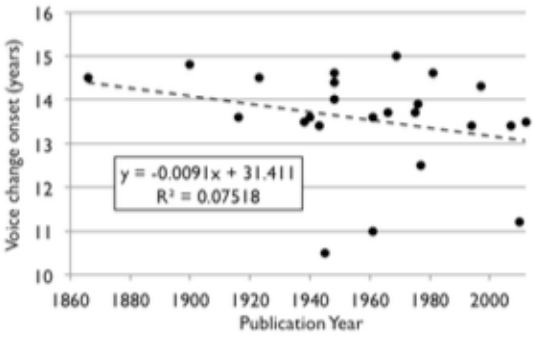
Concerning the chorister actors, a particularly important clue is found in *The Marriage of Wit and Science*. This was performed by Paule's somewhat earlier than *Antonio and Mellida*, between c1567 and 1569, probably under Westcott's direction. In this play, Science asks Wit's page boy, Will, 'What age art thou of, good sonne?', and receives the reply 'Betwene eleven and xii, Madame, more or lesse.' Will is then asked, 'How old is the gentilman thy maister canst thou tell?', to which he replies, 'Seuentene or there aboute I wote not verye well'.[49] The age of seventeen appears then, as now, to be the age at which the boy playing the maister would have reached one of the final stages of Cooksey's scheme. Twelve, then as now, appears to be the age when a boy could have sung a secure mean (or indeed treble) part with poise and confidence. Between the ages of twelve or thirteen and fourteen or fifteen may have been found the voices most likely to "squeak".

If this is correct, then the age of male puberty and voice change in the sixteenth century does not look to have differed radically from the norms of today. This flies in the face of popular belief in much later puberty, but there are many popular myths about the sixteenth century that fall under scientific scrutiny – that people were much shorter[d] or even that people smelled foul because they went unwashed, for example[50]. The present author carried out, in collaboration with a colleague from the Felix Mendelssohn

[d] Richard Steckel and his team have evaluated skeletal remains of some 15,000 individuals who lived in Europe over the past 1,800 years. Amongst their conclusions are a geographic gradient in health that favoured central and northern Europe. A recent paper by Galofré-Vilà et al notes that the early years of the sixteenth century were unusually healthy. The mean adult male stature *rose* to reach 173-174cm, before commencing a falling trend after the 1650s that continued to a low point in the 1800s. The comparable figure for today is 177cm - only 3 or 4 cm shorter.

University of Leipzig, a meta-analysis of all the sources relevant to the historic timing of puberty and voice change.[51] The study was forced to conclude that "the wide range of methods and criteria makes it impossible to establish or refute a development toward an earlier mutation, even if one is actually occurring." The regression plot in Figure 1, reproduced from the 2013 study,[52] does show a small trend from 1860 to 2000, but there are wide outliers indicative of the unreliability of many of the studies and reports analysed.

**Figure 1**




Two subsequent studies by the present author have shown that there has been a small though measurable trend to earlier voice change in recent decades that may well underpin some choir directors' complaints that voices are being lost earlier than the traditionally expected age of thirteen and a half.[53] Unfortunately tracing this back further than 1860 reveals numerous anomalies. Aside from the lack of statistical validity and sometimes anecdotal nature of the studies examined, many were reporting choir dispensation rather than actual puberty. Not only is it possible for older adolescents to sing soprano after completing puberty, choir directors' understandings and interpretations of when a supposedly "unbroken" voice has finished have been shown to be highly variable.[54] Haydn's boast that his voice lasted until he was 18 may be a case in point and perhaps rather more attention should be paid to the Empress of Hapsburg's complaint that he was "singing like a crow".[55] It is for this reason that a study of the sixteenth century chorister/actors who were required both to sing and to speak is of such potential significance.

## Conclusions

The evidence from the Paule's Boyes of the late sixteenth century provides further support to the general notion that, when averaged across a two-thousand-year time span, "boyes are apt to change theere voice at about fourteene yeares of age". Granted there is some variation across time and place in this generalisation and our own times are witness to unusually early puberty, perhaps as much as eighteen months or so in advance of sixteenth century norms. The most important single point made in this paper, however, is that it is to the speaking voice we must look, not the singing voice for a valid insight into a boy's pubertal status. Boy choristers today are well able to hide their advancing sexual maturation by resorting to various falsetto based styles of singing, but they cannot

do this for their speaking voices. A potentially "squeaking" speaking voice cannot be hidden by the boy falsettist and may even be used by him to advantage in parodic drama.

What can we deduce from this about chorister singing? The evidence appears to suggest that the most accomplished choristers at the height of their powers were aged between eleven and thirteen – quite similar to the case nowadays. Vocal disruption may have begun from the age of 13 or 14 upwards when the boys perhaps found more employment as actors than singers. The period of adolescence between choir dispensation and going up to university, however, looks to have been shorter. What may be relevant and different is that fewer of the sixteenth century boys would have begun puberty than is the case now. This points to the conclusion that a "strong mean, well sung" would have been typically a twelve-year-old. Though lower than today's "trebles", his would have been an unchanged voice, or at most the stage 1 voice of a peri-pubertal boy.

This raises other questions beyond the scope of this paper. How were unchanged voices able to be effective in the lower part of the range around middle C, particularly when ten or fewer boys were significantly outnumbered by men? David Wulstan and Peter LeHuray both assumed in addressing this obvious difficulty that a "penetrating chest voice" must have been used.[56] A 1989 musical dramatization of the Salomon Pavey story goes so far as to direct the boys participating to use only the "chest voice", promising that "the reasonable use of this register will not harm the 'head voice'".[57] Liberation from the peculiarly English obsession with an either/or choice between so-called "head" and "chest" voices is discussed by the present author elsewhere. Progress in this timely line of enquiry should be much enhanced by a better appreciation of the mechanics of "squeaking voices" and the ages of the boys who "squeaked".

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