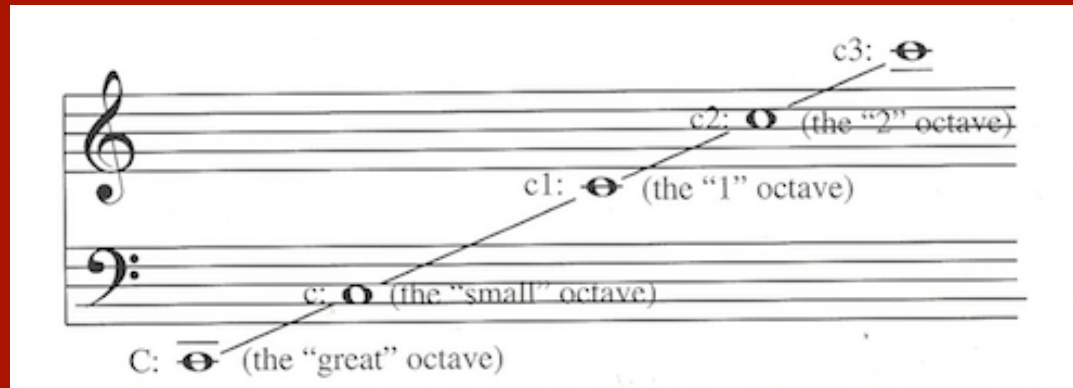


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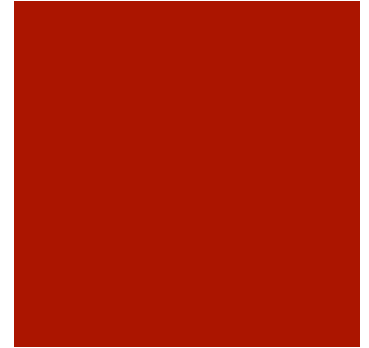
Phillips, Kenneth. *Teaching Kids to Sing (TKTS)*, 2<sup>nd</sup> ed. U.S.: Schirmer CENGAGE Learning, 2014.



Source: Phillips, *TKTS*, p. xviii.

# The Art of Choral Techniques

In-class Review of *Teaching Kids to Sing*:  
**Chapter 5 – The Adolescent Singer**

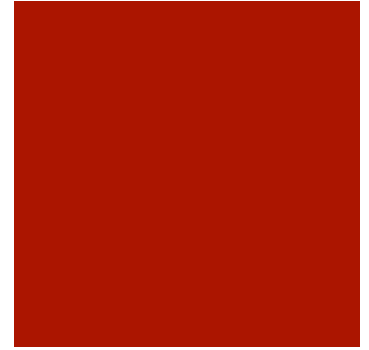


# Puberty and Voice Change

- Adolescence: time of transition from childhood to adulthood.
- Begins in 7<sup>th</sup> grade (age 12-13); ends with high school graduation (age 17-18).
- Puberty: when teenagers reach sexual maturity; voice change occurs, often peaking in 8<sup>th</sup> grade.
- Voice change among boys can start as early as 5<sup>th</sup> or 6<sup>th</sup> grades.
- Puberty among females can begin at any age from 9-13 and may take up to five years to complete.
- For males and females, voice change complete by 15 or 16.



# The Nature of Adolescence



- Mood swings are typical part of growing-up process.
- Human brain undergoes a massive reorganization from ages 12 to 25. Complete adaptation only when people reach mid-20's. Teens are definitely "works in progress."
- Psychological Factor: Depression is common. Signs include:
  - Sadness last for more than two weeks,
  - Change in appetite,
  - Change in sleep patterns,
  - Change in concentration,
  - Change in mood,
  - Most importantly: change in ability to really enjoy things.

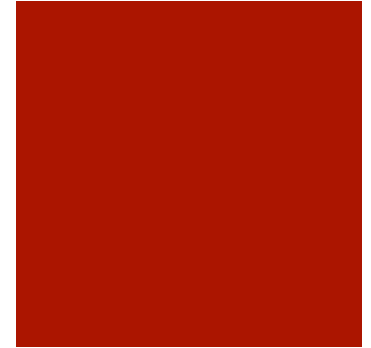


# Music Can Help!!



- Mental state of adolescents may cause focus inward. *This is why music ensembles can be so helpful to bring them out of their shells and interact with other in the music-making process!*
- Young adults need to know they're aren't alone in this transitional process. All need reassurance that a normal life awaits them at the "end of the tunnel." Need to know "it gets better" and you will tell them! *Be their lighthouse in the storm!*
- Peer approval intensifies along with need to belong to a group, especially young men (girls more individualistic). Music ensembles can help with this, too! (like family; satisfy need to belong)
- Drop in self-esteem also common, especially "late bloomers." Answer is communication; adults can help with lending perspective, especially sensitive, trusted music teachers.

# Teaching Adolescents



- Be ready for wide variety, especially in 7<sup>th</sup> and 8<sup>th</sup> grades: physical size, personality, mental ability, emotional stability (or instability).
- Girls, in general, are more mature; both sexes can be insensitive in how they treat their peers.
- Requires great intuition and patience; teachers must work to win over these students and create mutual respect and trust. When bond is created, you have completely dedicated and enthusiastic students.
- Athletic coaches can help to bridge the gap!





Variety is the Spice of Life!



California Music Educators Select Junior High Choir, 2005

# Pedagogical Pointers



- Consider separate music classes for boys and girls at middle level, especially 7<sup>th</sup> and 8<sup>th</sup> grades, to focus on unique issues and lessen embarrassment and tension between genders.
- Have each choir learn both common and individual repertoire and combine for couple of mixed-voice selections in concert.
- Keep all students singing throughout early adolescent years. Singing must be component of 7<sup>th</sup> and 8<sup>th</sup> grade general music.
- TKTS physiological approach is appealing to students dealing with changing bodies.
- Keep an eye on texts to stimulate interest and not be “babyish.”

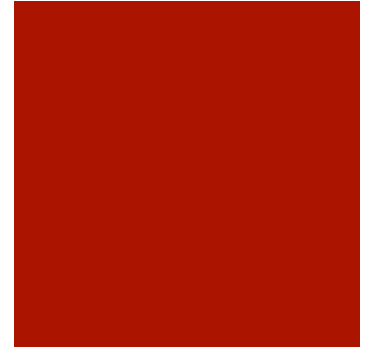
# Recruiting Young Men

- Start adolescent male chorus (Bass Clef Choir) as means of sustaining interest among boys. Can help to establish *esprit de corps* and support choice to sing.
- Consider alternate days for boys and girls scheduled at the same time; combine on Fridays.
- It may be sexist, but true: when boys participate, girls show up!





# Adolescent Female Voices



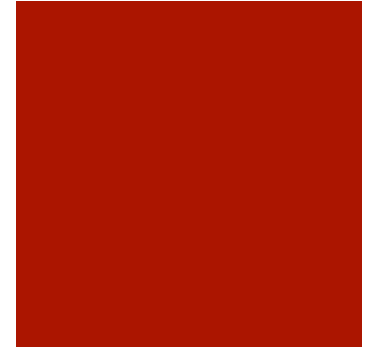
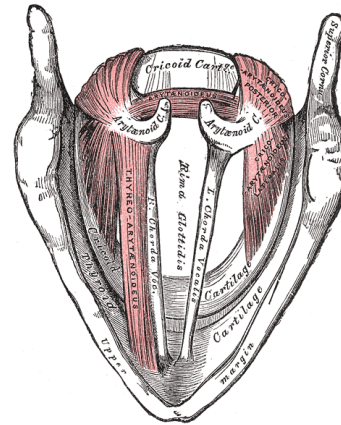
## ■ Female Voice Change:

- Puberty begins earlier than boys;
- Girls experience a rapid growth spurt at 10 or 11, several years before boys;
- At midpoint of puberty ( $12\frac{1}{2}$  to  $14\frac{1}{2}$ ), most girls experience first mensuration; traditionally been considered end of childhood.

## ■ Growth of Female Larynx:

- Not as radical a change as males;
- Thickens and grows in lateral or rounded direction;
- Vocal folds grow less than those of male, 3-4 mm.
- Growth results in slight lowering of speaking voice, lower extension of singing range.

# What to Listen For: “Mutational Chink”



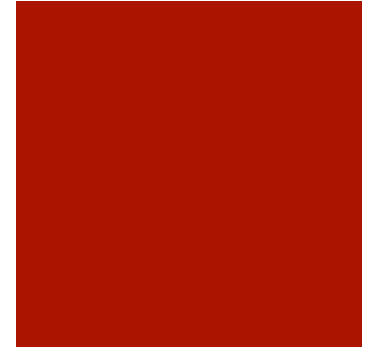
- Read about physiological changes on p.115.
- First sign of change: huskiness or unsteadiness of speaking voice from increased thickening of folds.
- May be accompanied by certain amount of breathiness as result of air passing through the “mutational chink.” This is the triangular gap between the posterior ends of the vocal folds. Happens as result of weakened interarytenoids that fail to close the folds completely for phonation.
- Flutelike quality of child voice is replaced by husky, breathy sound of adolescent female voice. Must be treated with care by teacher to maintain positive attitude toward singing.

# Female Vocal Quality

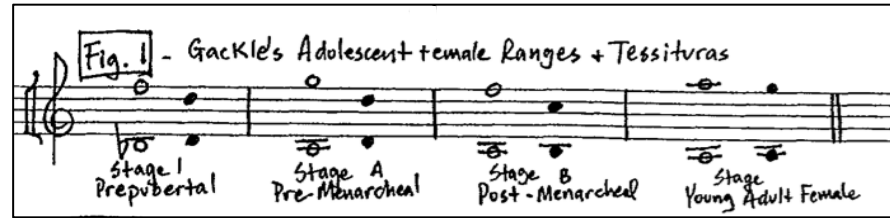


- Vocal self-image of young lady needs to change: from “loud and full” to “soft and pure” [*quality over quantity*].
- Teach good vocal technique to improve quality and understanding that this is temporary. Provide good model, but don’t have them “copy” you. Use other students as models, too.
- Avoid labeling to circumvent “alto-itis.” Some may lose ability to sing high notes or after singing “alto” believe they only have a chest voice. Teach them differently! Develop head voice!
- Inaccurate singers respond to remedial help in head-voice training for gains in range and pitch accuracy.
- Unstrained, light, upper-register vocalization is a must for ALL adolescent girls!

# Senior High Girls



- Can achieve mature vocal sound with proper instruction, but be careful not to strain these voices.
- Human voice is a delicate instrument, but capable of great endurance when treated with care and respect. Read Ch. 8.
- Use excellent recordings of adolescent singers as models of quality.
- Beautiful voice enhanced by even vibrato, the norm and a product of good vocal technique [*freely functioning voice*]. Non-vibrato = too much throat pressure (pressed voice) from too little breath support [*energy*]. Relaxing larynx and throat free the vibrato.
- Too much vibrato? Use “simple tone,” one that is simpler and not as soloistic.



# Female Vocal Stages.

## **Gackle (1991): Model for Classifying Characteristic Stages of Development**

Note: The female stages of voice change begin earlier than the male, and the female voice settles more quickly into an adult model.

### **Stage 1. Prepubertal**

Age: 8-10 (can occur as late as 11-13) years  
 Vocal quality: light, "flutelike" singing between upper and lower ranges achieved w/ease  
 Range: b-flat to f2 (octave and a fifth)

### **Stage 2A. Pubescent/Premenarcheal**

Age: 11-12 (13) years  
 Vocal quality: breathiness; trouble singing in lower register; volume in middle and upper ranges is difficult to achieve; voice "cracks" (registers develop) are common.  
 Ranges: a to g2 (octave and a seventh)

### **Stage 2B. Puberty/Postmenarcheal**

Age: 13-14 (15) years  
 Vocal quality: huskiness or heaviness in the vocal timbre; a five- or six-note range is most comfortable to sing; lower tones of the vocal range are easiest to produce  
 Range: a to f2 (octave and sixth)

### **Stage 3. Young Adults Female/Postmenarcheal**

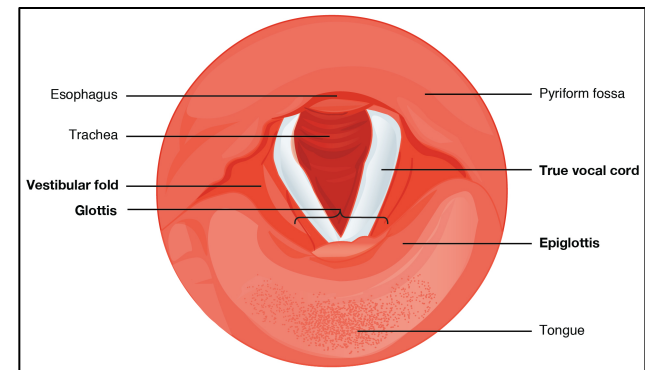
Age: 14-15 (16) years  
 Vocal quality: inconsistent sound; voice "cracking" common; breathiness decreases; great consistency between registers; richer tone; gradual appearance of vibrato; overall increases in volume, resonance, and agility  
 Range: a to a2 (two octaves)





# Female Vocal Instruction

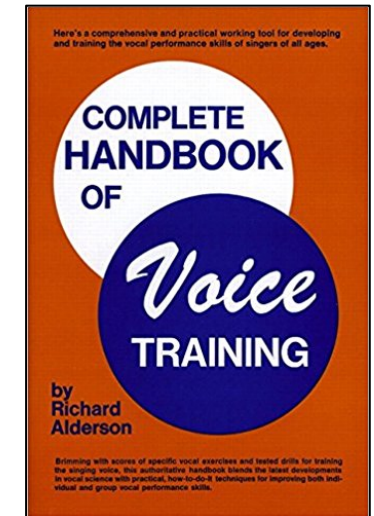
- Tone quality and pitch are improved through systematic instruction in breath management, resonance, and vowel unification. Also must address areas of posture.
- Instruction does not significantly improve breathy quality of singing.
- Glottal closure for singing must come from the flow of air through the vocal folds, not by pressing the folds together, i.e., “stroke of the glottis” vs. “shock of the glottis.”





# Other Recommendations

- Alderson: *Complete Handbook of Voice Training* (1979):
  - Breathing exercises
  - Humming, ringing quality
  - Light approach
  - Practice in the upper range
  - Choose songs to explore various registers
  - Have girls singing neither too high nor too low for very long
  - Avoid vocalizing too often on closed vowels [u] to solve breathiness
  - Vary the dynamics, but not too loud nor too soft
- Use frequent auditions to place each girl in proper section, for good choral balance/blend, and to recognize individuality.



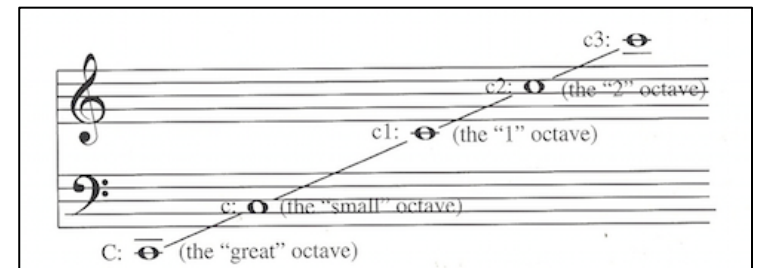
# First, Cause No Harm!

- Girls' voices can be harmed by:
  - Demanding loud singing for extended periods of time
  - Requiring that pitches be sustained for too long a duration
  - Seeking too wide a mouth opening resulting in a stiff jaw
  - Encouraging very soft singing, resulting in a weak, lifeless, out-of-tune sound.
- Protect the voices under your care, especially the young!

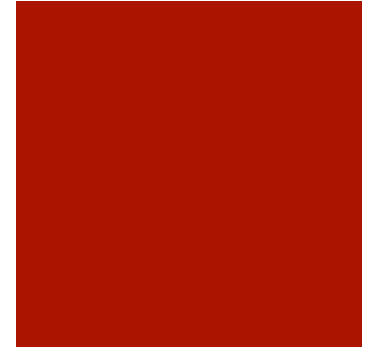


# Female Vocal Registers

- Remain basically the same as prepubertal children.
- Chest voice begins at middle C and extends lower as voice matures.
- Middle voice similar to child (*and adult!*): a sharing of the lower and upper registers. Traditional treble “break” between chest and upper registers (approx. a1 for untrained singers) does not exist with proper sharing of registers in middle.
- Pure upper register voice begins around c2 and extends upward to c3.



# Explore for Health and Balance

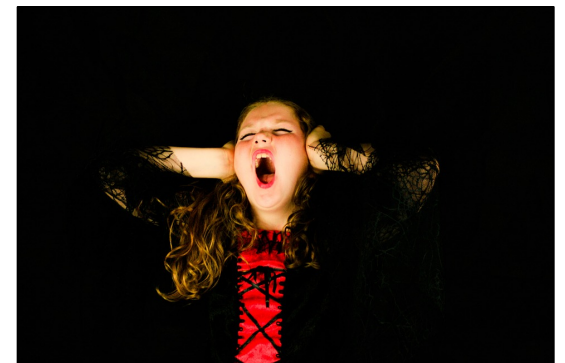
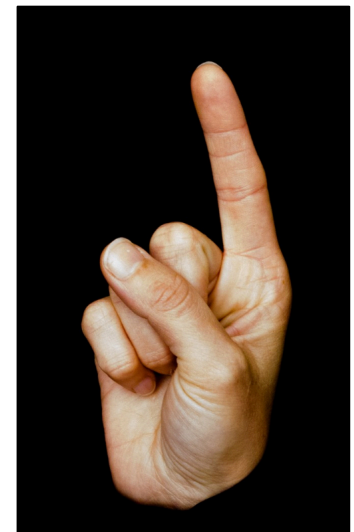


- Females with limited ranges, who can sing neither S1 or A2 are the norm. This is from lack of development of chest and upper registers and inefficient sharing in the middle.
- All females (including altos) should perform vocalises in a light manner from c2 to c3. Use exercises that explore and strengthen the upper voice.
- In a similar way, the chest voice is a necessary part of the female singer's vocal range and should be so conceived and developed.
- Exercising the entire vocal mechanism helps to build the total voice that is healthy and balanced.

# Careful of Misusing Chest Voice

- Chest voice does present a problem in female singing when its use is permitted in its pure form above middle C.
- The higher the chest quality is carried, the more difficult and obvious the transition becomes and the more strident the voice sounds.
- Exclusive use of the chest register above middle C is potentially damaging to the vocal folds.
- Example of Harmful Singing?

**WARNING**



# Female Vocal Range

## Disclaimers

- Examples of vocal ranges and tessituras to be used for consideration when choosing repertoire.
- Remember: tessitura = comfort zone in which majority of pitches should fall
- Junior high generally refers to 7<sup>th</sup> and 8<sup>th</sup> graders, though 9<sup>th</sup>-grade ranges can overlap.
- Regarding voice classification: voice is yet unsettled; don't label girls altos or even mezzo sopranos until the 9<sup>th</sup> grade.
- All girls should be vocalized from b-flat to f2, with a song tessitura of d1 to d2.






# Female Vocal Ranges

(1)


Range:  $b\flat-f2$  Tessitura:  $d1-d2$



EXAMPLE 5.2 Junior high treble I and II.

(2)

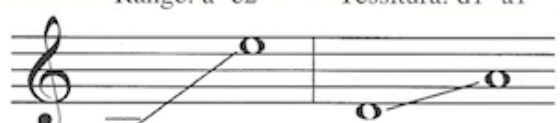
Range:  $c\flat1-b\flat2$  Tessitura:  $a\flat1-c\flat2$



EXAMPLE 5.3 Senior high soprano I.

(4)


Range:  $a-e2$  Tessitura:  $d1-a1$



EXAMPLE 5.5 Senior high alto I.

(3)


Range:  $c1-g2$  Tessitura:  $f1-c2$



EXAMPLE 5.4 Senior high soprano II.

(5)

Range:  $f\sharp-c\sharp2$  Tessitura:  $b-f\sharp1$



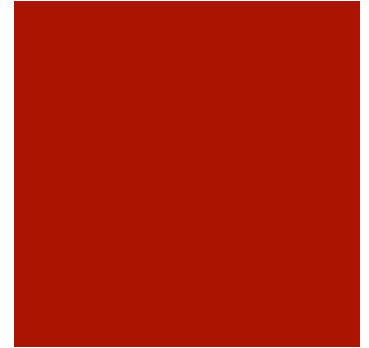
EXAMPLE 5.6 Senior high alto II.

# The Adolescent Male Voice

- Male voice change brought about by hormonal changes in the body.
- May begin as early as 4<sup>th</sup> grade, but more often starts in 7<sup>th</sup> grade (c.12 years old); known to peak in the 8<sup>th</sup> grade.
- Physiological indicators include:
  - Growth spurt,
  - Physical awkwardness,
  - Development of sex organs,
  - Growth of a mustache (peach fuzz) and other body hair,
  - Facial blemishes.

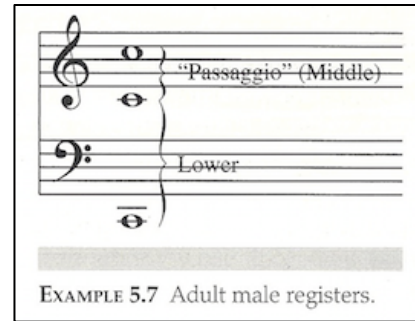


# Nature of Vocal Mutation



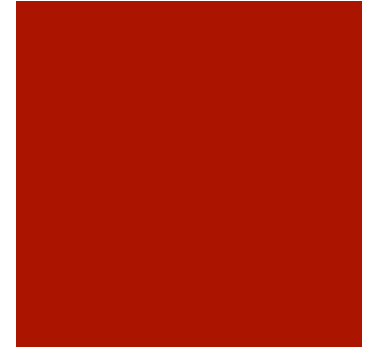
- Change in speaking voice indicates change is taking place, especially in the thickening and growth of the larynx.
- Boy about to enter voice change often displays a great brilliance and power in both speaking and singing.
- Noticeable changes in speaking can include a temporary loss of control, or “cracking,” and a heavy or husky quality.
- Puberty brings about increase in length and thickness of vocal folds. Vocal folds in both sexes reach their adult length by puberty, however, absolute length of male vocal folds increases over two times that of the female.
- Overt increase (10 mm) accounts for octave register drop and anterior (front) protrusion of the male larynx at the thyroid notch (“Adam’s apple”). Change happens at different rates.

# Male Vocal Registers



- Adult males sing in predominantly two registers:
  - (1) The lower (TA-dominant, or chest, voice) approx. middle C downward two octaves;
  - (2) A mixed register (CT/TA mix, or upper, voice) in the top octave of his range, middle C to c2.
- This upper voice involves a “passageway” (*passaggio*) from middle C to approximately f1, in which the CT/TA mix is heavier on the TA side, and a “head” voice (not to be confused with the child’s head voice) from g1 to high C (c2), in which CT-TA is higher on the CT side.
- Both registers (CT & TA) share equally in pitch production at approx. f#1. Above this pitch, the CT-dominant register gains prominence as pitch ascends. [Excellent discussion, pp. 124-128.]

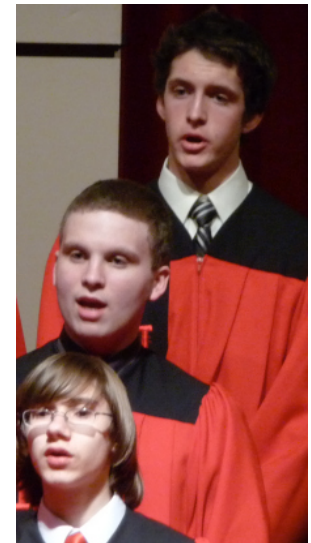
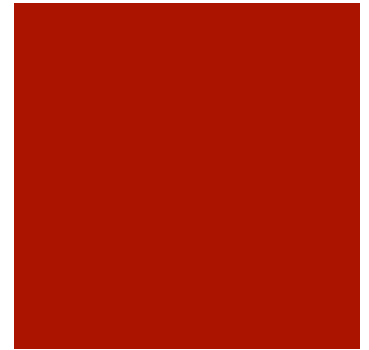
# Early Stages of Male Vocal Mutation



- Upon entering puberty, male voice expands downward in range, some gradually, some quickly.
- Maturity rates/speed of physiological developments vary according to individual.
- In early stages, cultivate only two registers: upper (male alto) and lower (chest). Shift at e1. Top voice, well-supported, will begin to take on the quality of true male *passaggio*, different than boy's mixed voice.
- Once realignment of registers takes place, true tenor head voice (fuller and more resonant than the male alto sound) can be developed in the late- or post-high-school years. Vocalizing boys in the upper register (CT/male alto) is the secret to developing the high school tenor.

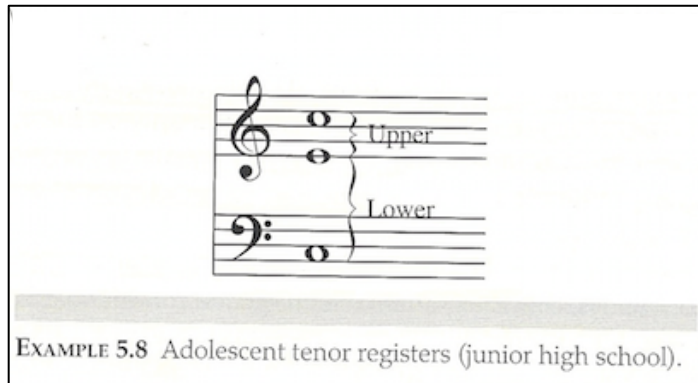
# New *Passaggio* & Head Voice

- Adolescent male can no longer sing in what was his childhood middle voice (c1 to c2) with same balance of CT/TA.
- Length and thickness of growing vocal folds disturbs coordination; new *passaggio* and head-voice techniques must be eventually learned for this top register (c1 to c2).
- Until voice is settled and a certain stability is evident (sr. high), this new *passaggio* register and head voice technique must be avoided in favor of a modified approach using the pure upper (CT-dominant) voice from approx. e1 to c2. Continued use of upper register through this range helps maintain its strength.
- Later, it can be coordinated with the chest voice for a new *passaggio* and head voice register (c1 to c2), referred to as the “upper voice.”



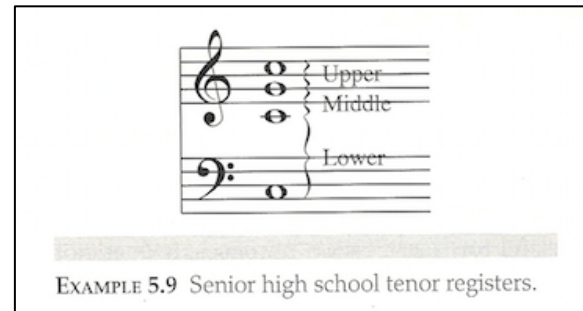


# Explore All Registers



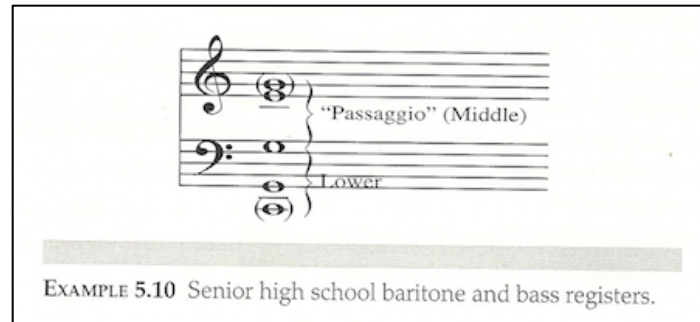
- Boys with changing voices fall into same trap as girls: they sing everything in a mixed register.
- Adolescent boys can bring unchanged mixed-register into chest voice range (middle C and lower) resulting in weak, undefined sound: neither man nor boy.
- Changing voices should be taught to explore lower (TA-dominant) chest register and use it for the lower 2/3s of vocal range (great C to middle C). Boys do not know it is possible to sing in this chest register. *[See campfire anecdote in book.]*
- Boys with changing voices are not limited to a small vocal range. They can significantly increase ranges – upper and lower – when they use both CT-dominant and TA-dominant vocal registers.

# Negotiating Tenor Passaggio



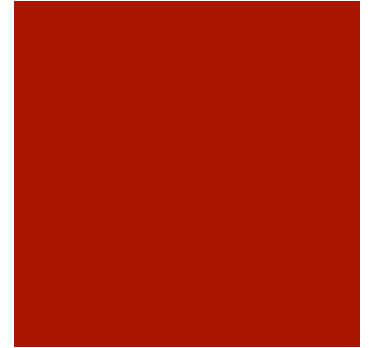
- TKS believes that a boy singing in the “cambiata” classification with a production based primarily on upper register (“boy’s voice”) will be interfering with the change that is taking place.
- At any given time, boys may have a blank spot where no pitches sound in a particular range, especially quick changers. Work to close this gap from the top down and it will eventually close.
- Continue to exercise all registers as able. If upper voice has been actively maintained and exercised, the true passaggio (incremental sharing of registers) begins at approx. middle C.
- Difficult technique to master, requires a “covered” quality accomplished through lowering the larynx and narrowing the vowel vestibule (i.e., production of a “closed [or focused] vowel” [u] or [i]).
- All transitions into the upper voice by the male singer are made with the closed vowel. The back vowels [u] and [o] and central [ʌ] vowels make this transition automatic.
- Tenors must have a good voice teacher to learn this technique

# Basses and Baritones



- Mature basses and baritones need to develop a *passaggio* if they are to learn to sing in tune without strain above middle C.
- For the bass, incremental sharing of registers begins at about pitch f.
- The baritone begins to “mix in” the upper register at about pitch g.
- Basses should be expected to sing in this *passaggio* register as high as e1; baritones can be expected to sing as high as f1 or g1.
- Review work of Henry Leck, founder and director of Indianapolis Children’s Choir, one of the largest children’s choir programs in the world. Young men take the “high road” in vocal registration.

# Male Vocal Ranges and Tessituras



- Given for consideration when choosing repertoire.
- Remember, tessituras are comfort zones in which majority of pitches fall.
- Junior High is 7<sup>th</sup> and 8<sup>th</sup> graders, although 9<sup>th</sup> can overlap junior and senior high school.
- Continual monitoring of the vocal compass is needed through the adolescent experience; “permanent” labeling too early may result in voices that are limited in range and confidence.

# Junior High Male Vocal Ranges/Tessituras

(1)

Range:  $b\flat-f2$  Tessitura:  $d1-d2$

EXAMPLE 5.11 Junior high tenor I (unchanged voice).

(4)

Range:  $c-e1$  Tessitura:  $d-d1$

EXAMPLE 5.14 Junior high baritone (changing voice).

(2)

Range:  $g-c2$  Tessitura:  $a-a1$

EXAMPLE 5.12 Junior high tenor II (changing voice).

(5)

Range:  $B\flat-f; a1-c2$  Tessitura:  $c-e$

EXAMPLE 5.15 Junior high bass (changing voice).

(3)

Range:  $d-g1$  Tessitura:  $g-d1$

EXAMPLE 5.13 Junior high tenor (newly changed voice).

(6)

Range:  $G-c1$  Tessitura:  $A-a$

EXAMPLE 5.16 Junior high bass-baritone (newly changed voice).

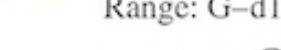


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Range: d-a1      Tessitura: g-d1

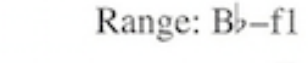
EXAMPLE 5.17 Senior high tenor I.

Range: G–d1      Tessitura: c–g



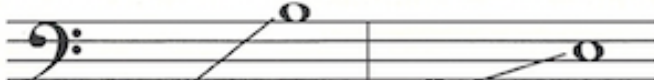
EXAMPLE 5.19 Senior high baritone.

Range: B $\flat$ -f1      Tessitura: e $\flat$ -b



EXAMPLE 5.18 Senior high tenor II.

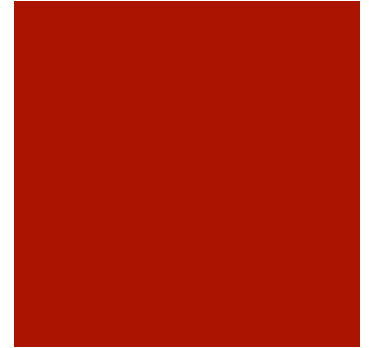
Range: E–b      Tessitura: A–e



A musical staff in bass clef showing a range from E2 to B2 and a tessitura from A2 to E3. The notation includes a whole note E2, a whole note B2, and a whole note A2. A diagonal line connects E2 to B2, and another diagonal line connects A2 to E3.

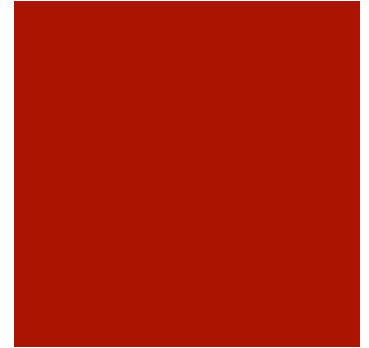
EXAMPLE 5.20 Senior high bass.

# Male Vocal Quality



- Adolescent boys are capable of greater richness and depth if they learn to energize their entire instrument. *[Read block quote on p. 133.]*
- Young adolescent voice will be light and husky/breathy, greater depth and resonance will occur with good vocal instruction over time.
- Loud singing during early adolescence will produce harsh quality; better to maintain levels of *mp* or *mf*, but not too soft!
- Well-supported and relaxed voice will produce vibrato and is a sign of good technique. Non-vibrato in pop singers: sign of throat tension.

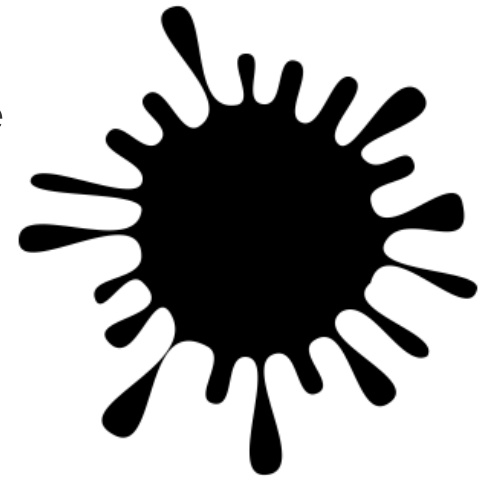
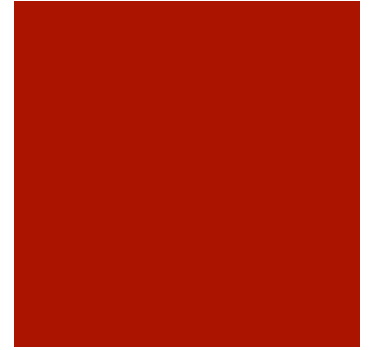
# Voice-Pivoting



- Challenges presented by changing voice to make process of instruction more difficult, especially for boys who may not have certain pitches on certain days.
- Sally Herman recommends “voice-pivoting” : pivot to another part when specific notes don’t sound. Use quality multi-voice literature where male voices sing a combination of voice parts according to present vocal ranges. You must be familiar with each singer’s parameters for pivoting to work.
- Herman classifies as: T1, T2, Bari, Bass (not to be confused w/ changed-voice counterparts. T2’s and Bari’s sit close to sopranos so they can sing their part down an octave; T1’s and Basses sit close to altos. In 2-part music: T1’s sing the alto part as written; Basses sing Alto part an octave lower.

# Singers with “Blank Spots”

- Adolescent boys who have the most difficulty matching pitch are those whose voices change at an early age or changed rapidly.
- These singers have only a 3- or 4-note range in the lower register and nothing in the middle range.
- Assure them this is normal; work their voices downward from the top.
- Have male singers sing in the soprano range to develop falsetto and head voice. Participation in glee clubs is recommended to stimulate interest in singing and help them with unique issues related to voice change.



## Appendix 1

### SECONDARY METHODS LECTURE

Jeffrey Gemmell

#### THE ADOLESCENT VOICE: FOCUS ON THE MALE CHANGING VOICE

##### I. The Physiological Situation (not a “problem”)

###### A. Adolescence:

- + Parameters for this discussion:
- + Outward appearance:
- + Inward selves:

###### B. Adolescent Voice:

- + Actual physical change:
  - a. vocal folds lengthen c. 1/6 of an inch and become thicker;
  - b. larynx become larger
- + Since the voice works as a functional unit with the rest of the body...

###### C. Historical Views on the Changing Voice:

- + The traditional and most prevalent view, which was popular to mid-20th century, was that the voice should be “rested” during the change.
- + During mid-20th century, three music educators began to take the issue of the changing voice more seriously and pursued it more scientifically than ever before.
  1. **Frederick Swanson** --
    - \* theory: vocal change rapid
    - \* at time of vocal change, voice often quickly drops an octave (See Fig. 2)
    - \* “adolescent basses”
    - \* “area of silence” (around middle C),
    - \* changed/unchanged and genders receive separate training
  2. **Duncan McKenzie** --
    - \* theory: voice change gradual process
    - \* adolescent male singer begins to lose notes in the upper range and add them on to the bottom, finally settling into the tenor or baritone range (See Range Fig. 3)
    - \* during transition process, there may be a period of time when where range is only 4 or 5 notes
    - \* As change begins, voice moves down through the treble range and into an area with a distinctive sound: between unchanged treble quality and sound of a newly changed junior high baritone. Labeled: “alto-tenor”
    - \* After moving through “alto-tenor” range, voices becomes a junior high baritone, after which it settles into tenor, baritone, or bass range.



## Appendix 2

### 3. Irvin Cooper --

- \* theory: voice change was gradual and should be monitored carefully
- \* as voice moves from characteristic treble quality of unchanged voice into changed quality, voice moves initially into the baritone range before settling into the tenor or bass range of the completely changed voice
- \* referred to range of changing voice as the *cambiata* range; method of dealing with voice known as the *cambiata plan*. (def. from *cambiata nota* meaning *changing note* and adapted it to *cambiata voce* or *changing voice* (See Range Fig. 4)
- \* published several collections of songs arranged for ensemble with changing voices with *cambiata* vocal line
- \* his students and others have continued to write SACB music since his death in 1971.

### D. More Recent Developments: John Cooksey

- + "Contemporary Eclectic Theory" (See Range Fig. 5)
- + theory based on a synthesis of Swanson, McKenzie, and Cooper
- + Theory:
  - a. 5-step process of vocal change takes from 1 to 2 years
  - b. Symptoms of vocal mutation onset in young men include changes in:
    - 1) vocal range and tessitura
    - 2) timbre
    - 3) quality of the speaking voice

## The Approach: Methods and Materials

### A. Practical Pedagogical Pointers:

1. Observe, listen, and learn.
2. Reclassify voices, if necessary, at regular intervals.
3. Shift seating arrangement of choir as voices change; keep young men seated together.
4. Develop good vocal technique and encourage healthy singing to ease the vocal transition.
5. Rehearse intelligently and practice variety and diversity in programming.
6. Choose repertoire that is appropriate for the voices: vocally, musically, intellectually, emotionally, expressively, etc.
7. Teach musical concepts through active involvement and performance of quality choral literature. Research all available resources to find new and innovative pieces.
8. Make learning an enjoyable experience for everyone. Quality, hard work, and excellence CAN be FUN!!! Encourage ensemble ownership of the musical product.

## Appendix 3

### Joanne Rutkowski's Adaptation of Cooksey's Material with Descriptive Comments Regarding Each Phases (Source: The Choral Journal (December 1981): 12-13)

- 1. Unchanged Voice (Pre-Mutation)**  
 Range: a to f2  
 Tessitura: d1 to c2  
 Speaking: c1

Description:  
 + usually until ages 10-12 and lasts about 1-2 years  
 + boy-like quality to voice; physical appearance is boy-like (baby-fat)  
 + voice is at maximum range  
 + no life points  
 + excess air signals voice is starting to change
- 2. Mid-Voice I (Early Mutation)**  
 Range: a-flat to d2  
 Tessitura: c1 to b-flat 1  
 Speaking: b

Description:  
 + 7th or early 8th grade (12-13 years old); lasts about 6 months  
 + loss of upper notes; no falsetto  
 + volume diminishes and timbre darker  
 + physical appearance: height and weight increase
- 3. Mid-Voice II (High Mutation - Cambiata)**  
 Range: f to a1  
 Tessitura: g-sharp to f1  
 Speaking: a

Description:  
 + 13-14 years old; lasts 3-12 months (plateau at 8 months)  
 + husky speaking voice  
 + break from g1 to a1 into falsetto  
 + "Adam's Apple" appears  
 + voice becomes hard to manage  
 + very high "whistle register"  
 + crucial period for careful voice cultivation
- 4. Mid-Voice IIA**  
 Range: d to f-sharp1  
 Tessitura: f-sharp to d-sharp1

Description:  
 + lasts a few weeks to several months  
 + top quality like Mid-Voice II  
 + husky quality - baritone sound appears very breathy  
 + register lift around d1
- 5. New Baritone (Post-Mutation)**  
 Range: B to d-sharp1  
 Tessitura: d-sharp to b  
 Speaking: d/e

Description:  
 + 14-16 or 17 years old; lasts 1-2 years  
 + settling period; not child-like, but not adult sound  
 + light voice usually does not want to sing above c1  
 + not much vocal agility  
 + trouble with leaps of more than a 4th or 5th
- 6. Settled Baritone (Early Adult)**  
 Range: G to d1 (or f1)  
 Tessitura: c to a

Description:  
 + ages 17-18-?  
 + adult tone appears

## Appendix 4

