 BY DIANNE SPOTO

Anatomy of a Singer

Lungs, windpipe, diaphragm...your voice has parts just like any other instrument. Learn how they work together to produce the many colored sound of singing!

You've probably heard someone say, "The body is an instrument." Sounds clichéd, but it really is true. The human body has the same mechanisms that stringed, wind and percussion instruments have—they're just located inside of us. It's these mechanisms that allow us to sing!

Think about it: A stringed instrument's sound is produced when friction on the string causes it to vibrate and create audio waves. The same thing happens when our vocal cords vibrate. A wind instrument makes sound when air vibrates and resonates against the inner cavity of the instrument's tube. Our mouths serve as that same type of resonating cavity.

The human body is a fascinating instrument made up of lots of intricate mechanisms, capable of creating myriad pitches, tone colors, and fascinating sounds.

The Voice Machine

The actual sound of the voice comes from the *vocal cords*. Vocal cords are two bands of elastic muscle tissue located side-by-side in the voice box (known as the *larynx*) just above the windpipe (*trachea*). When you are silent, the cords remain open, creating the airway through which you breathe. When you speak, the air you exhale from your lungs is forced through the closed vocal cords, causing them to vibrate—faster for higher-pitched sounds, slower for lower-pitched sounds.

Have you ever taken a blade of grass, pressed it between your thumbs and blown through it to make a squeaky sound? This is the exact same way our vocal cords produce sound! Ever notice that great singers often take very deep breaths? Like a cellist's bow or a guitarist's pick, the air they're inhaling is the the tool they use to play their instrument.

Resonance Residence

Singing voices are often categorized into registers like chest voice, middle voice, head voice, and falsetto. Each of these "voices" has recognizable tonal qualities and serves different purposes to a singer.

The chest voice is known for its deep, warm, rich tone. When a singer sings in the chest voice, the air resonates mainly in the chest cavity. Theatre and rock singers are often known as "belters" because they "belt it out" when they sing, which means that they sing in their chest voices.

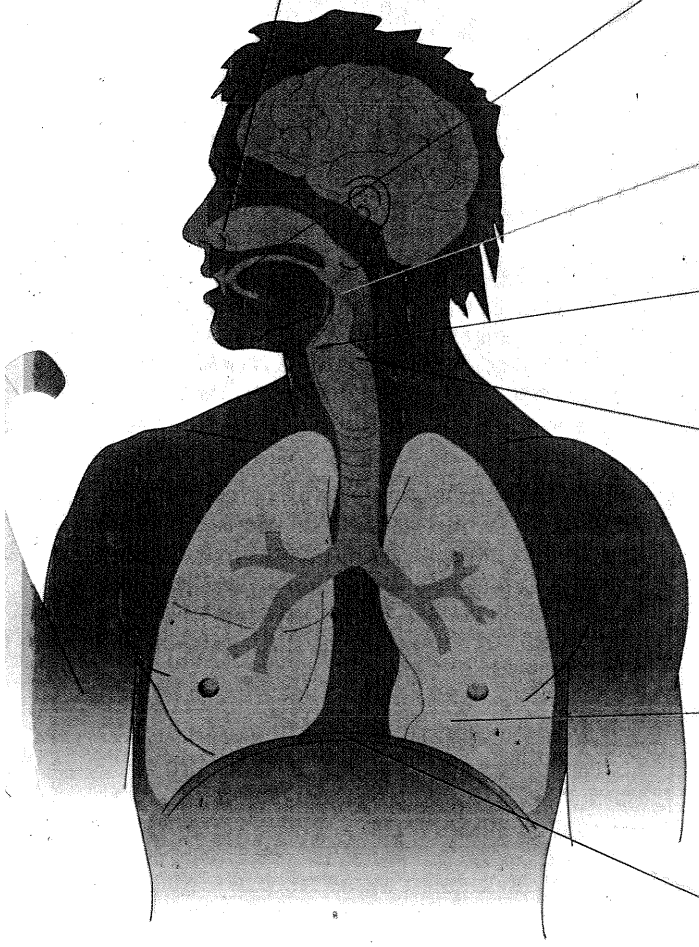
The middle voice is generally associated with middle pitch ranges, and is recognized for its smooth, calm sound. When singing in middle voice, the air resonates in the middle of the head—particularly in the throat and mouth cavities. Lots of jazz vocalists prefer to sing in this smooth and easy way.

The head voice and *falsetto* really mean the same thing, except the head voice is associated with females, and falsetto with males. These two "voices" create light, bright singing tones that are higher in pitch and resonate within the upper sinus cavities.

Tone Quality and Care

There are many factors that affect the tone quality of the

A LOOK INSIDE THE HUMAN INSTRUMENT



Nasal cavity
The open area inside the nose. When air resonates here, the sound created helps make upper-register singing easier.

Mouth cavity
The open area inside the mouth is a place that air resonates. Changing the shape of the mouth cavity with vowel and consonant pronunciation, jaw expansion, and lip shape affect pitch, pronunciation, volume, and tone.

Pharynx
A passageway from the nasal cavity down to the larynx.

Vocal cords
Two bands of elastic muscle tissue which vibrate to create vocal sounds.

Larynx
Also known as the "voice box," the larynx houses the vocal cords.

Lungs
Organ of the respiratory system that creates oxygen and airflow.

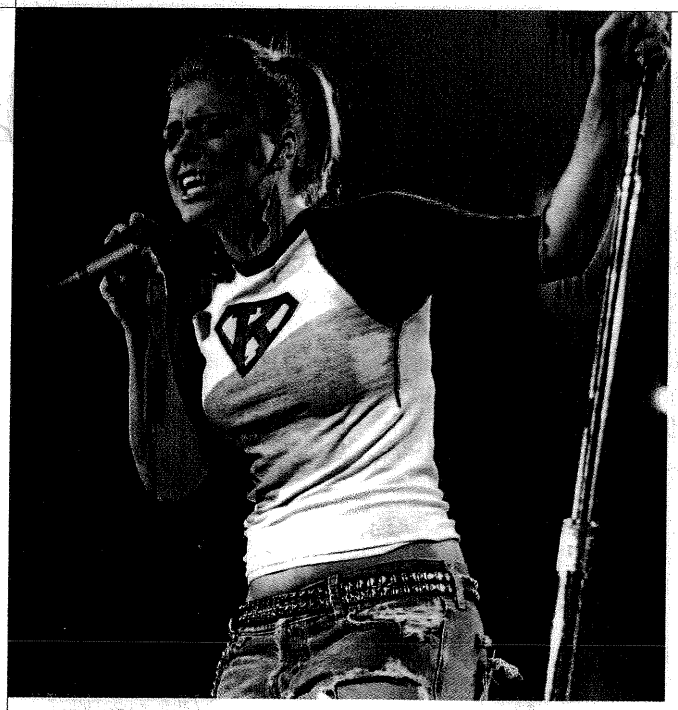
Diaphragm
A dome-shaped muscle located beneath the lungs which contracts and expands, helping the lungs to pull air in and push air out.

voice. Singing techniques, physical care of the voice, and even puberty can affect the vocal tone.

It is very important to take good care of your voice. Just like other body parts, vocal cords can be strained or damaged. But unlike an injured arm or leg, we usually don't notice anything is wrong with the voice until the problem becomes severe. There are many factors that contribute to vocal damage, such as frequent shouting, screaming, or cigarette smoke. Taking care of your voice by using proper technique can have a direct impact on the quality of your singing.

Putting Your Body Into It

The way you use your body has a direct impact on your singing. Sometimes, instead of just singing in a way that seems natural, it helps to step back and think about how



Kelly Clarkson demonstates good vocal and mic technique: Note her open mouth and the support she's getting from her midsection. (image courtesy Audio-Technica)

your "instrument" is working. Here are a few tips:

If you're having trouble hitting a high note, use your head voice by resonating in your mouth and nasal cavities. Sing softly, and avoid strain.

Use your diaphragm to support the sound at all times. To support with your diaphragm, take a deep breath in, and as you open your mouth to sing, make the stomach muscles slightly taut as if you were about to do a sit-up. The diaphragm will literally support the air coming out of your lungs and up through your vocal chords. This will immediately improve the tone, pitch, and breath control.

Don't be afraid to open your mouth wide when you sing. You will not look silly, and you will be amazed at how much easier it is to move between the various voices.

Posture directly affects pitch. When slouching, it is very easy to sing flat and out of tune. The best posture is one that is "built" from the bottom up: Begin by standing with your feet shoulder-width apart. Align your hips over your knees, keeping your spine straight and stretching it upward toward the ceiling. Keep your chin slightly tucked in, as if there is an invisible string attached to the crown of your head pulling you up toward the ceiling.

Great singers know how to use a microphone to capture their voices. When you're belting, move the mic away from your mouth and a little off to the side to avoid that unpleasant popping sound caused by bursts of air. Always sing consonants much softer than you would without a mic. When you're singing in your head voice, bring the mic closer to your mouth.

The Last Word

Our voices are made up of and surrounded by a complex and delicate number of mechanisms. You can avoid damage, build and improve the tone of your voice through proper breathing and vocal technique, regular practice, living a healthy lifestyle, and enjoying all the wonderful sounds the voice can make! **T**

Dianne Spoto received performance degrees from New England Conservatory and Mannes College of Music. She writes for VH1.com, SONY BMG, and is the former Editor-in-Chief of Women Who Rock.

FIVE VOICES

There are many great singers out there, and each one uses the head, middle and chest voice in his or her own way. The five artists listed below exemplify how using the body can impact your singing.

ELLA FITZGERALD is one of the finest jazz singers of all time. She uses the middle voice to create her trademark soulful tone. When you listen to one her recordings, notice how her voice is never pushed or strained—no matter what range she is singing in. Her tone is always smooth, easy, and pure.

JOHN LEGEND has a voice that projects! Take a listen to any of the tracks on Get Lifted and you will hear a voice that could reach the back of a concert hall with no amplification. His voice resonates fully in his nasal and mouth cavity, which allows his vocals to spin out of his mouth, filling up a room with intense sound.

KELLY CLARKSON is a prime example of a classic "belter." On her smash hit "Since You've Been Gone," Kelly supports her sound with a firm diaphragm, and allows her full voice to resonate in her chest cavity up through her vocal cords and out of her mouth, creating a powerful pop singing tone.

MARIAH CAREY has an astounding five-octave voice. This is practically unheard of! Most accomplished singers can cover about three octaves. Check out some of her earlier recordings, like "Emotions" or "Vision Of Love" and you will hear her sing in a register so high, it almost doesn't sound real.

BONO of U2 is an incredibly versatile rock singer who goes from quiet (but strong) chest-voice singing to belted mids and reaches effortlessly into a supple, expressive falsetto.—DS