

Things you know  
about language  
you don't know  
you know

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Linguistics Program

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# Talk about linguistics

- What is linguistics?
- The scientific study of language and its structure, including the study of morphology, syntax, phonetics, and semantics. Specific branches of linguistics include sociolinguistics, dialectology, psycholinguistics, computational linguistics, historical-comparative linguistics, and applied linguistics.
- What does **that** mean?

# How about this instead....

- Linguistics is the study of things you know about language you don't know you know
  - Such as? A native speaker of English knows, for example, that the previous sentence could also be uttered as
- Linguistics is the study of things that you know about language that you don't know that you know
  - Remember anyone ever telling you this? Yet, you know...
- Today, I want to illustrate with a hands-on case something you know about English you are unaware of, which deals with sounds, meaning and the morphology of the language....

# Sounds we don't hear

- Consider the following two words
  - cap (as in baseball cap)
  - cab (as in taxi cab)

# Sounds we don't hear

- Consider what happens when we pluralize these words
  - caps
  - cabs
- Notice anything? Put a hand on your throat and pronounce the two words

# Sounds we don't hear

- Consider what happens when we pluralize these words
  - caps           the end sounds like [..ap**s**]
  - cabs           the end sounds like [..ab**z**]
- Notice anything? Put a hand on your throat and pronounce the two words

# Who has ever noticed this?

- This is something you know about language that you don't know that you know!
- You might ask yourself at this point: WHY is this the case? In fact, this little fact raises two interesting questions:
  1. Why is it that the plural -s sometimes sounds like z?
  2. Why have you never noticed this before?
- There is an answer to both these questions, and we'll try to understand what these are here today...

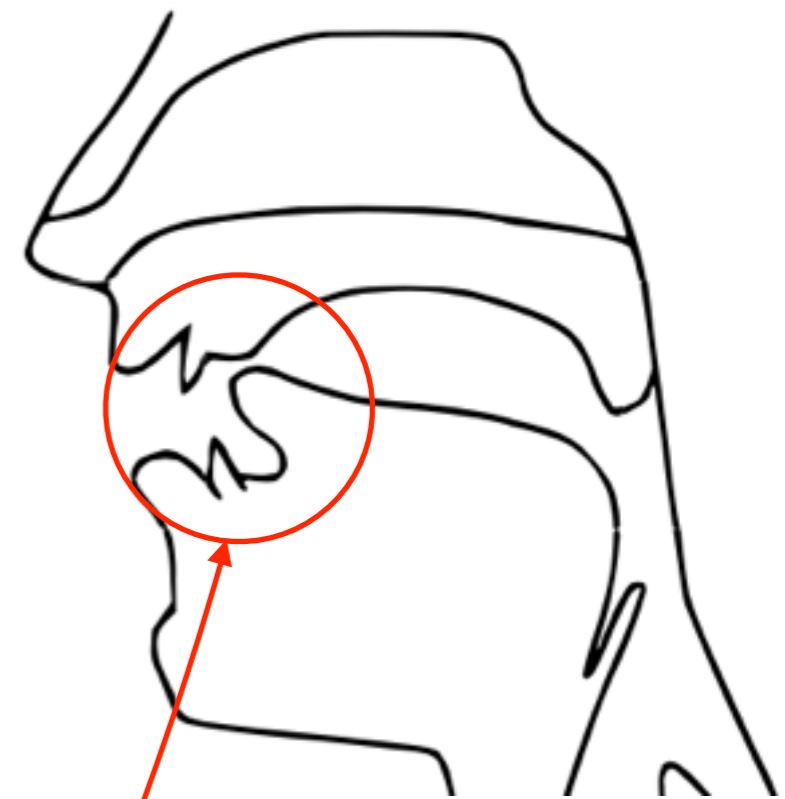
# The first question

- To answer why the plural -s sometimes sounds like [z] requires a basic understanding of **articulatory phonetics**, which is
  - The production of speech sounds
    - Air in our lungs that is pushed through our throat and mouth
    - Position and movement of the articulators in your mouth and throat leads to the production of different sounds
- Important point to retain here: the sounds /s/ and /z/ are almost the same sounds

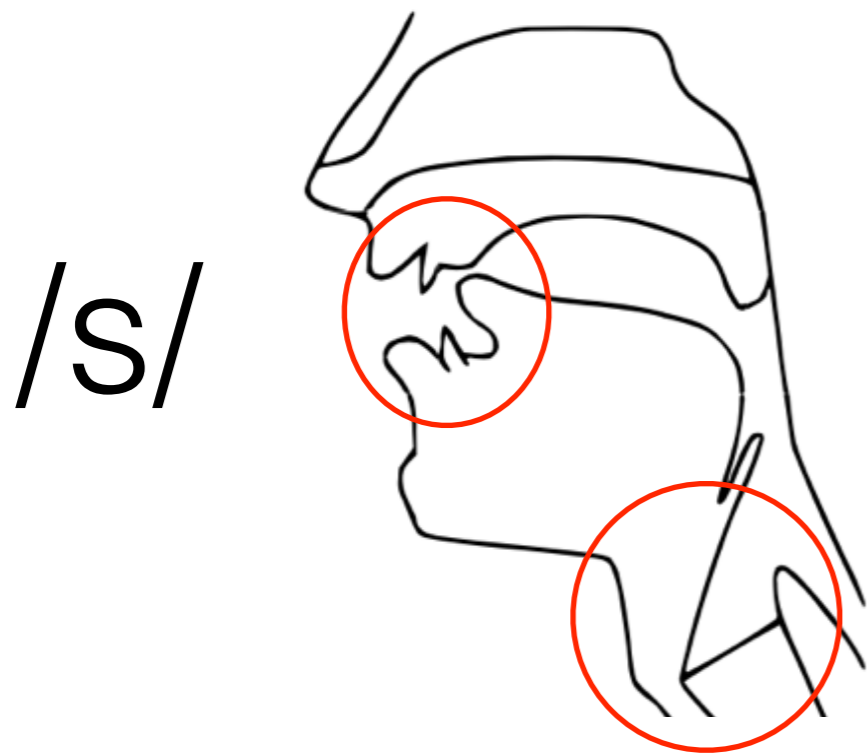


# */s/ and /z/: alveolar fricatives*

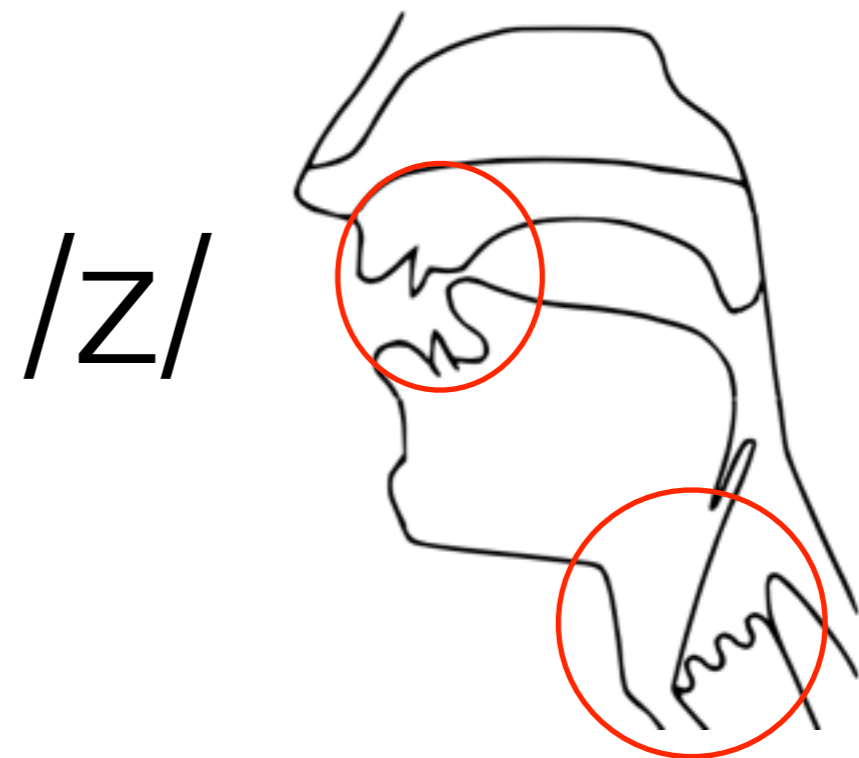
- Fricatives:
  - Continuous flow of air from the lungs through the mouth;
  - Noise made by passage of the air through a constriction (a narrow canal);
  - Constriction with */s/* and */z/*: tip of the tongue close to the alveoli, the little bumpy ridge right behind your upper teeth



- Pronounce /s/ and /z/ alternatively in a sequence (szszsz): observe that the position of the tongue in your mouth is the same with the two sounds.
- What differs between the two sounds? /z/ feels more noisy than /s/: why?
  - Your vocal cords vibrate with /z/, but not with /s/;
- Same position of tip of the tongue with alveoli



no vibration of vocal cord



vibration of vocal cord

# About /s/ and /z/

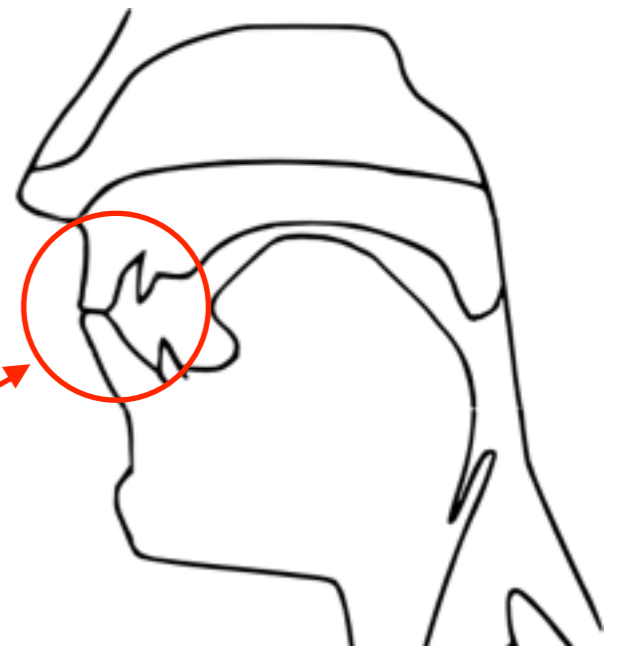
- /s/ is a voiceless alveolar fricative (no vibration of vocal cords)
- /z/ is a voiced alveolar fricative (vibration of vocal cords)
- This difference is called **voicing**

# Voiced and voiceless pairs

- Many pairs of consonants in English are articulatory identical, differing only with respect to voicing
- Among those: /p/ and /b/, the final sounds for cap**p** and cab**b** respectively

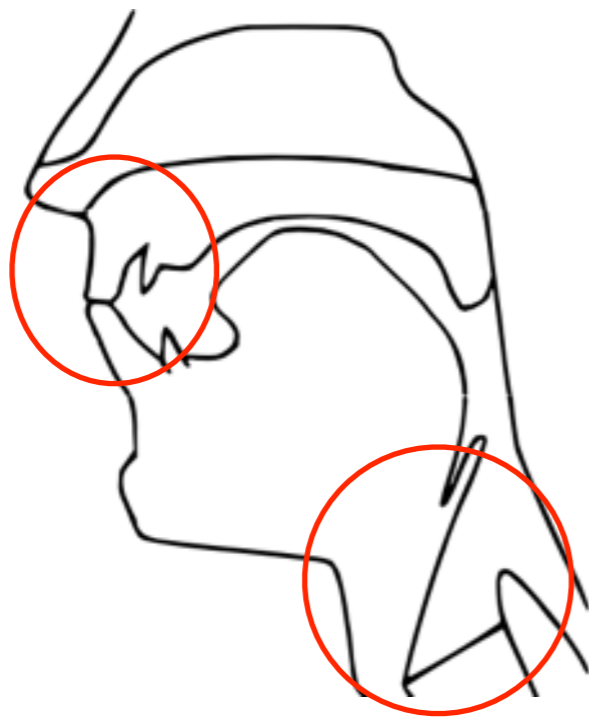
# /p/ and /b/: *bilabial stops*

- Stops:
  - Stops involve the stopping and releasing of the air flow
  - The release of air makes a ‘pop’ type of sound
  - The stopping with /p/ and /b/: contact of the upper and lower lips



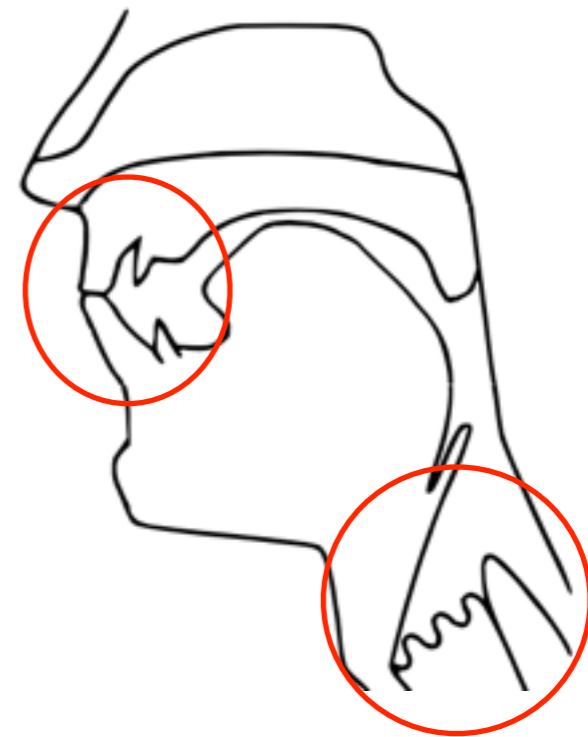
- Pronounce /p/ and /b/ alternatively in a sequence (pbpb): observe that your lips stop the air flow in both cases.
- What differs between the two sounds? /b/ feels more noisy than /p/: why?
  - Your vocal cords vibrate with /b/, but not with /p/!
- Same stopping of air by the lips followed by a release

/p/



no vibration of vocal cords

/b/

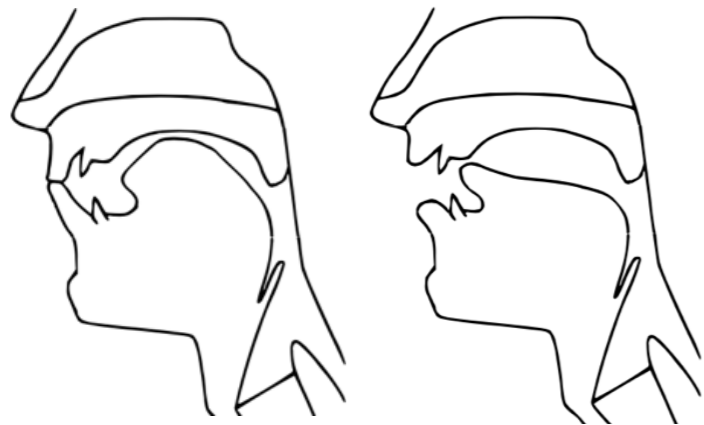


vibration of vocal cords

# Answering the first question

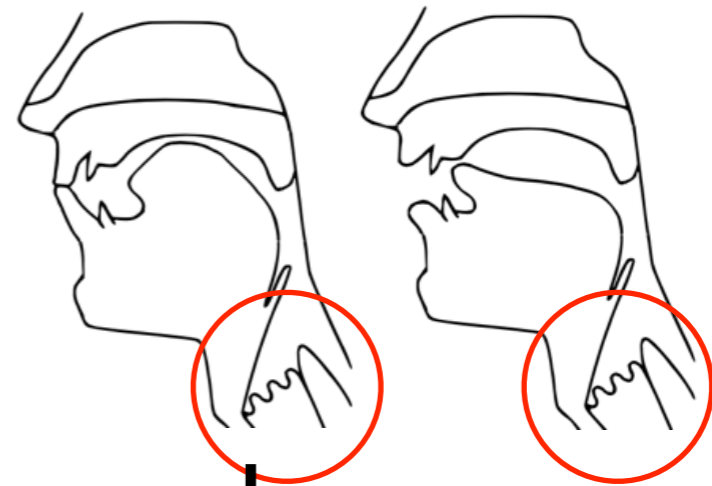
- Why is the s of the plural in *cabs* sound like z?
  - *caps* sounds like [...aps]
  - *cabs* sounds like [...abz]

When s is next to the voiceless sound /p/, nothing happens...



...a p s

When s is next to the voiced sound /b/, the vocal cords keep vibrating: **s** then sounds like **z**



...a b z

# This happens a lot!

- Try to determine if the sound in bold in the following words is voiced or voiceless, by listening to plural form s:
  - pat**t** + s            s sounds like **s**, /t/ is voiceless
  - pad**d** + s            s sounds like **z**, /d/ is voiced
  - tu**que** + s            s sounds like **s**, /k/ is voiceless
  - tug**g** + s            s sounds like **z**, /d/ is voiced
  - ref**f** + s            s sounds like **s**, /f/ is voiceless
  - rev**v** + s            s sounds like **z**, /v/ is voiced
- The pairs of sounds /t,d/, /k,g/ and /f,v/ are all distinguished by their voicing values



# English consonants distinguished by the voiced feature

		bilabial	labio-dental	dental	alveolar	post-alveolar	velar
stops	voiceless	p <b>pit</b>		t <b>tin</b>			k <b>cut</b>
	voiced	b <b>bit</b>		d <b>din</b>			g <b>gut</b>
affricate	voiceless					tʃ <b>cheap</b>	
	voiced					dʒ <b>jeep</b>	
fricative	voiceless		f <b>fat</b>	θ <b>thigh</b>	s <b>sap</b>	ʃ dilution	
	voiced		v <b>vat</b>	ð <b>thy</b>	z <b>zap</b>	ʒ delusion	

# More sounds

- Try to determine if the sound in bold in the following words is voiced or voiceless:
  - **pie** + s            s sounds like **z**, /ai/ is voiced
  - **bee** + s            s sounds like **z**, /i/ is voiced
  - tub**a** + s            s sounds like **z**, /ɑ/ is voiced
  - sho**e** + s            s sounds like **z**, /u/ is voiced
  - fram**e** + s            s sounds like **z**, /m/ is voiced
  - fan**n** + s            s sounds like **z**, /n/ is voiced
  - grill**l** + s            s sounds like **z**, /l/ is voiced
  - boar**r** + s            s sounds like **z**, /r/ is voiced

# All things you know, you did not know you know (before today!)

- Funny, the plural -s seems to sounds like -z more often than it sounds like an -s
- Why is it that the great majority of people never noticed this before (except linguists, and..you now!)?
- This is our second question

# Words and morphemes

- Do you hear the difference between
  - **zap** and **sap**?
  - **fuss** and **fuzz**?
- Why do you hear these differences so clearly, yet you never heard the difference between the different realizations of the plural -s before, which are phonetically identical?
- It's all semantics!

# Meaningful distinctions

- The sounds associated with words can be understood as instructions in the brain telling your articulatory apparatus to execute a specific set of movements.
- With *sap* and *zap*, or *fuss* and *fuzz*, the instructions associated with s and z serves to distinguish different WORDS:
  - We say that in these cases, s and the z introduce a meaningful distinctions:
  - the sequences of sounds *zap*, *sap*, *fuss* and *fuzz* distinguish different realities (the realities associated with ZAP, SAP, FUSS and FUZZ respectively)

# Distinctions that are meaningless

- The plural -s is a **morpheme** (a unit that must attach to a word): it also introduces its own specific reality (plurality of things)
  - The different realizations of this morpheme are not meaningful: although it is often realized as -z, what we actually *hear* is the notion of plurality, a reality associated with the instructions that produce /s/.
- Again, this happens all over the place, not just in morphemes: consider words that start with the sequence **ex** in English:
  - **Ex**pect: [...ksp...]
  - **Ex**ample: [...gza...]

- You now know a little more about
- things you know about language
- you did not know
- you know
- There is a lot more to find out
- This knowledge is at the very centre of what it means to be a human