

## Day 4: Daniel Jones and 18 basic vowels

Daniel Jones was a British phonetician who contributed to the description of language sounds. We will discuss the description and definition of language through Daniel Jones' basic vowels. We will also learn about and discuss consonants through practice.

Daniel Jones (1881.9.12–1967.12.4<sup>\*1</sup>) is an English phonetician, born in London. He studied under Paul Passy, professor of phonetics at the Sorbonne (now the University of Paris). He became the Dean of the Faculty of Speech at London College. The systematic teaching of speech has been going on since 1907, when Daniel Jones was still a part-time lecturer at London College. He became Dean of the Faculty in 1912, and in 1921 became the first full professor of phonetics. He retired from London College in 1949.



Daniel Jones 1881–1967

### 1 Cardinal vowels

The cardinal vowels are the basic vowels that form the basis for describing the sounds of a language, as defined by Daniel Jones.

The “English Pronouncing Dictionary,” in which the basic vowels were first introduced, was published in 1917 and continues to be published. Accurately recording the sounds of language was extremely difficult and was the most important issue.

A recording of Daniel Jones' own voice is available on YouTube, so please have a listen.<sup>\*2</sup>

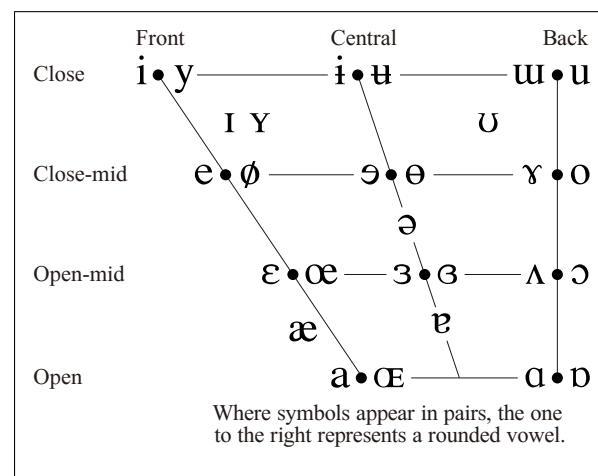


FIGURE 1: IPA vowel chart (2015)

- Q1: Watch the video and pronounce each vowel to see how it corresponds to the FIGURE 1.
- Q2: How can we pronounce each vowel so that we can clearly tell the difference between them?
- Q3: What methods did Jones use to determine the 18 vowels?
- Q4: Why did FIGURE 1 become an inverted trapezoid?
- Q5: Compare the different vowels and discuss what relationship each vowel has to each other.
- Q6: Imagine Jones's ideas on the description of the voice, and exchange your opinions with each other.

<sup>\*1</sup> ©University Colledge London

<sup>\*2</sup> There is a famous person with the same name as Daniel Jones, so be sure to use search terms like ‘Daniel Jones vowel’

## 2 Recodings of cardinal vowels

Jones made a recording of the first cardinal vowels on a phonograph in 1917. Later, he recorded the second cardinal vowels and invented a vowel chart for the central vowels. Recordings were made in 1943 and 1956. “An Outline of English Phonetics” (1918) became the first standard to describe pronunciation in linguistics. Jones’ research attitude toward phonetics is famous for being the model for Professor Higgins in the theater show “Pygmalion.”\*<sup>3</sup>

Q7: Discuss why they were recorded in two stages: the first cardinal vowel, followed by the second cardinal vowel.

Q8: If you were to divide the first cardinal vowels into two groups, discuss what groups they could be divided into.

Q9: Imagine and discuss how Jones’s method of describing pronunciation might have influenced other languages.

## 3 System of cardinal vowels

The system of cardinal vowels is used to draw a diagram, describing the shape of the lips and the height of the tongue needed to produce each sound accurately. The height of the tongue represents the position of the tongue on the vertical axis in front and the horizontal axis behind. The front vowels (e, a) have a spread or middle lip position, but the back vowels (o, u) have lips that gradually round as the tongue rises in height. The International Phonetic Association still uses Daniel Jones’ model.

Q10: Identify what the major factors are in the vowel system.

Q11: Share your opinions on what aspects of the sounds allowed you to focus on these factors.

## 4 Tongue position/lip shape

FIGURE 2 is x-rays of Daniel Jones’ own tongue, showing the four cardinal vowels. A chain of small lead plates was placed on the tongue so that the outline of the tongue could be seen. A circle indicates the highest point of the tongue. A triangle indicates the position near the end of the hard palate. (Photographed by H. Trevelyan George, January 1917) Note the difference in the relative positions of the circles in the four vowels.

Q12: What difficulties and problems did he encounter in capturing these photos?

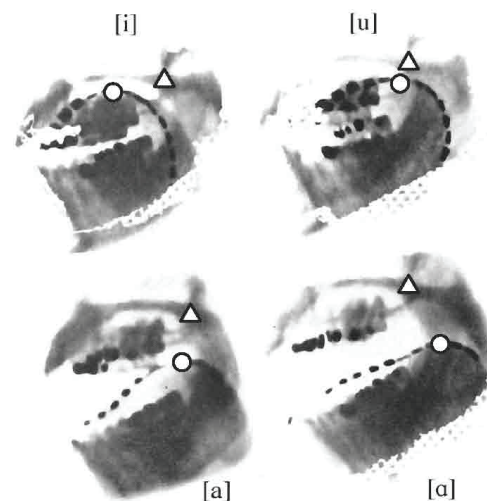


FIGURE 2: X-ray of Daniel Jones’s own tongue

\*<sup>3</sup> “Pygmalion” is a play by George Bernard Shaw. It is the basis for the theater and movie “My Fair Lady.”

Q13: Compare the shape of the mouth when the chin is up with the shape of the mouth when the chin is down, and discuss why the vowel chart is an inverted trapezoid.

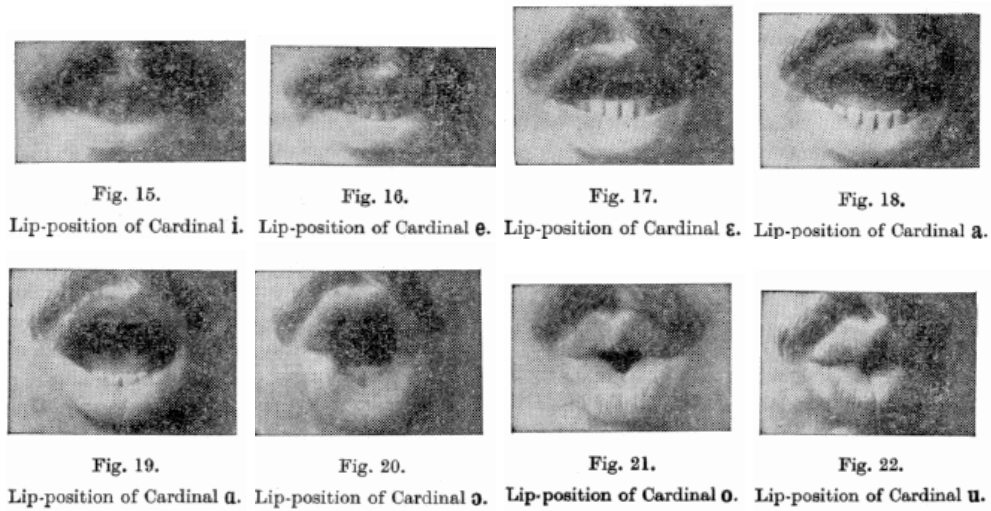


FIGURE 3: Photos of Lips: Photos of lip positions for the 8 cardinal vowels (lips are Jones' own lips). Note the relative widening of the top four (front, non-circles) and the relative rounding of the bottom four (back, circles).

## 5 Explanation of cardinal vowels

Q14: Discuss the difference between the following two definitions of vowels.

1. While the consonant sounds are mostly articulated via closure or obstruction in the vocal tract, vowel sounds are produced with a relatively free flow of air. They are all typically voiced. (Yule 2006:38)
2. A vowel is a speech sound that is accompanied by a shaking of the vocal cords. A vowel is a sustained sound that is voiced for a certain amount of time, without the tongue, teeth, lips, or glottis completely, partially, or momentarily closing the path of breath from the mouth, nor is it accompanied by the sound of breath friction by narrowing the path of breath. It is the opposite of a consonant, and is sometimes abbreviated to V, from the English vowel (Wikipedia).

## 6 Exercise: consonant

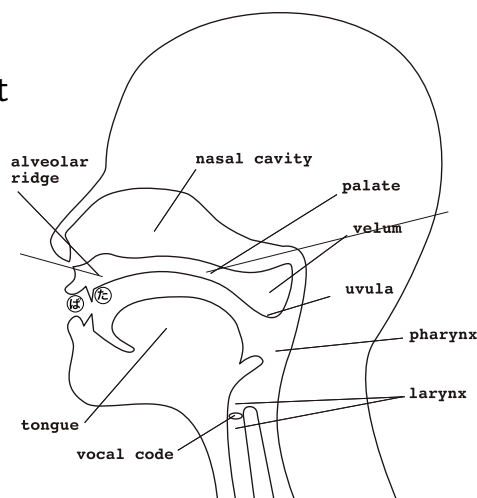


FIGURE 4: How to pronounce consonants

Q15: Try to pronounce each consonant and write its position in the following oral chart with hiragana:

か さ た な は ま や ら わ and write the consonant in the alphabet as well.

Q16: Try to draw a diagram of the oral cavity without looking at anything. If you can't draw it well, discuss with the group what is important to draw.

Q17: Describe two typical articulations and their articulation points. What are the differences between them?

Q18: Compare the two lip sounds of plosive and those of fricative, and tell the difference.

Q19: Compare the two labial sounds of plosive and the voiced and unvoiced sounds and tell the difference.

CONSONANTS (PULMONIC)												© 2015 IPA	
	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal		
Plosive	p b		t d			ʈ ɖ	c ɟ	k ɡ	q ɢ			ʔ	
Nasal	m	ɱ	n			ɳ	ɲ	ŋ	ɴ				
Trill	ʙ		r						ʀ				
Tap or Flap		ⱱ	ɾ			ɽ							
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ		
Lateral fricative			ɬ ɮ										
Approximant		ʋ	ɹ			ɻ	j	ɰ					
Lateral approximant			l			ɭ	ʎ	ʟ					

Symbols to the right in a cell are voiced, to the left are voiceless. Shaded areas denote articulations judged impossible.

FIGURE 5: IPA consonant chart (2015)

## 7 To learn further more

1. Daniel Jones of [web page](#) at London College.
2. You can click on the UCLA page to hear the sound [vowel diagram](#).
3. Cardinal vowels of Utrecht University [site](#). The images presented here are from this site.
4. For more information on Daniel Jones, see [Collins \(1988\)](#).
5. The IPA table can be found on Wikipedia at [IPA Consonant Table](#).

## References

- Collins, Beverly (1988) "The early career of Daniel Jones.", Ph.D. dissertation, Utrecht University.  
 Yule, George (2006) *The Study of Language*: Cambridge University Press, 3rd edition.