

UC San Diego

Infusing social justice in the development and instruction of a course on the history of phonetics

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About us



Marc Garellek

Faculty, Linguistics
Phonetics

Ongoing learner of
anti-racist & inclusive
pedagogy
history of phonetics



Shai Nielson

Grad student, Linguistics
Phonetics/phonology of
sign languages

Hearing researcher
Anti-racist and inclusive
pedagogy



Tamara Rhodes

Lead for Inclusive Design
UCSD Library
(form. Linguistics Librarian)

Anti-racist and inclusive
pedagogy



Emily Clem

Faculty, Linguistics
Syntax, semantics,
fieldwork

Anti-racist and inclusive
pedagogy

Introduction

- Winter 2022: I taught a mixed (undergrad and grad) seminar on the history of phonetics
 - The seminar was designed and implemented within an anti-racist pedagogical framework (e.g. Blakeney 2005, Kishimoto 2018)
- Goals for this talk:
 - Describe the motivation for the course, its development
 - Share the legacy course page and its materials
 - Discuss (ways of) teaching about our field's history to promote social justice, EDI.

Motivation 1: Learn more about the history of phonetics

Why learn (and teach) about our field's history?

It's fun

A. M. Bell (1868)'s *Visible Speech* (p.38)

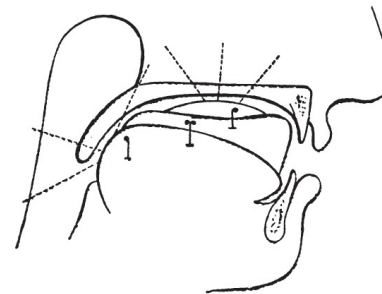
DIAGRAMS SHOWING THE RELATION OF THE PRIMARY ORGANIC SYMBOLS TO THE ORGANS.

CONSONANTS.



- X Glottis closed, (catch.)
- I " narrow, (voice.)
- O " open, (aspirate.)
- 0 Super-Glottal Passage contracted, (whisper.)
- j Soft Palate depressed, (nasal.)
- C Back of Tongue, (contracting oral passage.)
- o Front of do. (do.)
- o Point of do. (do.)
- o Lips, (do.)

VOWELS.



- 1 Back of Tongue high.
- I Back and Front do. do.
- l Front do. do.

[The dotted lines show the 'high, 'mid,' and 'low' positions of the tongue, as subsequently explained.]

Why learn (and teach) about our field's history?

How and when do our ideas start out?

A. M. Bell (1868)'s *Visible Speech* (p.38)

Potter et al. (1947)'s *Visible Speech* (p.4)

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Fig. 3 — The words "Visible Speech" as recorded by the sound spectrograph.

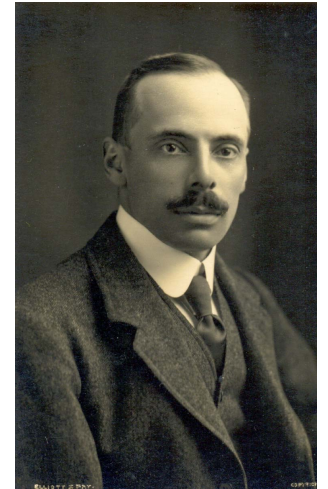
Why learn (and teach) about our field's history?

Moral reasons, e.g.:

- Whose voices are suppressed, and why?
- How can we be more moral practitioners of phonetics?



Henry Sweet (1845-1912)



Daniel Jones (1881-1967)

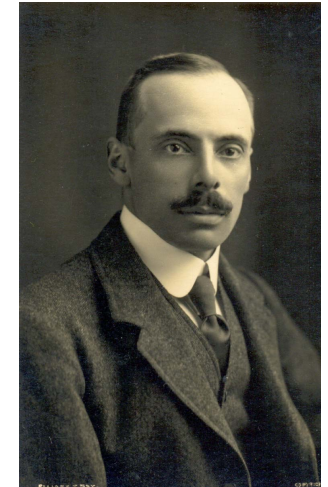
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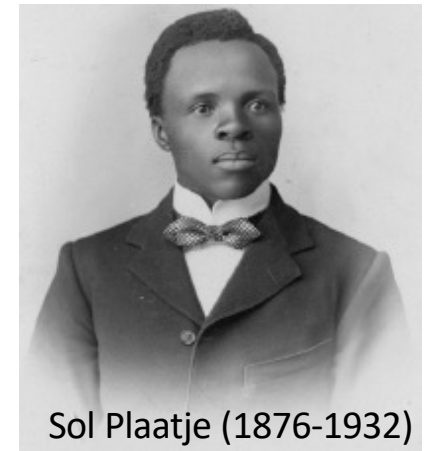
mis Soames

ðə deθ əv mis Soames [soumz] wil əv bin felt hevili ba
o:l ðət njuw əɪ pɔ:ɪsənəli. moust əv au: ri:dəz wil prəbebli
bij glæd tə nou sɑ:mθiŋ mo:ɪ əbaut ðis truwli ri'mɑ:kəbl
wumən, ən wil ðeɪfəʊ ri:d wið intrist ðə fəloɪŋ klipɪŋz frəm
ə Brighton [braɪtn] peɪpə.

« mis Soames wəz bɔ:n in Brighton [braɪtn] in 1840, ən sou
suwn wəz ðə bent əv əɪ maɪnd vizibl ðət in əɪ twenti fe:ɪst
jɪ:ɪ sɪj d bɪ'kɑ:m sʊpərɪntendənt əv ðə snt me:rɪz ɡə:ɪlz sɑ:ndi
sku:l, ənd fəʊ ðə lɔ:ŋ pi:rjəd əv twenti faɪv jɪ:ɪz sɪ held ðis
rɪ'spɒnsɪbl ɔ:fɪs, gɪvɪŋ tə ðə wɔ:ɪk ðə kləʊsɪst pɔ:sɪbl ətensjən.
leitə ɒn sɪ bɪ'keɪm wʌn əv ðə mænɪdʒəɪz əv rɪtʃmænd strijt
sku:lz ʌndəʊ ðə sku:l bɔ:ɪd, ənd ɪn'di:d ədʒukeɪʃənəl wɔ:ɪk
θɪkənd raund əɪ.

« ðəʊ ði Albany [ɔlbəni] sku:l fəʊ ɡə:ɪlz, Oldsteine, Brighton,

Laura Soames (1840-1895)



Sol Plaatje (1876-1932)

Motivation 2: Implement anti-racist pedagogical practices in teaching (about the history of phonetics)

Leading up to the seminar: Summer 2020

[Ling-faculty-l] Information from Your Librarian



Rhodes, Tamara <tlrhodes@ucsd.edu>

Thu, Jun 18, 2020, 12:58 PM



to ling-faculty-l@ucsd.edu, ling-grads-l@ucsd.edu ▼

As you all are preparing for your summer, and maybe even fall, courses, I wanted to share some information that might be helpful.

Leading up to the seminar: Summer 2020

Commitment to Equity, Diversity, and Inclusion

I came across this week-long learning opportunity specifically for academics and am sharing with each of my departments in the hopes that you all find it useful and will share it with others.



<https://www.academics4blacklives.com/>

(Each day has a topic. There are readings, reflections, and the only synchronous part is from 11-2pm.)

The purpose of this week of learning is to intervene against anti-Black racism and other forms of white supremacy as it manifests in academia and, in turn, enhance the safety and wellness of Black students, staff, faculty, and community members. In recognition of the toll that anti-Black racism, white supremacy, and racial trauma has on Black people, Academics for Black Survival and Wellness is calling for White and non-Black People of Color to suspend all research activities and “work” that they benefit from (that does not directly serve Black people) for one week, beginning on Juneteenth, June 19, 2020 – June 25, 2020. The weeklong action is a small intervention acknowledging the productivity loss and exposure to racial trauma that Black people have endured due to anti-Black racism. Many non-Black people ask Black people how they can be supportive, but, within the same day, they are likely able to still be productive and free from the psychological pain associated with this specific form of racial trauma. Black people do not have these privileges. Therefore, in order to truly enact social justice and show solidarity and care for the Black people in your life, use this time to address your own complicity in anti-Black racism and explore how you might promote Black wellness given your roles and environmental contexts.

Please visit [our website](#) to learn more, sign the petition, and register for the week. There is information for Black and non-Black people on the website.

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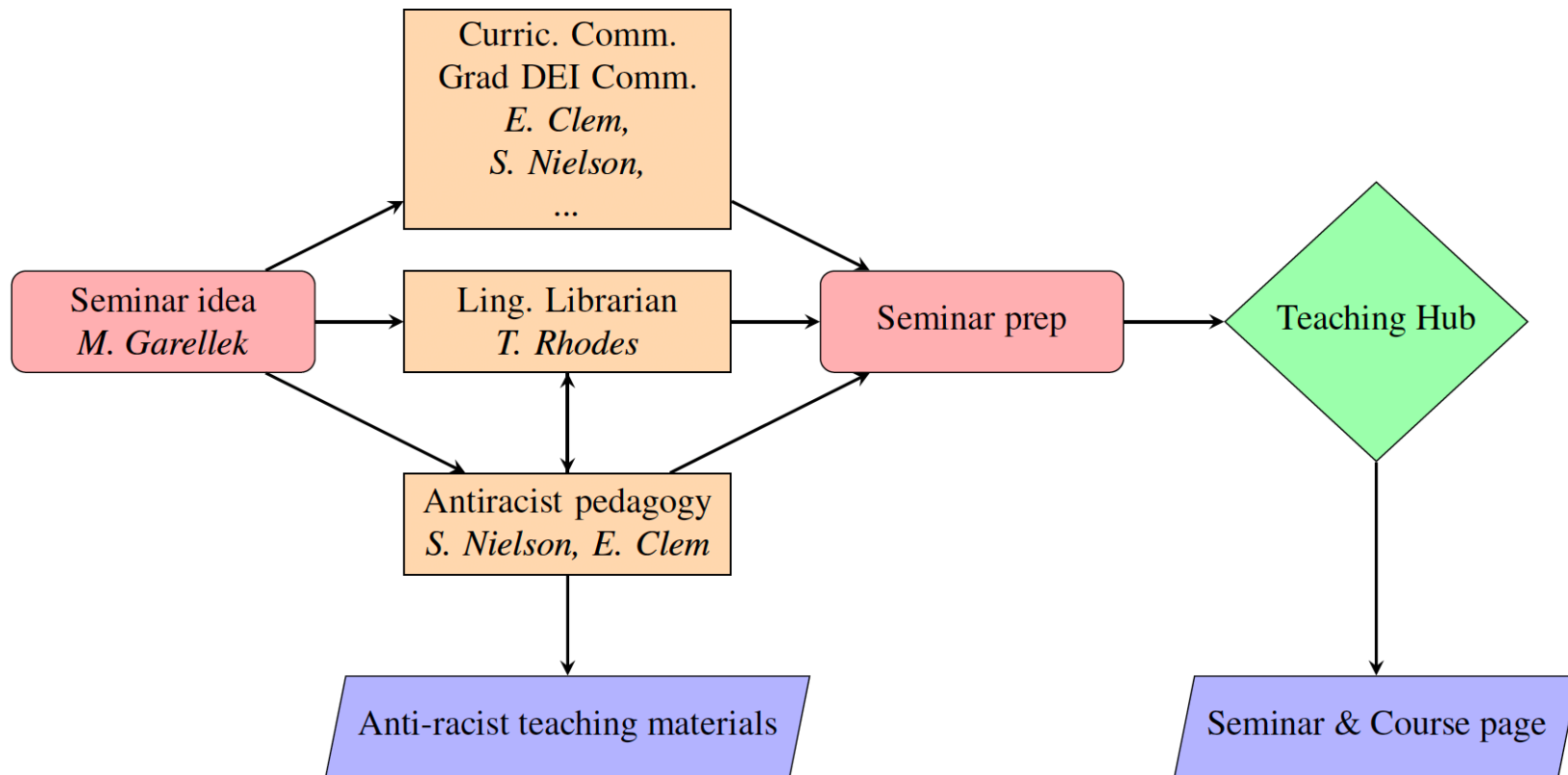
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Fall 2021: Planning for the course

- Discussions with librarian (Tamara Rhodes):
 - Curate materials, design a repository for them
 - JEDI in pedagogy
- Departmental discussions:
 - Curriculum Committee, Grad DEI Committee
 - Shai Nielson & Emily Clem: Ling-general anti-racist teaching materials
 - Shai: how phonetics engages with deaf communities, sign languages
- Discussions with UCSD's teaching hub (The Commons)
 - Universal Design for Learning approach > More flexibility in terms of assignments
 - Entry and exit surveys for class

Planning for the course: summary



Course page

<https://pages.ucsd.edu/~mgarellek/History/>



Syllabus

- Description and Learning Outcomes
- Pedagogical Framework
 - How to engage in effective discussions:
 - Shared glossary for discussing JEDI issues
 - Community guidelines
 - Dominance of English-language readings
 - UCSD and outside links to anti-racism pedagogical resources
 - Campus resources for dealing with post-trauma symptoms

Weekly organization



Tuesday Readings	Wednesday Class	Additional Readings
Readings assigned to prepare for class Short essay assignment with prompts	“Handout” But discussion-focused: Not everything we covered appears on handout Not everything on handout ended up being covered	References (not just what we covered in class) Bios of authors and historical figures

JEDI-related topics incorporated throughout: readings chosen and the essay prompts; topics covered in the weekly handout; and additional “Perspectives.”

Topical coverage



Historical topics	JEDI perspectives (sample)
Overview, history prior to c. 1850	Phonetic traditions in Ancient India
Phonetic notation	Notation of signed languages
Pronunciation, dialectology	Dialectology and the documentation of slavery in US
Experimental phonetics	Phonetics in Japan
The IPA	Eurocentrism and inclusivity of the IPA
Acoustic phonetics	Women in speech acoustics
The spectrograph	Phonetics and Deaf communities
Field phonetics	Colonial and missionary fieldwork
Sound change, the phoneme	Chinese phonetic tradition
Conclusion, present and future of phonetics	Towards a more diverse phonetics

Example: Week 6 (Acoustics)

https://pages.ucsd.edu/~mgarellek/History/#Week_6:_Acoustics





Readings before lecture

Week 6: Acoustics

Readings

Lecture

Perspectives

References

Bios

When the various sounds are breathed —either in or out— *without* sounding the vocal chords, each one appears, when analysed by ear, to consist almost entirely of a characteristic combination of two component sounds.

(Sir Richard Paget, *Vowel resonances*, 1922, p. 1.)

Vowel acoustics before Chiba & Kajiyama (1941) and Fant (1960)

Read through Paget (1922) – only 12 pages! In a 1- or 2-page essay, address **all** of the following questions:

1. What is/are the source(s) of sound for Paget? Does his conception differ from our contemporary understanding? (Explain your answer)
2. Does Paget treat the voice source of vowels (the “larynx tone”) as independent from the filter (the “vowel resonances”)? Does this differ from contemporary understanding? (Explain your answer)
3. How many vowel resonances are there, and where do they come from? Does this differ from our contemporary understanding? (Explain your answer)
4. Can vowel resonances coincide in frequency? Does this differ from our contemporary understanding? (Explain your answer)

For a review of our “contemporary understanding,” you may wish to consult Johnson’s *Acoustic and auditory phonetics*, particularly Sections 6.1, 6.2, and 6.4.

- [Canvas:] [Paget, R. \(1922\). *Vowel resonances*. International Phonetic Association.](#)

Lecture



Week 6: Acoustics

Readings

Lecture

Perspectives

References

Bios

We might continue this paper indefinitely. But I have said enough to indicate that a physiological study has much to offer in a consideration of the question as to *what causes vowel and voice quality differences*. I believe also, that I have cited enough evidence to prove that the cavity tone theories merely skim the surface. And to prove that we are not justified in disregarding the function of the hard and soft surfaces which line the cavities. Or in minimizing the function of the vocal cords and interior larynx including the epiglottis which of themselves may do much to change both qualities.

(G. Oscar Russell, [The mechanism of speech](#), 1929: p. 109.)

Vowel descriptions

Inspired heavily by Ladefoged 1967 and [Pfitzinger & Niebuhr 2011](#)

- [Robinson \(1617: image 25\)](#): arguably first attempt at categorizing vowels based on tongue position (Ladefoged 1967: pp. 63-63).

Lecture, *Perspectives*



Week 6: Acoustics

[Readings](#)

[Lecture](#)

[Perspectives](#)

[References](#)

[Bios](#)

Miss Fischer-Jørgensen says that it is unlikely that the linguist can become a communications engineer, but that he should not be discouraged by this from concerning himself with the problems presented by present-day studies in acoustics and communications that have linguistic bearing.

(Eileen M. Whitley, discussion in response to report by Eli Fischer-Jørgensen's "What can the new techniques of acoustic phonetics contribute to linguistics?" at *ICL VIII*, 1958: p.454.)

Women in speech acoustics

Many of the contemporary advances in the acoustic theory of speech production are being led by women acousticians. Learn more about some of those working in speech communication who have been elected [fellows of the Acoustical Society of America](#):

References, biographies



Week 6: Acoustics

Readings

Lecture

Perspectives

References

Bios

Historical reviews

- [Reserve] Ladefoged, P. (1967). The nature of vowel quality. In P. Ladefoged, *Three areas of experimental phonetics* (pp. 50-142). Oxford: Oxford University Press.
- Mrayati, M., Carre, R., & Guerin, B. (1988). Distinctive regions and modes: a new theory of speech production. *Speech Communication* 7(3): 257-286.
- [Reserve] Stevens, K.N. (2000). *Acoustic phonetics*. Cambridge: MIT Press.
- Fant, G. (2001). T. Chiba and M. Kajiyama, pioneers in speech acoustics. *Journal of the Phonetic Society of Japan* 5(2): 4-5.
- Stevens, K.N. (2001). The Chiba and Kajiyama book as a precursor to the acoustic theory of speech production. *Journal of the Phonetic Society of Japan* 5(2): 6-7.
- JPSJ. (2001). The authors of *The Vowel*. *Journal of the Phonetic Society of Japan* 5(2): 12-13.
- Maekawa, K. (2002). From articulatory phonetics to the physics of speech: Contribution of Chiba and Kajiyama. *Acoustical Science and Technology* 23(4): 185-188.
- Arai, T. (2004). History of Chiba and Kajiyama and their influence in modern speech science. *Proc. From Sound Sense* 50: 115-120.
- Pfitzinger, H. R., & Niebuhr, O. (2011). Historical development of phonetic vowel systems – the last 400 years. *ICPhS XVII*: 160-163.
- [Canvas:] Johnson, K. (2012). *Acoustic and auditory phonetics*, 131-151.
- Vilain, C., Berthommier, F., & Boë, L.-J. (2015). A brief history of articulatory-acoustic vowel representation. *HSCR 2015 - 1st International Workshop on the History of Speech Communication Research*. Dresden: fhal-01197460.
- Schmid, C., & Moran, E. (2018). ASA at 75, chapter 1: Short history of the Society's first seventy five years.
- Arai, T. (2019). Vocal-tract models in phonetic teaching and research. In Katz, W.F. & Aschmann, P.F. (eds), *The Routledge Handbook of Phonetics*, 570-598.

Primary sources

- Robinson, R. (1617). *The art of pronuntiation*. London: Nicholas Okes.

References, biographies



Week 6: Acoustics

Readings Lecture Perspectives **References** Bios

Historical reviews

- [Reserve] Ladefoged, P. (1967). The nature of vowel quality. In P. Ladefoged, *Three areas of experin* 142). Oxford: Oxford University Press.
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- Robinson, R. (1617). *The art of pronuntiation*. London: Nicholas Okes.

Week 6: Acoustics

Readings Lecture Perspectives References **Bios**

- William Henry Barlow (1812-1902)
- Alexander Graham Bell (1847–1922)
 - See also article from the Disability History Museum entitled “Alexander Graham Bell and his role in oral education” by Brian H. Greenwald
 - See also [Canvas:] prologue to Booth (2021) for a critical view from the point of view of the Deaf community.
- Tsutomu Chiba (1883-1959)
- Irving B. Crandall (1890-1927)
- William DuBois Duddell (1863-1918)
- Sir James Alfred Ewing (1855-1935)
- Gunnar Fant (1920-2009)
- Harvey Fletcher (1884-1981)
- Osamu Fujimura (1927-2017)
- Jan Gauffin (1932-2008)
- Hermann Ludwig Ferdinand von Helmholtz (1821–1894)
- Ludimar Hermann (1838–1914)
- (Henry Charles) Fleeming Jenkin (1833-1885)
- Masato Kajiyama (1909-1995)
- Carl Friedrich Wilhelm Ludwig (1816-1895)
- Dayton C. Miller (1866-1941)
- Sir Richard Arthur Surtees Paget (1910-1965)
- Harold. E. Palmer (1877-1949).
- George Oscar Russell (1890-1962)
- Edward Wheeler Scripture (1864–1945)
- Kenneth N. Stevens (1924-2013)
- John William Strutt, 3rd Baron Rayleigh (1842-1919)
- Sir Charles Wheatstone (1802-1875).
- Eileen M. Whitley (1910-1988)
- Robert Willis (1800–1875)

Exit survey and evaluations

How do you think your social identities have influenced how you conceive of phonetics, the history of phonetics, and the phoneticians whose work we've reviewed?

- “I think my social identities have influenced me that I would pay more attention to the phoneticians with similar backgrounds (gender, nationality, culture, etc.) or history that I could relate to.”

Please provide additional feedback on the seminar:

- “I think the seminar is really interesting and I really enjoy[ed] learning all those different historical facts and stories. I also really enjoy[ed] listening to the people from different areas and backgrounds talking about how their experiences were related to the subject.”

Applicability to other courses

- Better poised to discuss history of ideas, theories, across variety of courses and disciplines:
 - Phonetics, Speech acoustics, CSD,
 - Historical Linguistics
 - Sociolinguistics
 - Phonology
 - ...
- Incorporating inclusive and anti-racist pedagogical tools in these and other courses

Teaching about our history

- Courses on the history of a discipline are extremely:
 - Hard to design
 - Enjoyable
 - Valuable
- Incorporating anti-racist and inclusive pedagogical practices in our courses requires intentional thought and effort, but is extremely valuable (for students and instructors alike)
- We hope the course materials help others design similar courses, and consider:
 - How phonetics has changed
 - How to reckon with the exclusion of certain people, communities
 - How we can promote social justice, equity, diversity, and inclusion in our teaching

Thanks!



UCSD

Linguistics:

Yaqian Huang (now
UCLA)

Sharon Rose

Will Styler



The Teaching+Learning
Commons:

Paul Hadjipieris



Fellow students
in the seminar



Legacy course page

<https://pages.ucsd.edu/~mgarellek/History/>

Comments welcome!

Paper:



Garellek, Nielson, Rhodes,
Clem. An inclusive course on
the history of phonetics.

To appear in *Proceedings of the
20th ICPHS, 2023*

https://pages.ucsd.edu/~mgarellek/files/Garellek_etal_2023_ICPhS.pdf