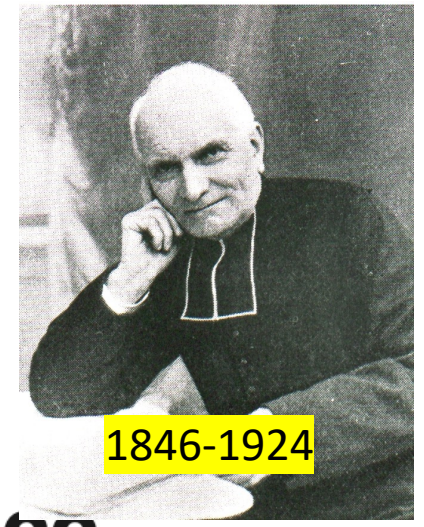
Sorbonne Nouvelle

LABORATOIRE DE PHONETIQUE ET PHONOLOGIE

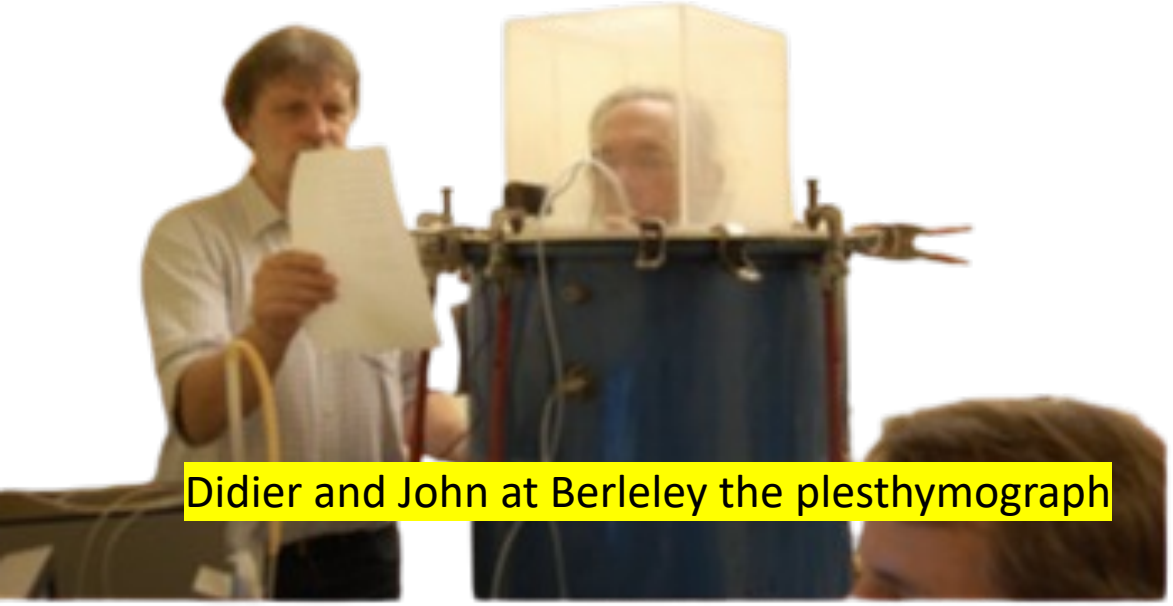
Labex EFL



1846-1924

Experimental phonetics: an interdisciplinary journey through time and space

26 Mai 2023



Didier and John at Berleley the plesthymograph

Jean-Pierre Rousselot, John Ohala, Didier Demolin and experimental phonetics

Par Jacqueline Vaissière

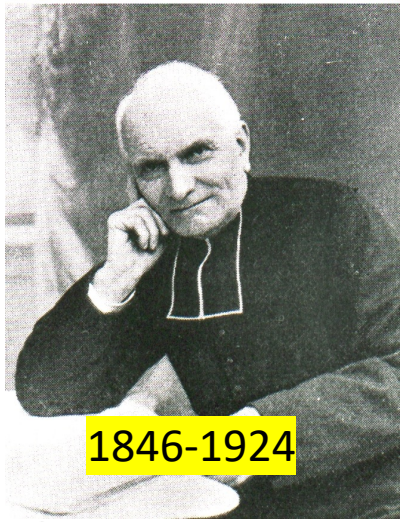
Sorbonne Nouvelle

LABORATOIRE DE PHONETIQUE ET PHONOLOGIE

LPP

EFL

Ex[illegible] phonetics:
an interdisciplin[illegible]ry [illegible]e through time and space



1846-1924

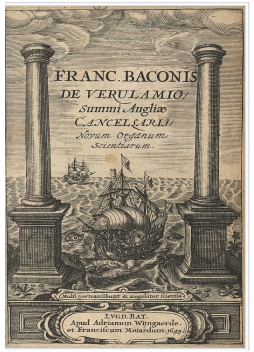
Didier and John[illegible]e

Jean-Pierre Rousselot,
John Ohala,
Didier Demolin

perimental phonetics

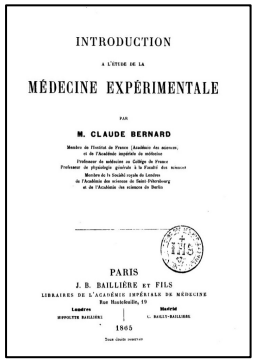
Before Rousselot

Experimental **method**

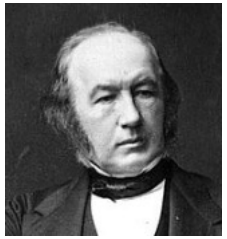


Francis Bacon (1620)
- gave a central place to experimentation for scientific progress,
- is considered as the father of modern empiricism.

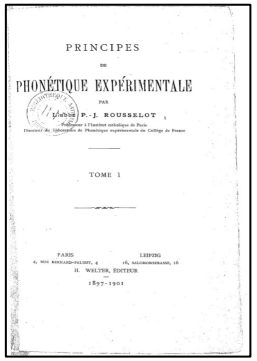
Experimental **medicine**



Claude Bernard (1865)
'the more complex the science,
the more essential it is, in fact,
to establish a good experimental standard,
so as to secure comparable facts,
free from sources of error'.



Experimental **phonetics**



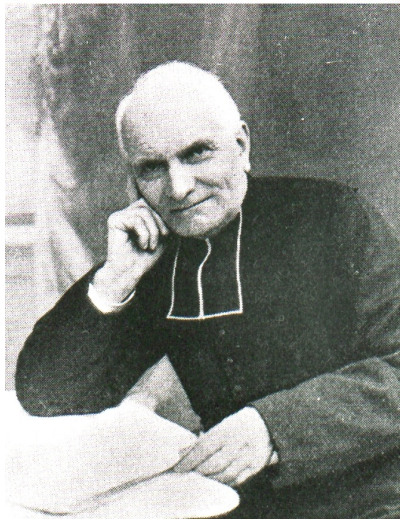
Marey, Rosapelly, Harvet as precursors
Rouselot as the founder

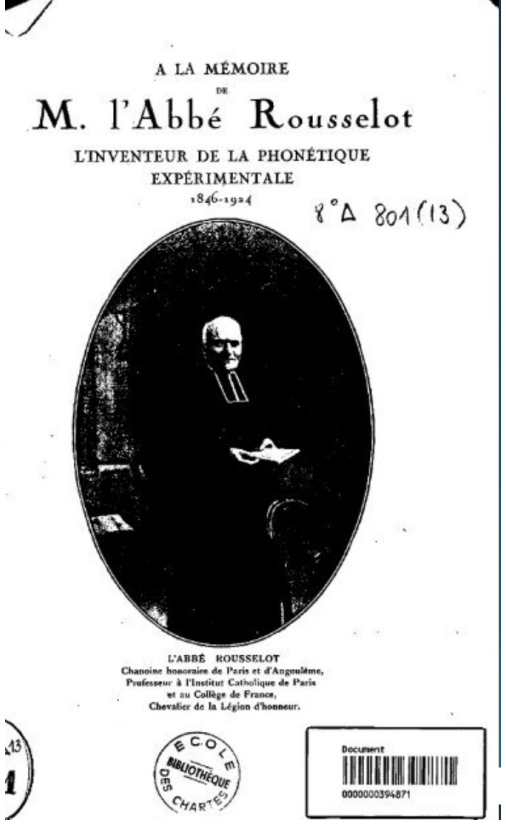
Rousselot

in front of his kymograph

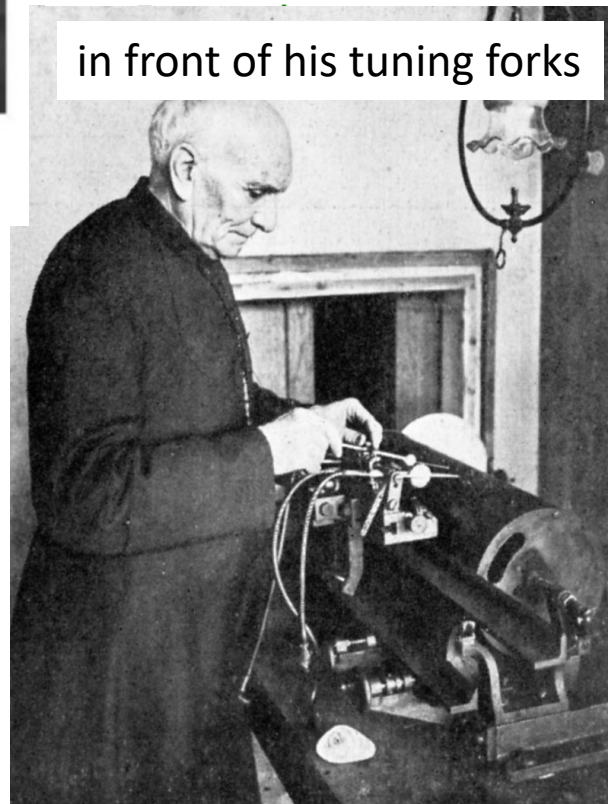
2 Rousselot et sa collection de diapasons (collection privée)

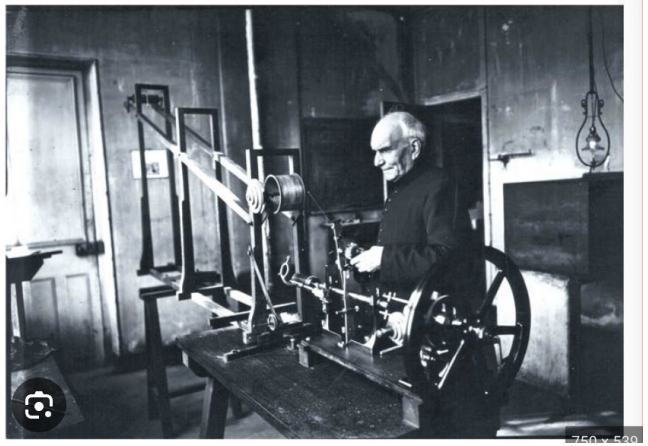
ion privée.

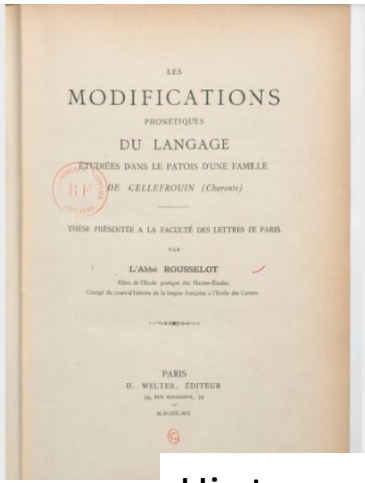




in front of his tuning forks





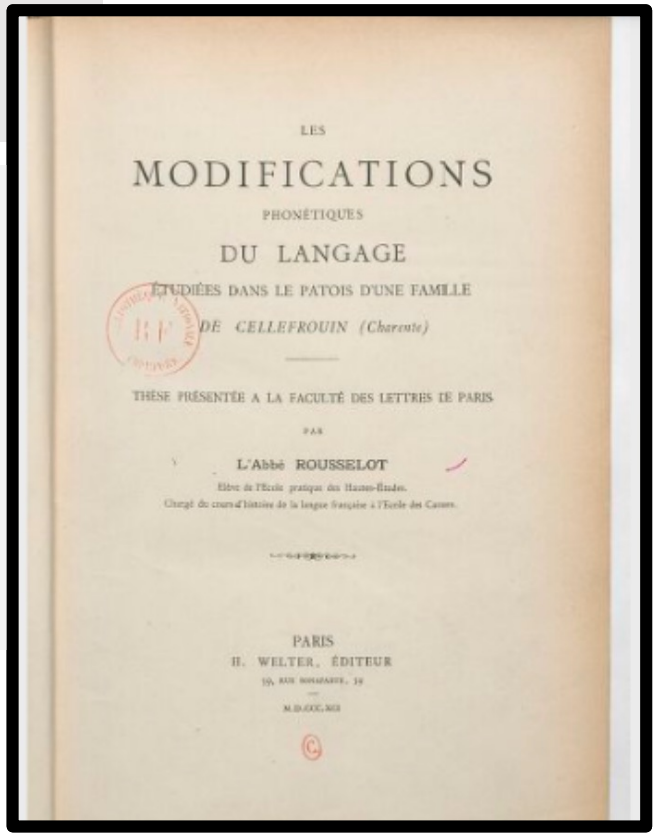


His two main books

Rousselot studied his family's dialect and its evolution (1891)

« Les *modifications phonétiques du langage étudiées dans le patois d'une famille de Cellefrouin (Charente)* (1891)»

Really interdisciplinary thesis (some say the first one):
dialectology,
graphic method of Marey,
Physiology,
and human sciences.



LES

MODIFICATIONS

PHONÉTIQUES

DU LANGAGE

ÉTUDIÉES DANS LE PATOIS D'UNE FAMILLE

DE CELLEFROUIN (Charente)

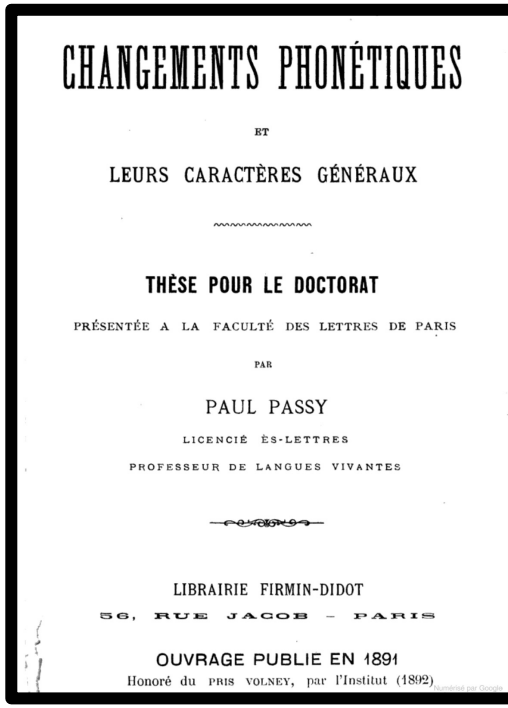
THÈSE PRÉSENTÉE A LA FACULTÉ DES LETTRES DE PARIS

PAR

L'Abbé ROUSSELOT

PARIS

H. WELTER, ÉDITEUR



CHANGEMENTS PHONÉTIQUES

ET

LEURS CARACTÈRES GÉNÉRAUX

THÈSE POUR LE DOCTORAT

PRÉSENTÉE A LA FACULTÉ DES LETTRES DE PARIS

PAR

PAUL PASSY

LICENCIÉ ÈS-LETTRES

PROFESSEUR DE LANGUES VIVANTES

LIBRAIRIE FIRMIN-DIDOT

56, RUE JACOB - PARIS

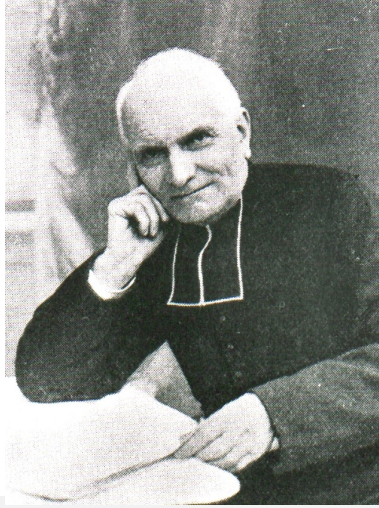
OUVRAGE PUBLIE EN 1891

Honoré du PRIS VOLNEY, par l'Institut (1892)

One of his scientific purposes was to apply experimental methods to reproduce sound change, he may be considered as the founder of Experimental sound change Phonology.

Passy's thesis the same year on sound changes

And Rousselot found: « hearing is not enough »

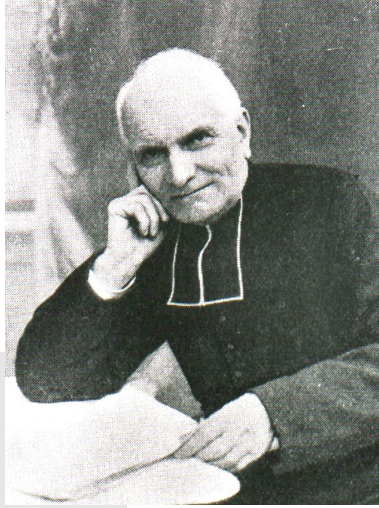


While studying the evolution of his dialect, JPR realized that his ear was not capable of describing **phonetic details, which are essential**.

l'oreille ne peut suffire à nous renseigner sur tout ce qu'il nous importe de savoir. [...] La recherche des procédés d'expérimentation [...] s'impose au phonéticien désireux de dire ce qui est et non ce qu'il sent, de substituer la réalité objective à l'impression personnelle, d'agrandir la puissance visuelle et auditive, et d'étendre le champ de ses études au-delà des limites étroites assignées à nos sens.

The ear cannot suffice to inform us about everything we need to know. [...] The search for **experimental procedures** [...] is necessary for the phonetician who wishes to say what is and not what he feels, to substitute **objective reality** for personal impression, to enlarge the visual and auditory power, and to extend the field of his studies beyond the narrow limits assigned to our senses [...].J.-P. Rousselot, Principes de phonétique expérimentale p. 44-45 ,…

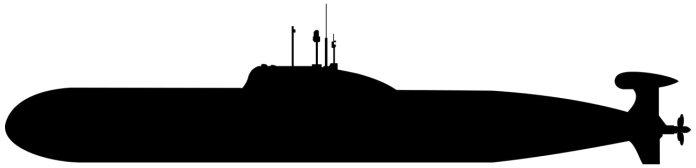
Rousselot came to Paris to complete his scientific training (1880 à 1885).



To get a better understanding on speech,

JPR studied not only **linguistics** and **comparative grammar**,

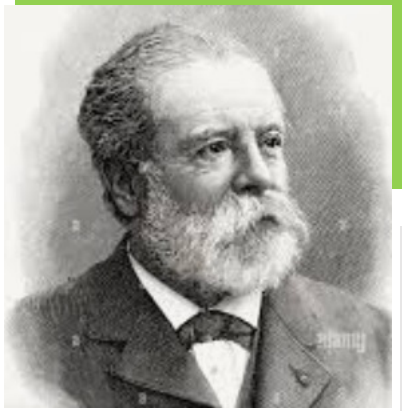
but also **physics, propagation of the sound, electricity, telegraphy, and physiology.**

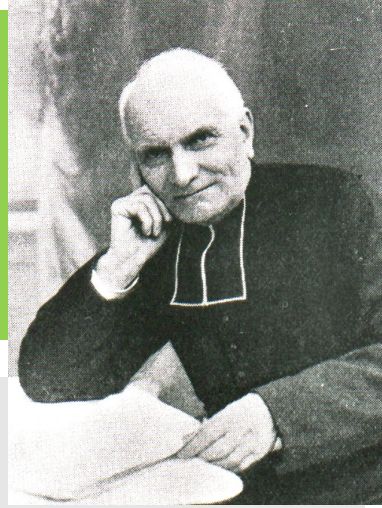


Ordre national de la Légion d'honneur

During the first war, he established the principles of the correct location of guns and submarines
and received the Legion of Honor from the French government.

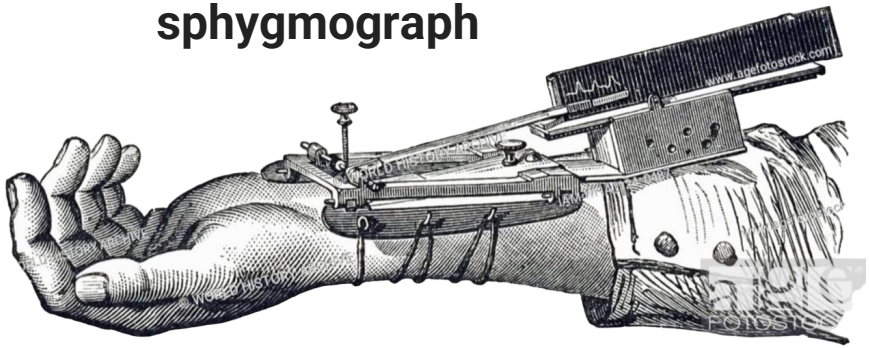
In Paris, Étienne-Jules Marey (physiologist) had developed the graphical method: graphs are profs





To show on graphs the evolution over time of parameters such as blood pressure, blood circulation, heartbeat, breathing, body movements, etc.

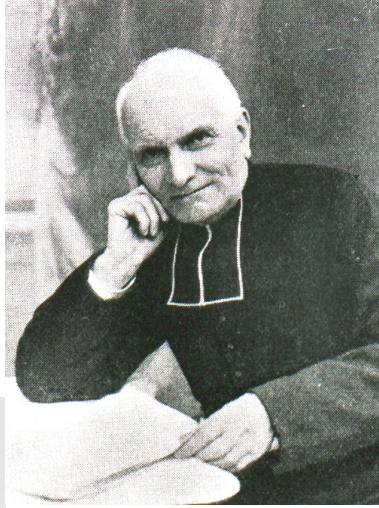
sphygmograph



recording of the pulse and variations graphically in blood and pressure

Marey's chronophotograph

In Paris, at this time, Marey (physiologist) developed the « graphical method »; graphs are profs



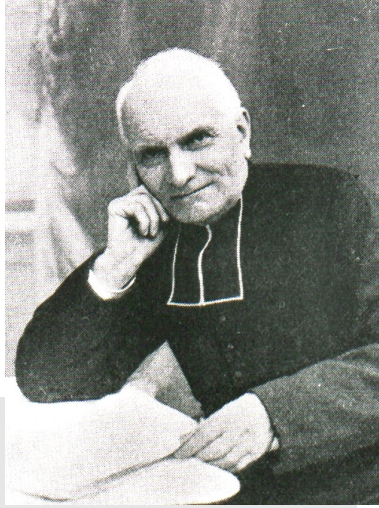
To show on graphs the evolution over time of parameters such as blood pressure, blood circulation, heartbeat, breathing and many other.

In 1875, a delegation from the LSPL came to consult Marey with the aim of "applying the graphic method to the study of the so complex and varied movements that occur in speech" and in particular the speech of deaf-mutes.

Marey accepted, and he said that he already had instruments to study speech, which he had developed.

But the linguists were quite interested, but not much.

In Paris, Marey (physiologist) developed the « graphical method »; graphs are profs



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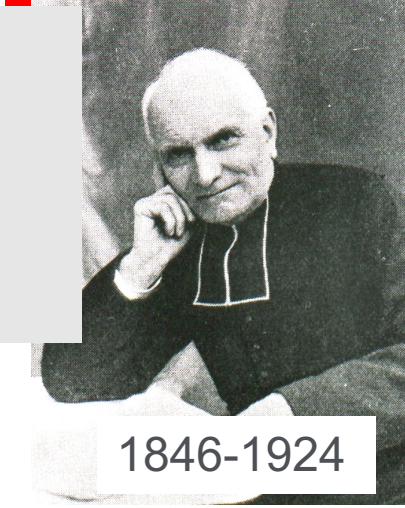
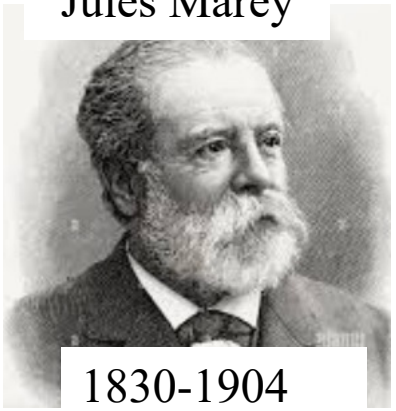
JPR was very much influenced by Marey's graphical method, and through Marey Came into contact with Charles Rosapelly and Louis Havet

- As quoted by John Ohala, at that time, the professional background of the ones who contributed before Rousselot the most to construct **instrumentation** that will be available later for instrumental phonetics was mainly **medicine, physics, engineering, a few linguists, mathematics, and physiology**.


1846-1924

Jules Marey


1830-1904

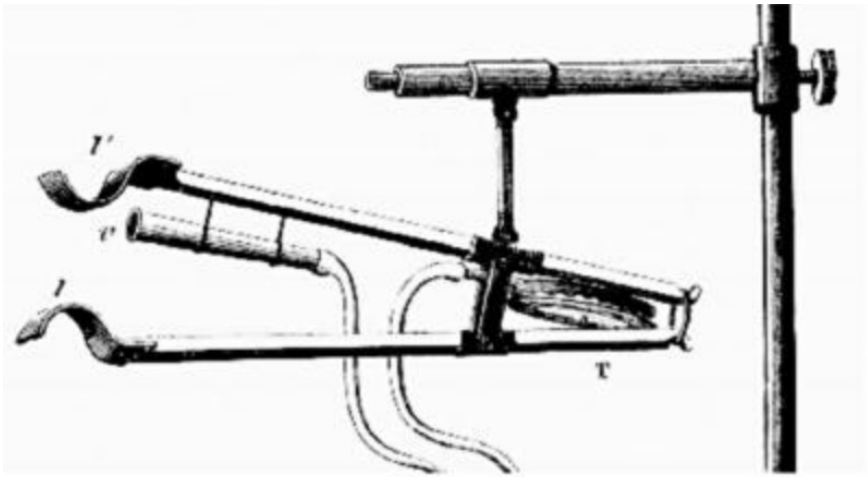
JPR was very much influenced by Étienne-Jules Marey ‘s (1830-1904) , the physician who developed the graphic method: the graphs are the proof.

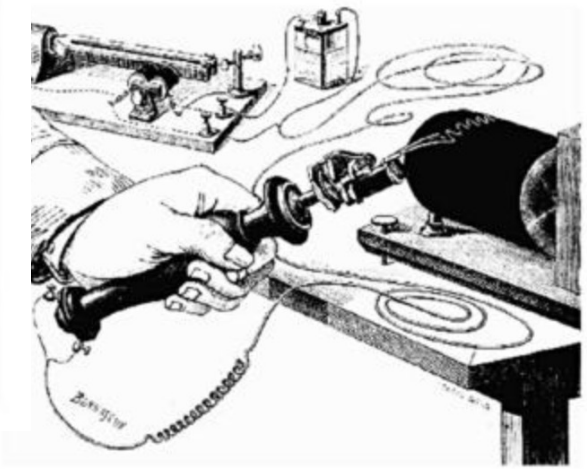
harles-Etienne Rosapelly

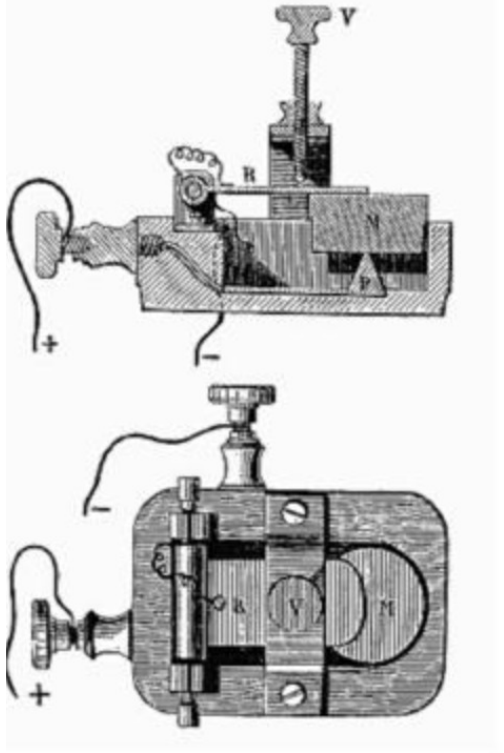
Thanks to Marey, he got into contact with Charles Rosapelly and Louis Havet

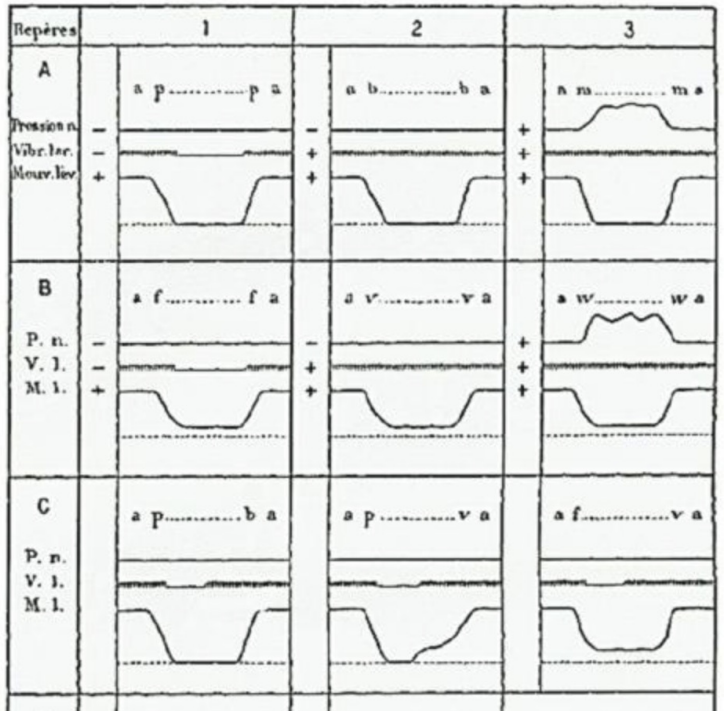
1 Étienne–Jules Marey dans son laborat
Pierre Jean Rousselot, vers 1885 (vidéo

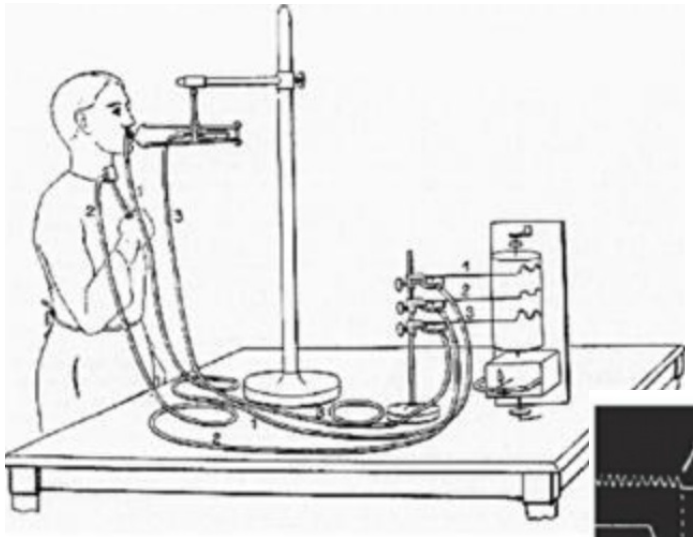
Some of the Marey's and Rosapelly's instruments 1/3

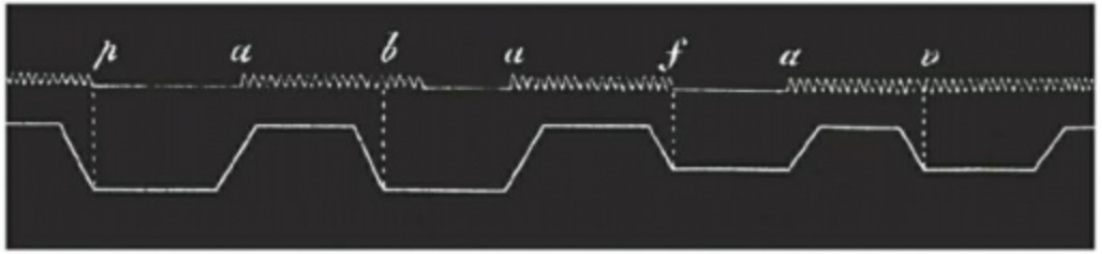




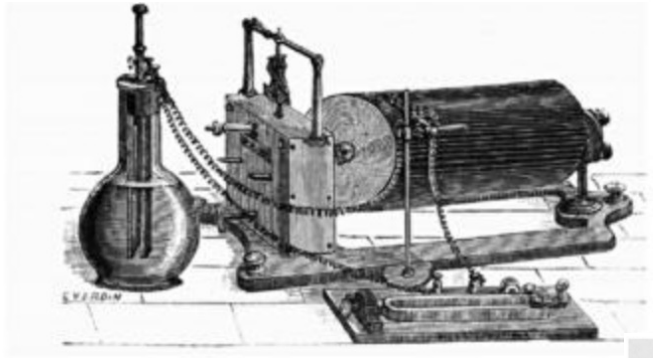








Some of the Marey's and Rosapelly's instruments 2/3



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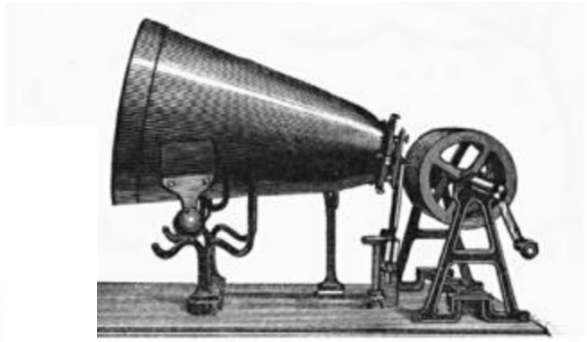

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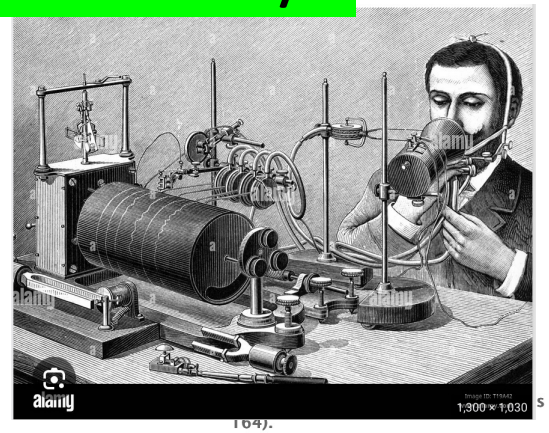
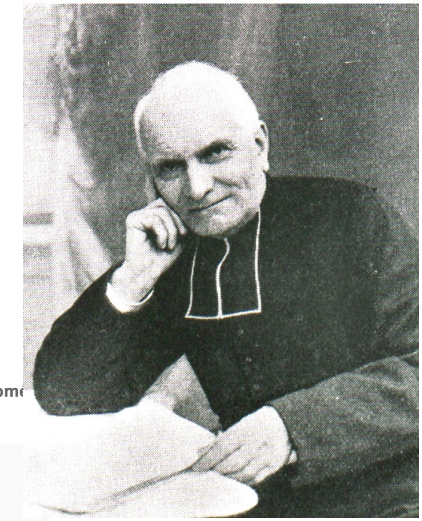
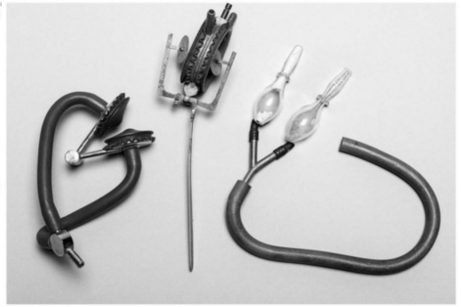




s manome
164).

eur de Kœnig par les flammes manométriques (Rousselot 1924*a*, p.

4 Diapason chronographe (Rousselot 1924*a*, p.



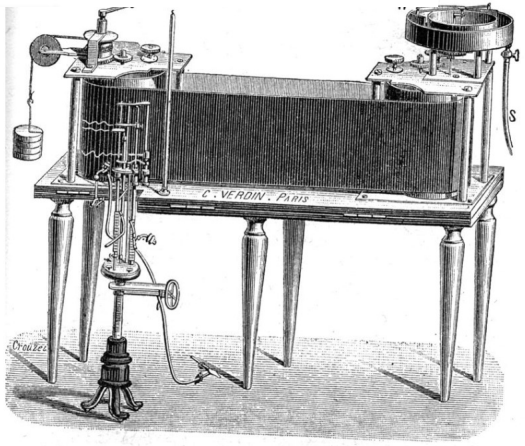
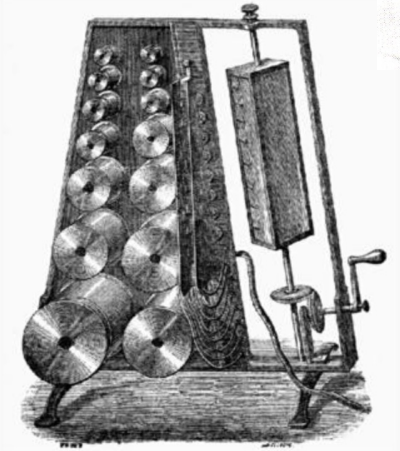
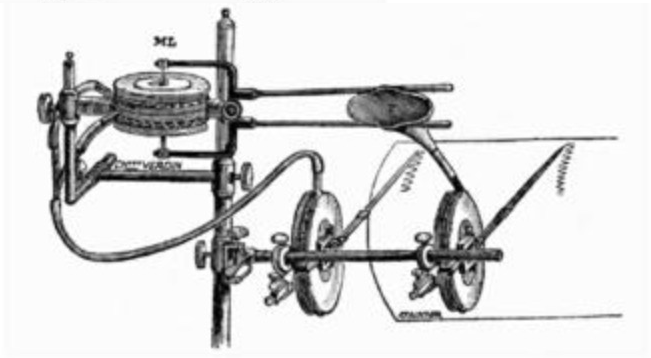


Fig. 22.
Enregistreur à poids.

Enregistreur utilisé par Marey et construit par Ver
In Rousselot, Principes…, p. 65





Zoom in Original (jpeg, 10k)

LI and MILLS | **From Voice Identification to Speech Recognition**

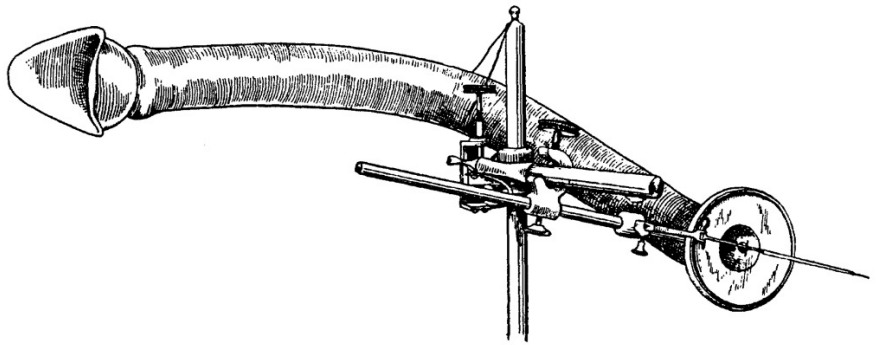
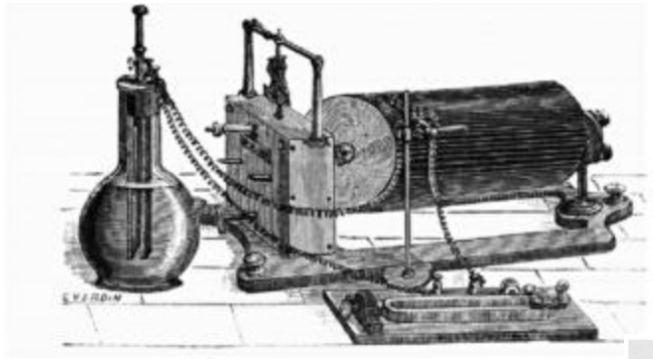
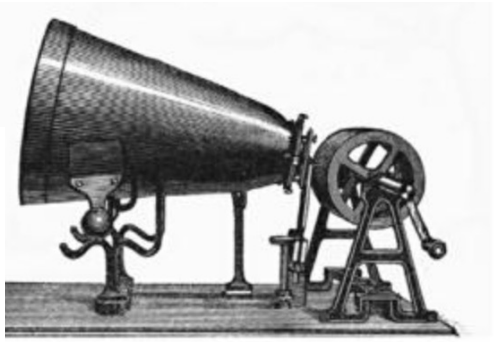


FIG. 2 A "vowel tracer" inscription attachment for Rousselot's apparatus, designed by Goddard. (Source: Pliny Earle Goddard, "Mechanical Aids," 618.)

Some of the Marey's and Rosapelly's instruments 3/3



Zoom in Original (jpeg, 12k)



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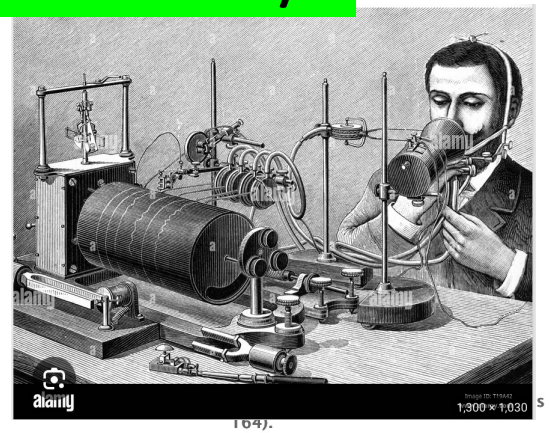
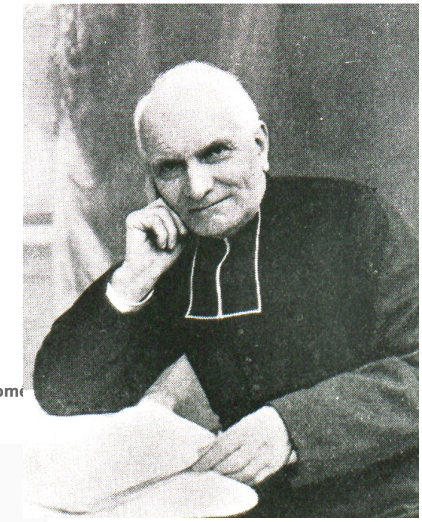


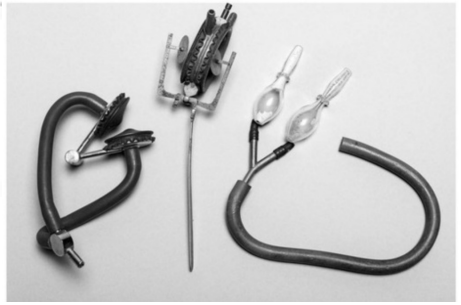


s manome

164).

eur de Kœnig par les flammes manométriques (Rousselot 1924*a*, p.

4 Diapason chronographe (Rousselot 1924*a*, p.



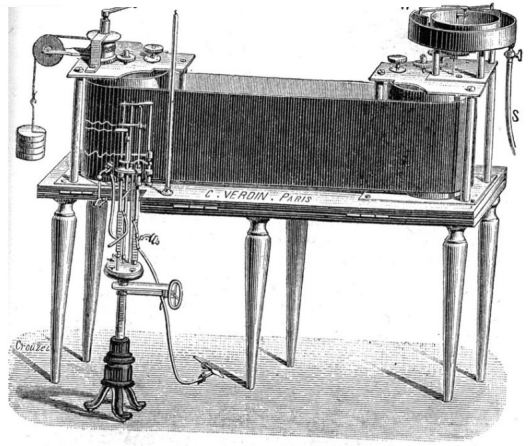
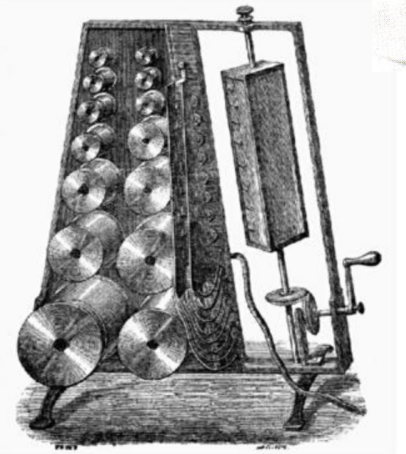
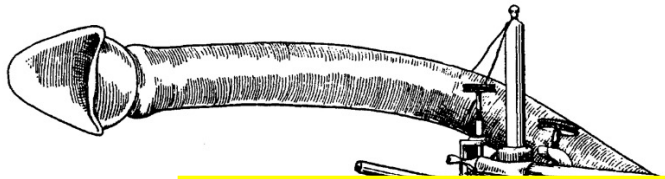
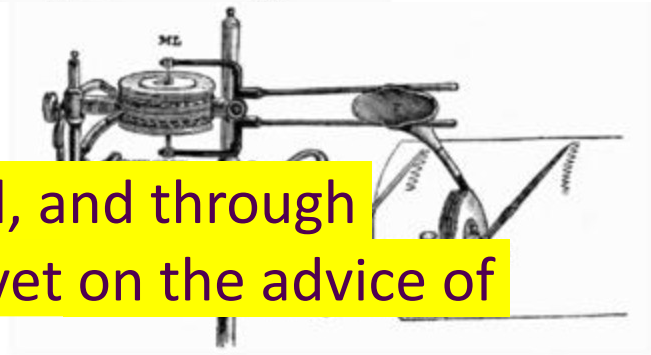


Fig. 22.
Enregistreur à poids.





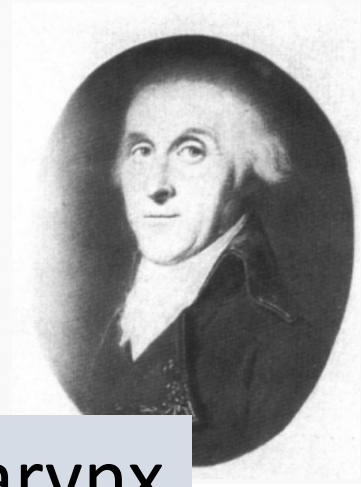


Rousselot was greatly influenced by Marey's graphic method, and through Marey, came in contact with Charles Rosapelly and Louis Havet on the advice of Gaston Paris, and he could use the instruments.

FIG. 2 A "vowel
signed by Godd

Zoom in Original (jpeg, 10k)

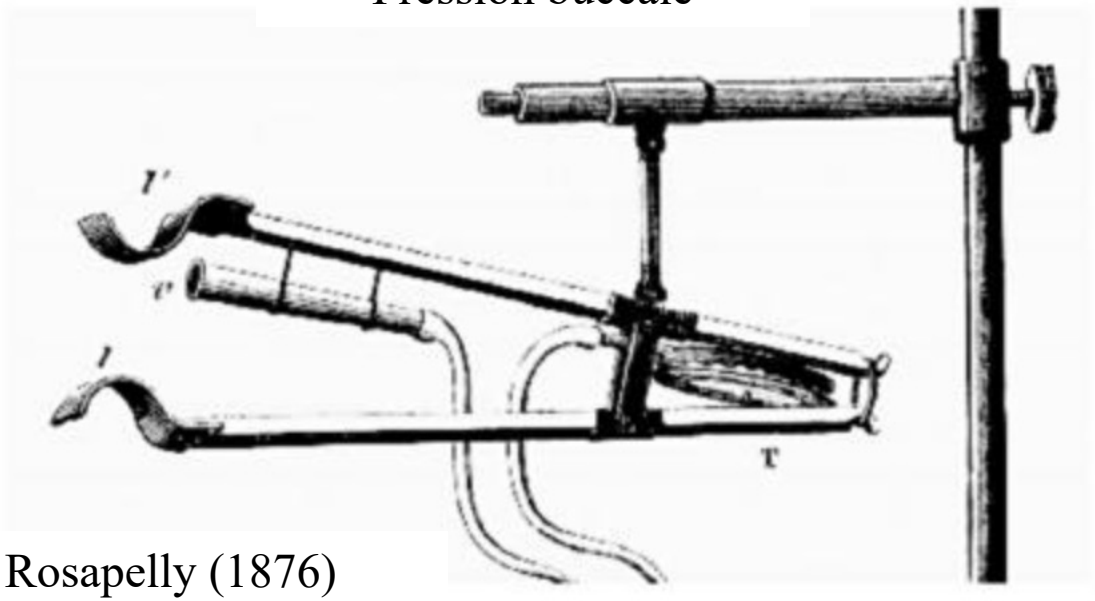
For example: lips and larynx movements



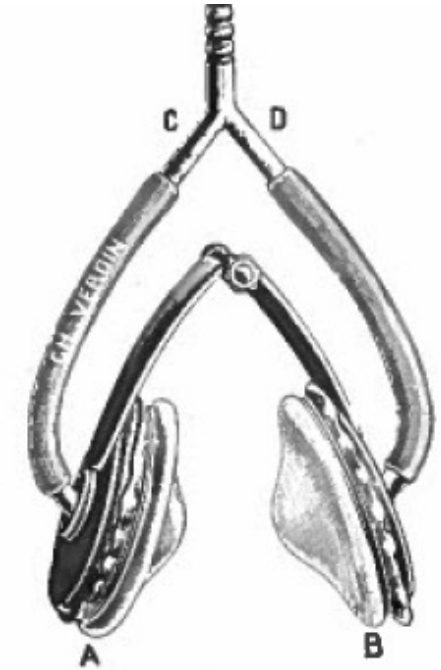
lips

Vibrations of the larynx

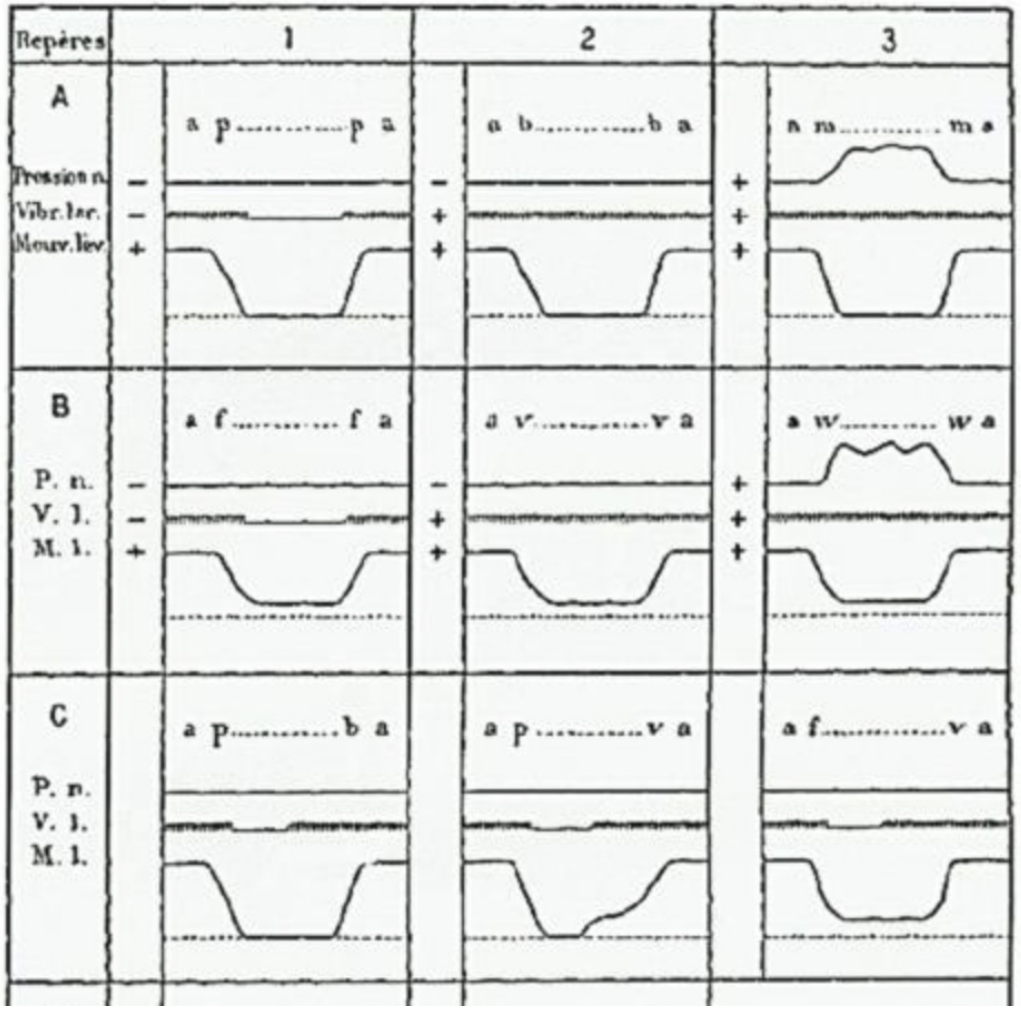
Pression buccale



Rosapelly (1876)



And multiparametric representation of the sound



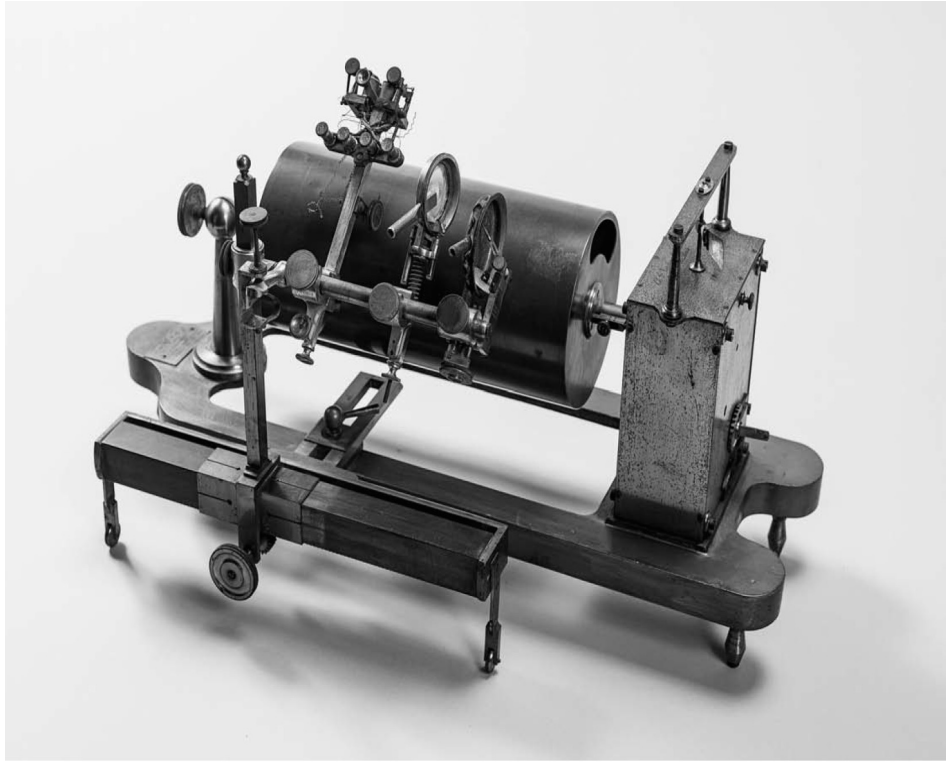
1. Glottal vibrations
2. Nasal pressure
3. Lip movment

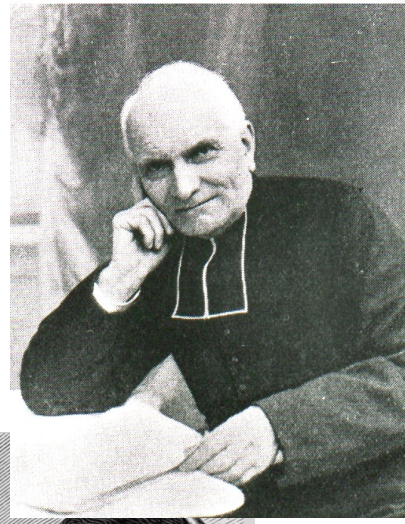
Portrait de Rosapelly en costume de général en chef des armées de la République (1797) (*coll. privée*)

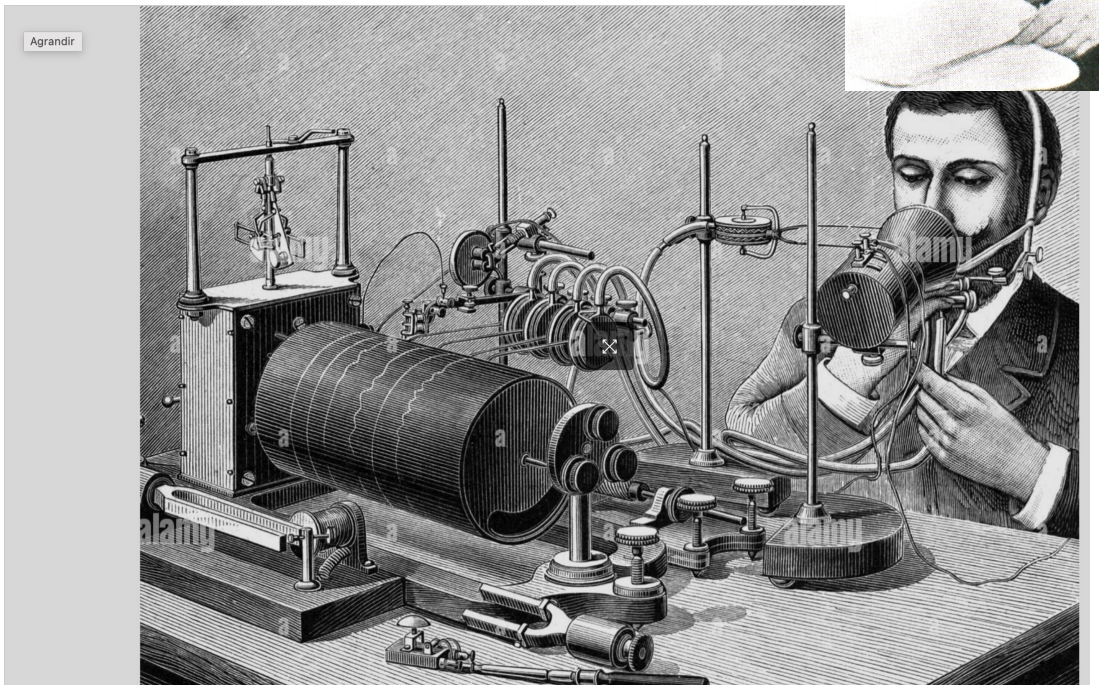
Developing new ways to measure phonetic parameters

Rosapelly’

Rousselot developed the kymograph

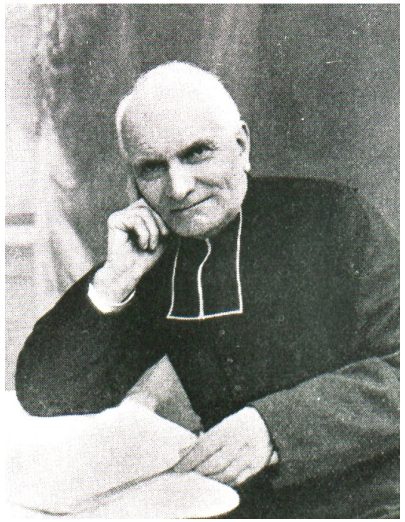






Kymographe de l'abbé Rousselot : Inscripteur électrique, et deux tambours de Marey

Rousselot's sense of humor ?



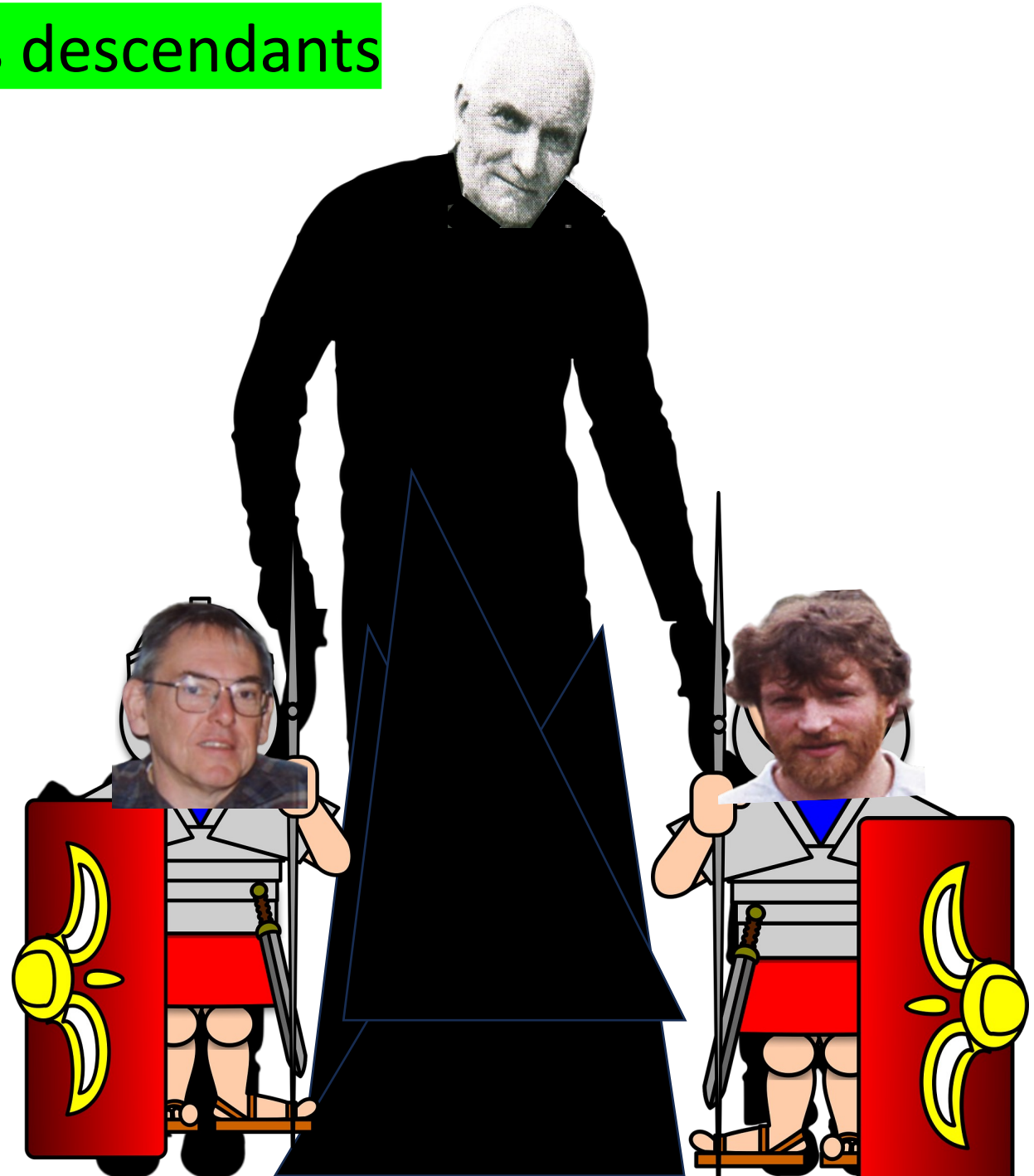
On one of his paper, the ecclesiastic, wrote in a slightly sarcastic way, that one of his subjects went to school, but this scholar experience seems to have left no trace.

He aslo wrote:

The procedures of the experimental sciences are quite foreign to linguists. A sort of superstitious terror seizes them as soon as it is a question of touching the simplest mechanism.
It was thus necessary to make them glimpse the immense field that experimentation opens before them' (1904: 1).

It didn't sound like Christian charity,
but can be seen as the premise of some of our dear John Ohala's jokes☺!

Rousselot’s descendants

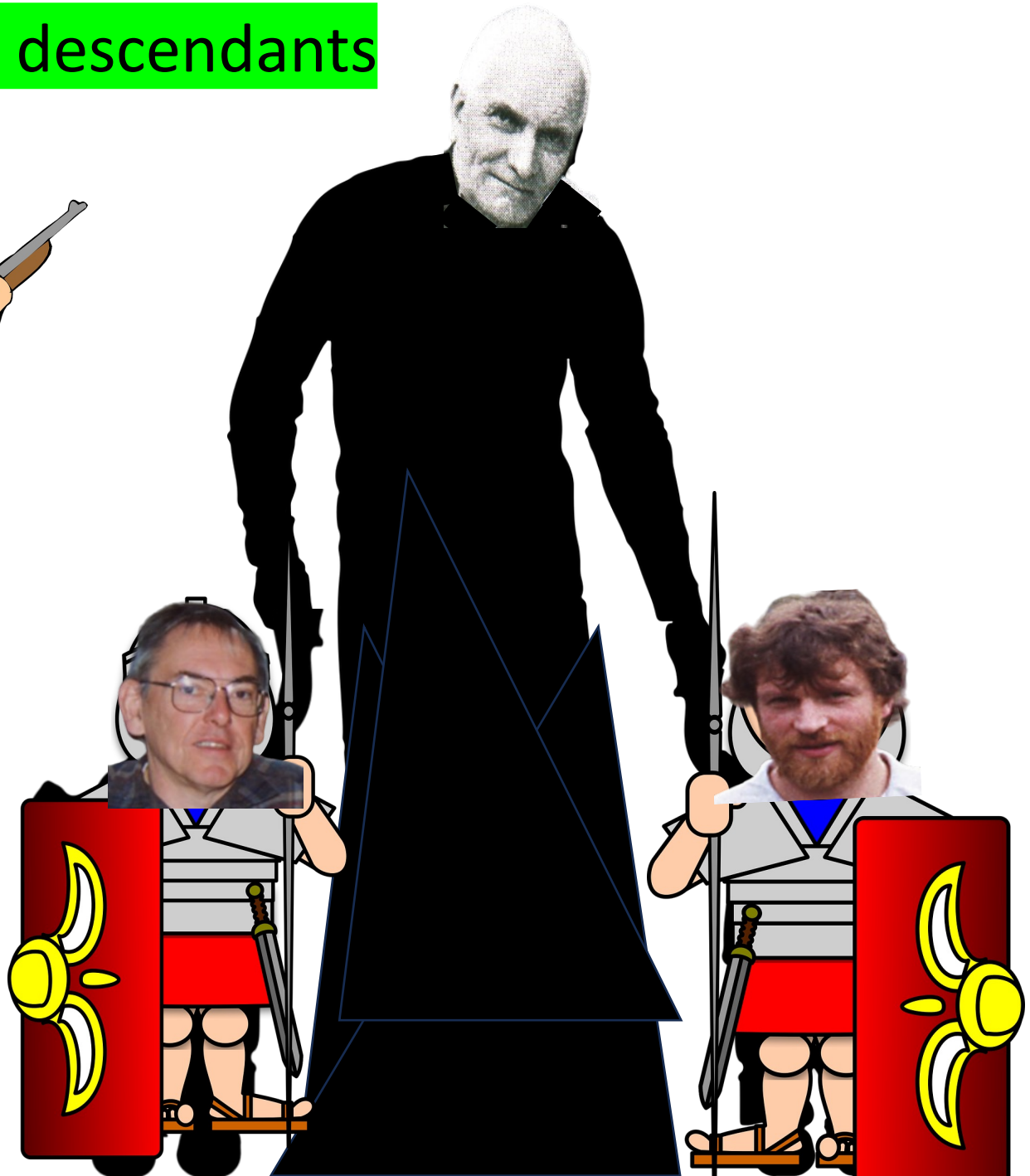


Rousselot had two partisans on his heels:

John Ohala, as a very efficient and combative propagator of experimental phonetics,

and **Didier Demolin** as a valiant illustrator of experimental phonetics.

Rousselot’s descendants

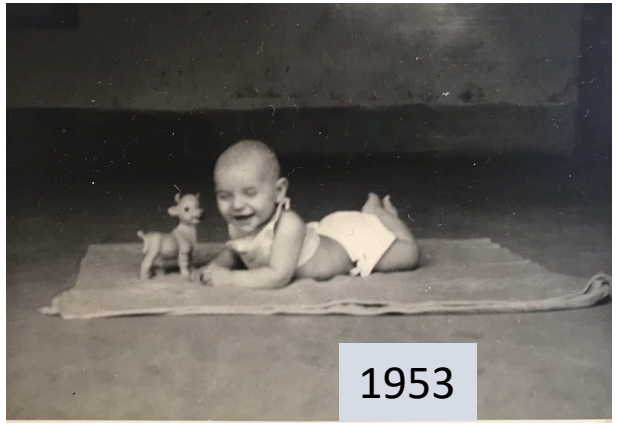


- **John** was the heroic defender of experimental phonetics, who masterfully demonstrated the validity of Rousselot's approach.
- He has somehow inherited the sometimes un-Catholic humor of the man he admires☺

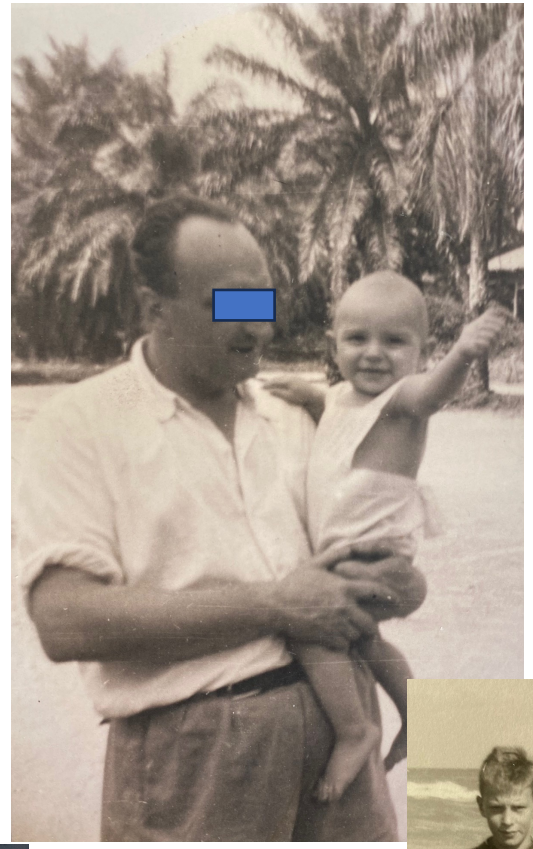
- **Didier,** the fervent defender of experimental phonetics too and a model of experimental phoneticiaRousselot’s book
- Their favorite book was probably the Bible written by their spiritual father, which illuminated their light-filled and shadowless experimental life☺.

The second one was born in the Belgian Congo in 1953

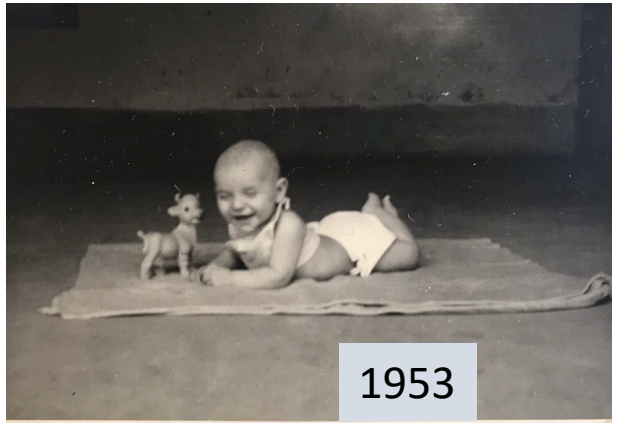
DD as baby and later



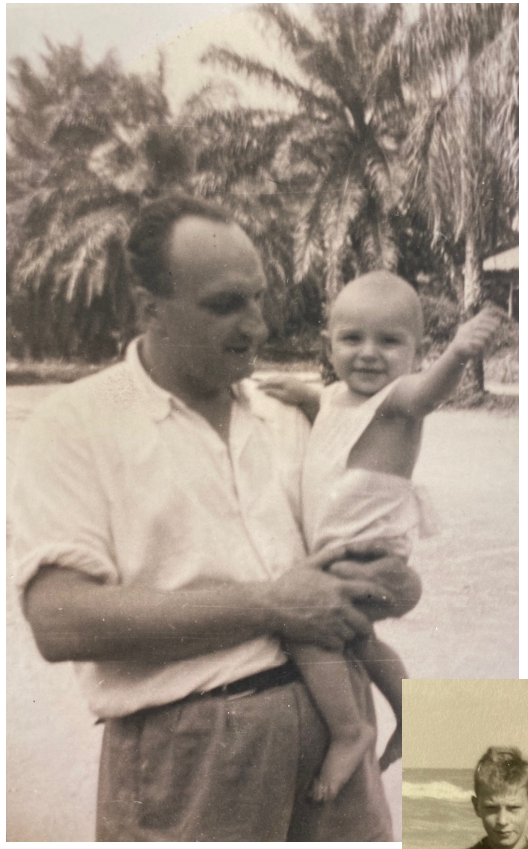
He is the eldest of a family
of four children,
three boys and one girl



DD as baby and later



He is the eldest of a family
of four children,
three boys and one girl



He is the eldest of a family of four children, three boys and one girl.

JO and DD met and become the best friends in the world

And they both are quite a character ☺.

Nasal aerodynamics

The same spiritual father

Professor

instrumentations

History of phonetics

In commun

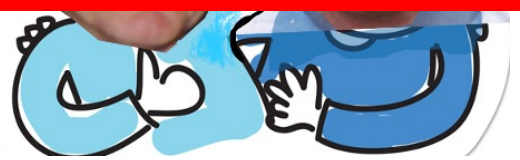
Invasive inves

Old books

1) Both have the same spiritual father

Eth

ris



Heart brake

mountain

physicians

Many mutual riends

1) The same spiritual father

As Rousselot

- Same combative passion for research
- Same basic question: Comment çà marche?
- Same belief in the use of experimental methods.
- Phonetics and phonology is one and the same thing.
- Same interest in the sources of sound change.
- And in the role of aerodynamics and physiology
- Both have close connection to medical doctors
- Both are teachersand researcher !

Nasal aerodynamics

The same spiritual father

Professor

instrumentations

History of phonetics

In commun

Invasive inves

Old books

Eth

ris

in

physicians

Many mutual riends

2) The same passion for instrumentations (particularly the invasive ones on themselves ☺)

John Ohala's instrumentations

John refined

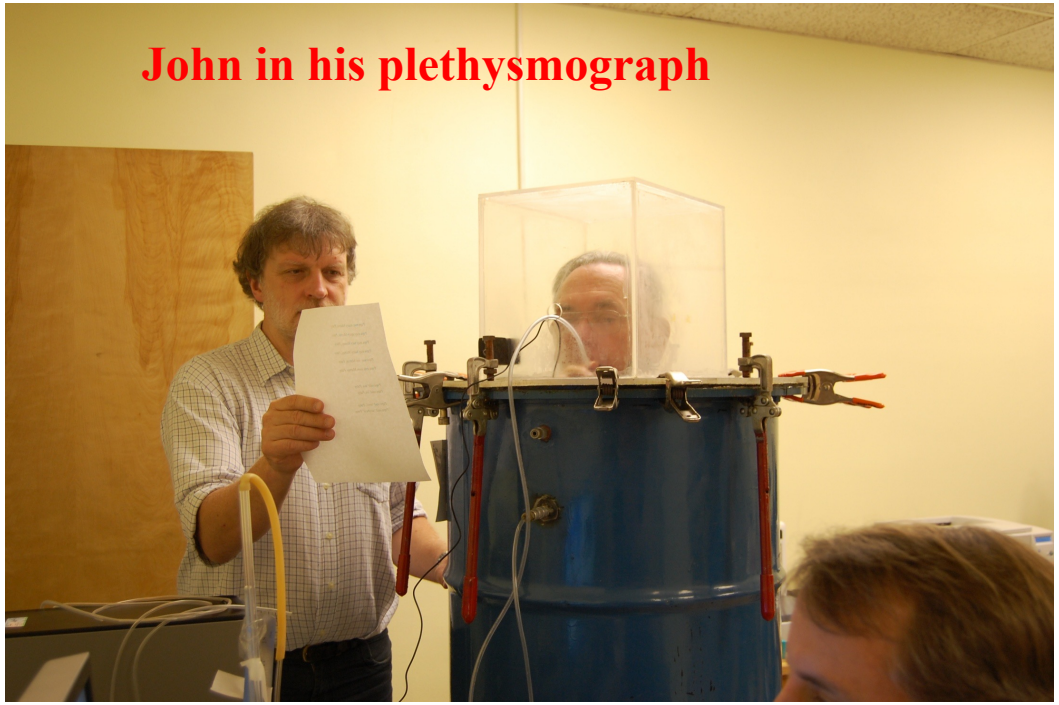
plethysmograph : an instrument for recording and measuring variation in the volume of a part of the body,

thyrometer, an optoelectric device for observing the laryngeal control in speech through the vertical movement of the larynx

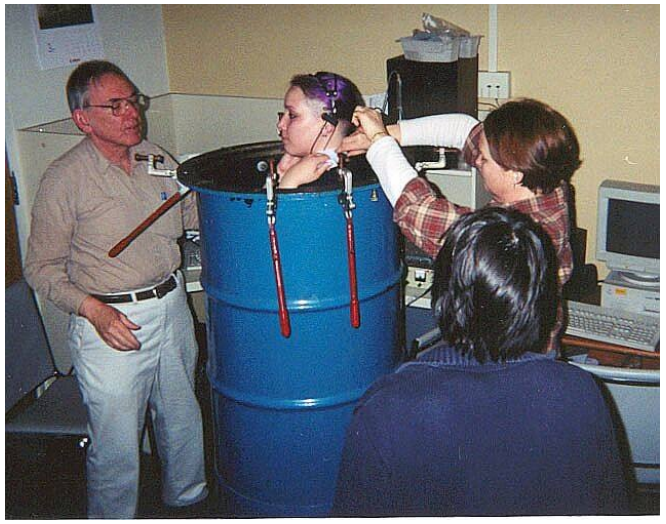
photoelectric glottograph (1967): technique for investigating the opening and closing of the glottis in the larynx (Czermak in 1861)

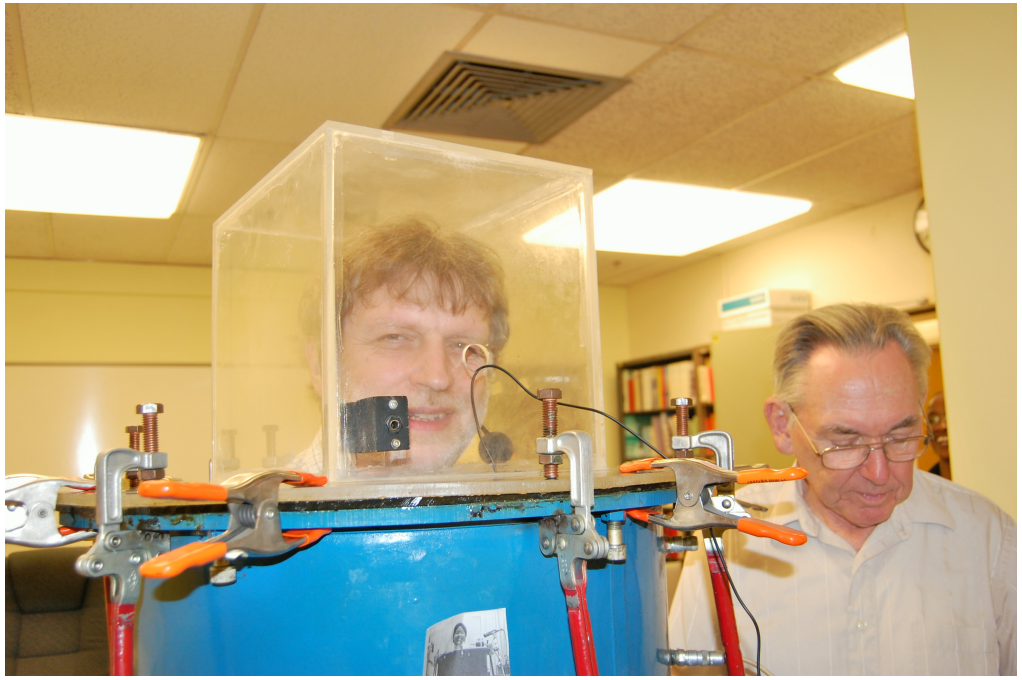
John invented

nasograph: technique for investigating the closing and opening in the velopharyngeal port



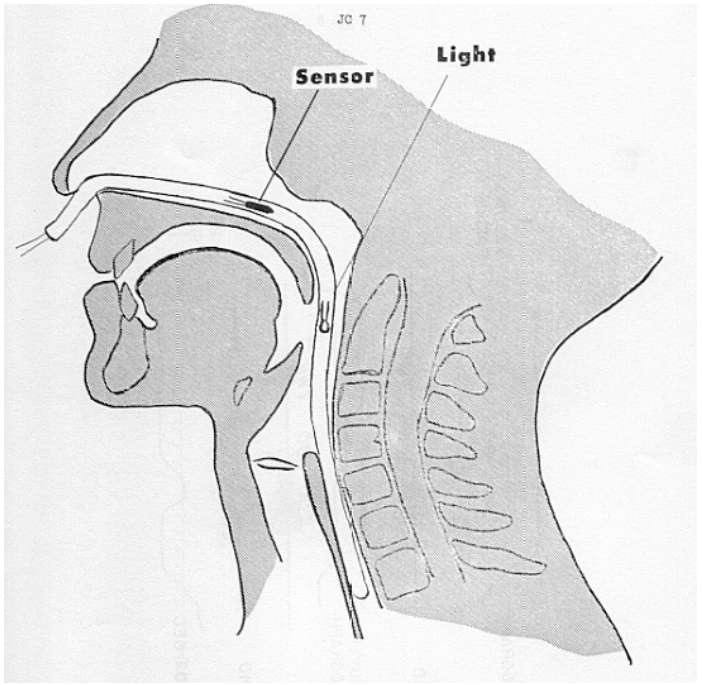
Plethysmograph





plethysmograph : an instrument for recording and measuring variation in the volume of a part of the body

John's nasograph



A miniature light a
sensor, encased i
transparent plas
catheter, are situat
opposite sides of the
velum. As the
velopharyngeal port varies
in size with the raising and
lowering of the velum, the
light flux through the port

nasograph: technique for investigating the degree of velo-pharyngeal opening

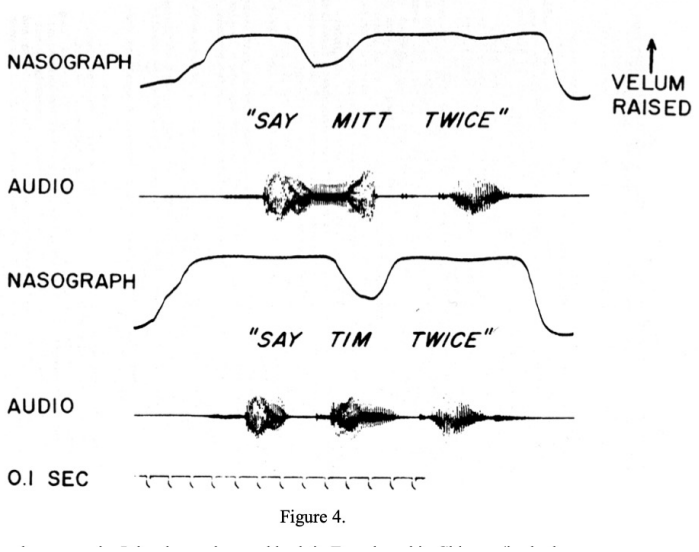


Figure 4.

From: Ohala, J. 1971. Monitoring soft palate movements in speech. *Project on Linguistics Analysis Reports* (Berkeley). 13.JO1-JO15.

Didier participated to the development of EVA with his friend Bernard Teston

DD refined

EVA: synchronization of

Acoustic data

Aerodynmic data: (oral and nasal airflows, itra oral and subglottal pressure

Electroglottograph

Bernard created the first portable EVA machine for Didier.

portable electromyography devices.

DD prived

Didier & al (2002) proved that it is possible to record in real-time the MRI and the speech signal.

Real-time magnetic resonance imaging for the study of speech production

And Didier used EVA a lot on the field

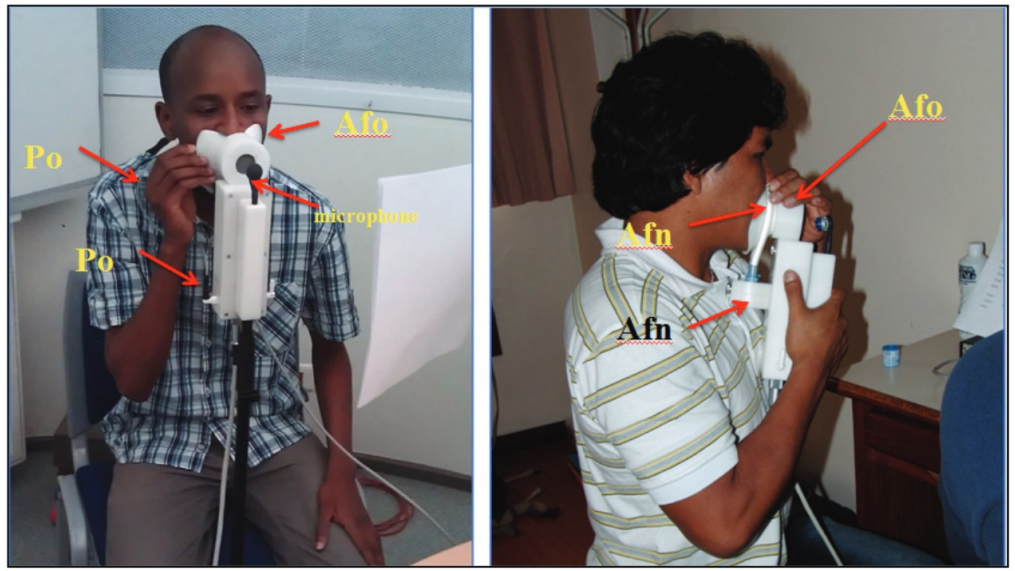
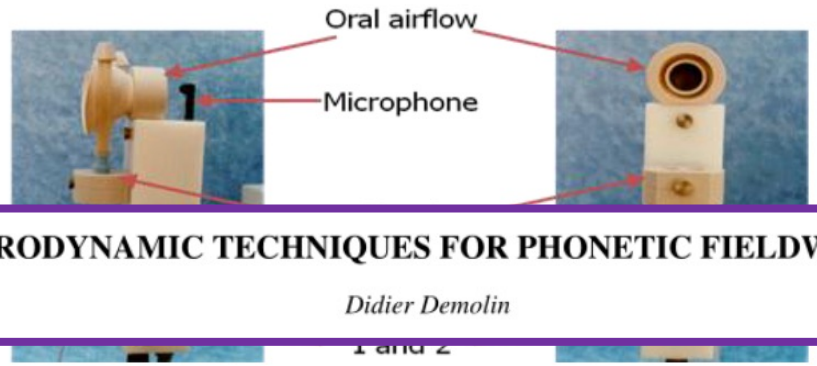


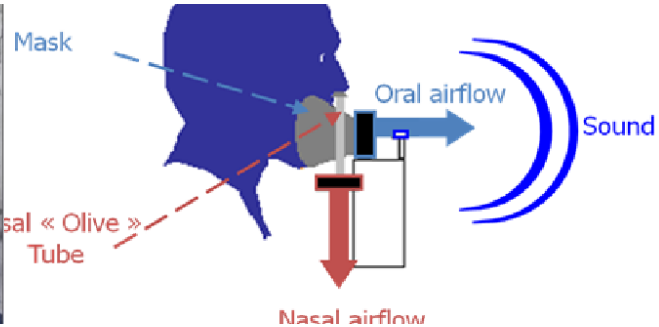
Figure 1: The setting of the EVA2 transducers.

Eva2



AERODYNAMIC TECHNIQUES FOR PHONETIC FIELDWORK

Didier Demolin



'Fieldwork data potentially provides the opportunity to identify sounds that are either deemed impossible or are not yet categorized by the IPA' (Didier)

EVA offered DD the possibility of characterizing sounds deemed impossible or poorly categorized by the IPA

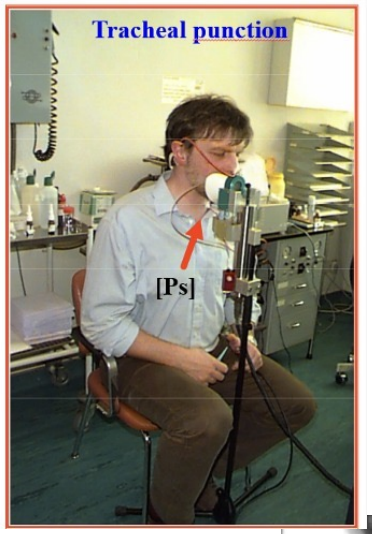
Didier has used all available instrumentations

Direct tracheal puncture

EVA

EMMA

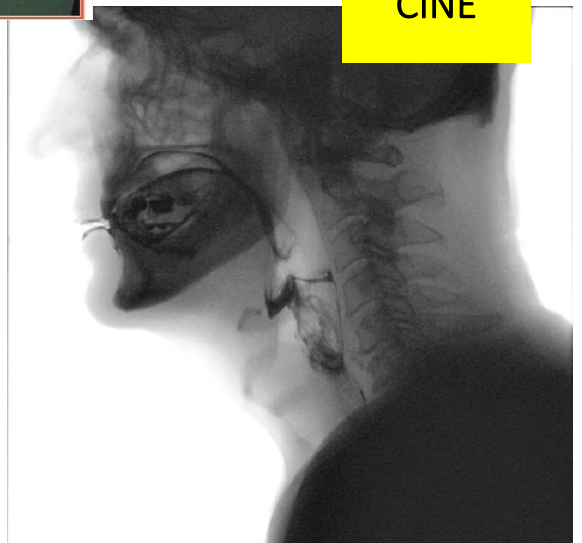
EMG



EEG

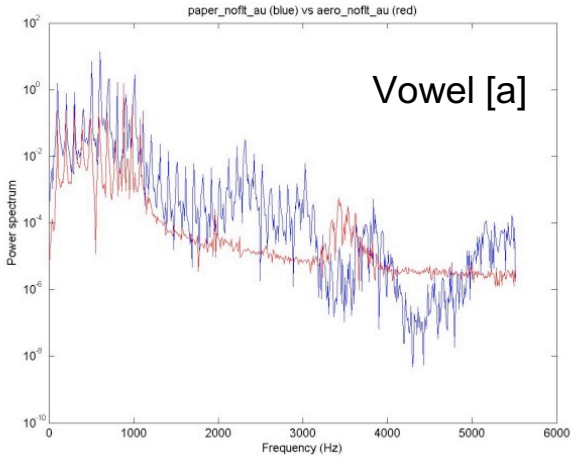
MRI

CINE

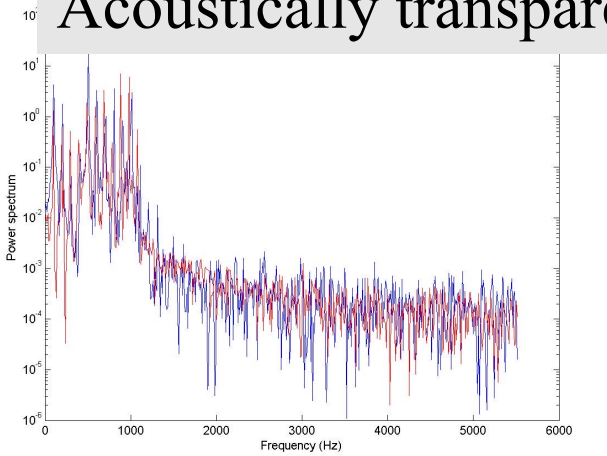


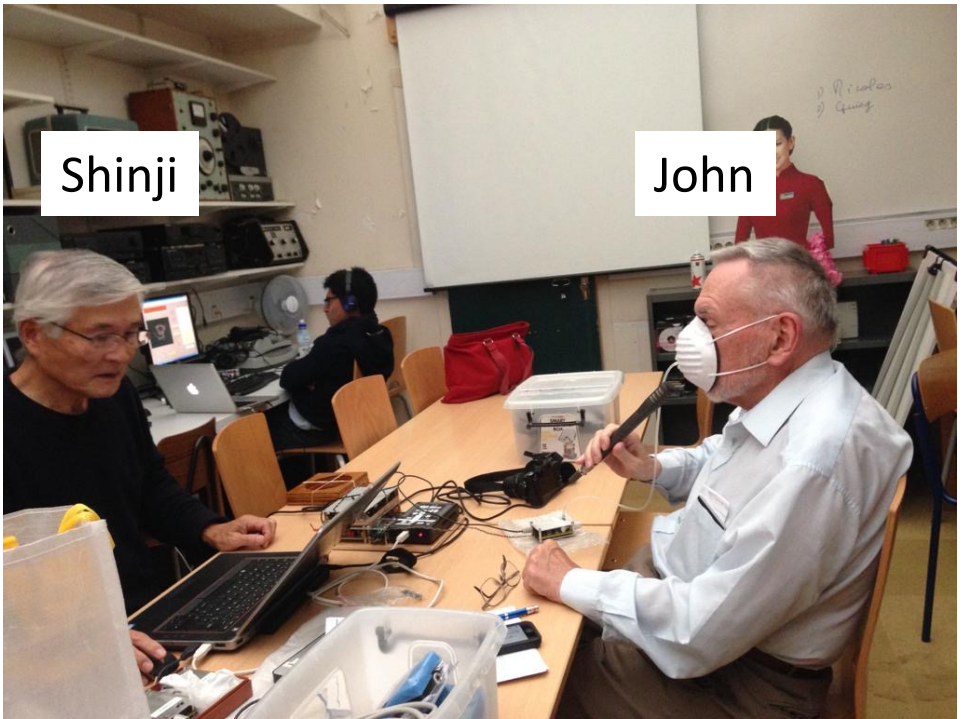
Didier intends to use a new available instrumentation

Maeda's mask



Acoustically transparent





disposal paper mask

Didier intends to use a new available instrumentation

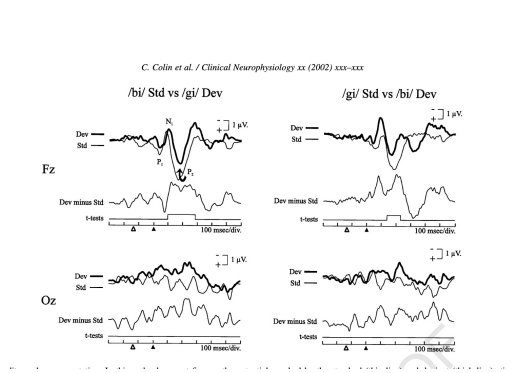
Maeda’s mask

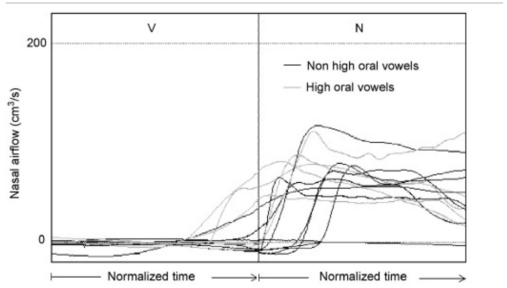
Acoustically transparent

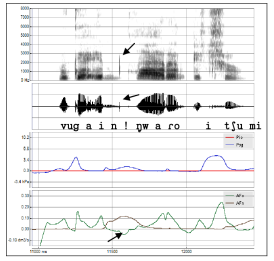
The advantage of Maeda's mask is that it is acoustically transparent and does not distort the signal.
It uses an inexpensive paper mask for painting.

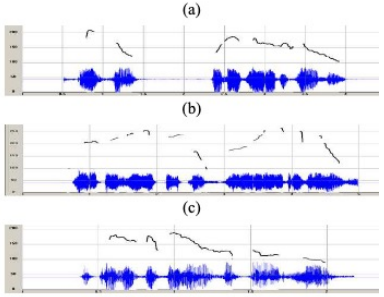
Didier took Shinji's mask to Tanzania at the beginning of the year on a mission with Alain Ghio, but the battery caught a cold in the hold and didn't work ☹

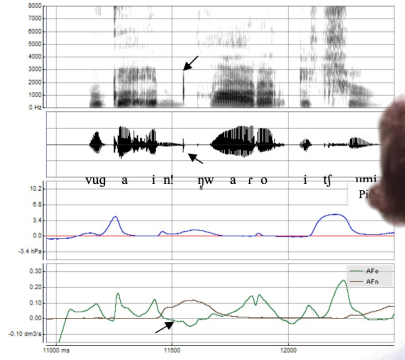
By using a lot of instrumentation, Didier created a lot of very precious data

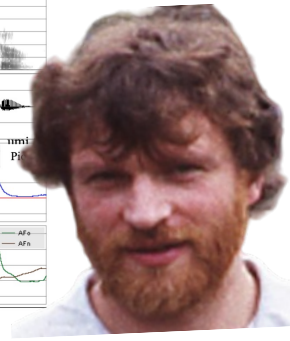


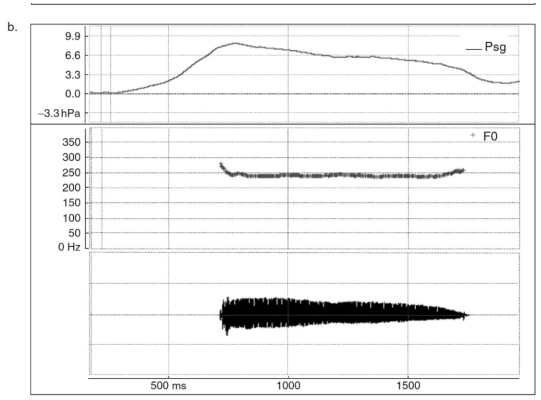












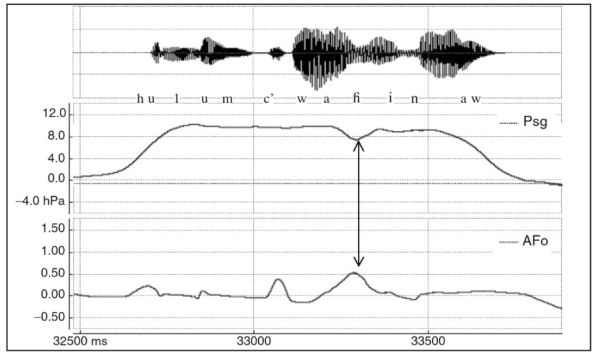
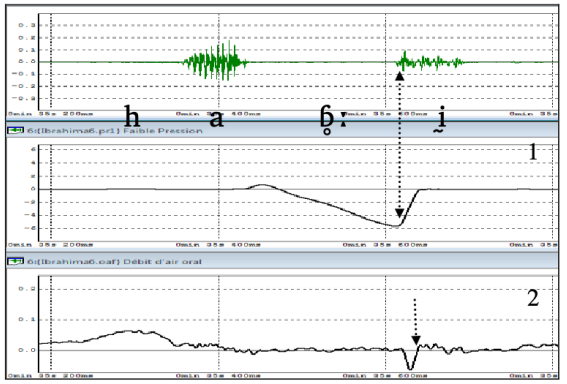
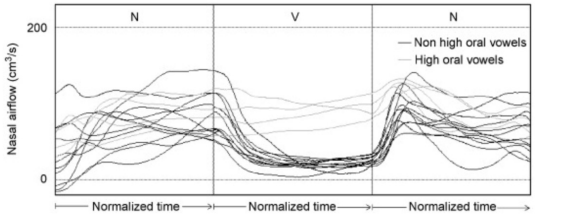
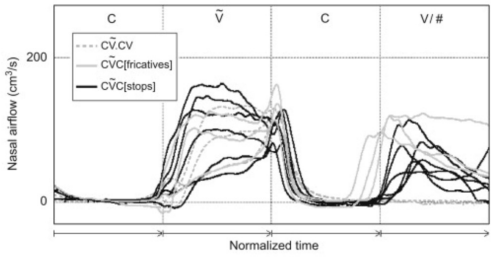


FIGURE 6.1. Audio waveform, subglottal pressure (Ps) [given as Psg in the graph] and oral Airflow (AFo) for the Amharic sentence [kulumc'wafiino] "Everybody is noisy." The arrows indicate the drop in Ps for the voiced [fi] and the corresponding increase in oral airflow. Ps is given in hPa ($1\ cmH_2O = 1.2\ hPa$) and oral airflow in dm^3/s.







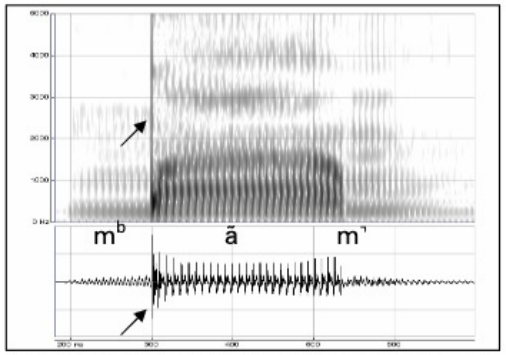
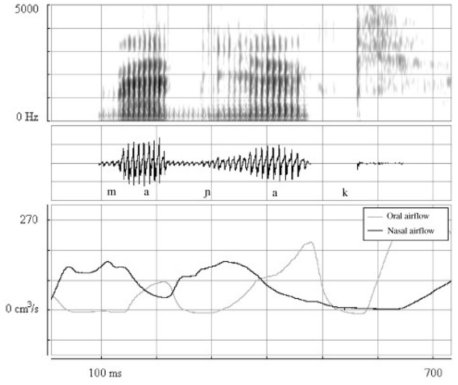
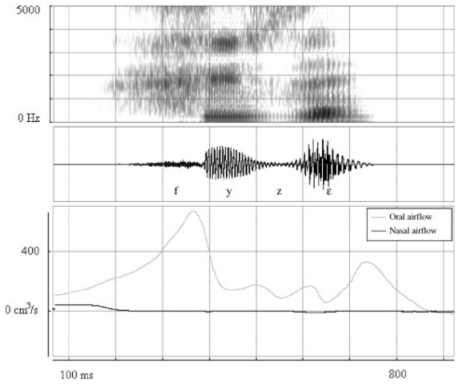


Figure 2. Spectrogram and audio wave form of the word [mᵇãmˀ] 'to tighten'.





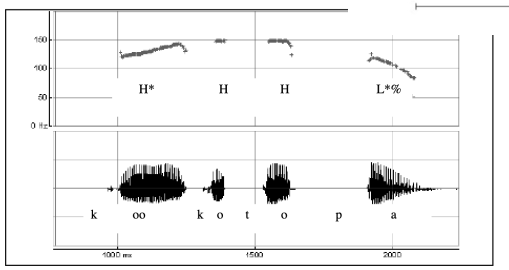


Figure 5. Fo contour and audio waveform of the word **koo**kotopa 'bridge'.

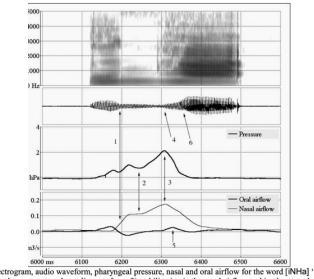


Figure 1. Spectrogram, audio waveform, pharyngeal pressure, nasal and oral airflow for the word [ĩNĥã] 'cow'. 1) start of the nasal consonant on the audio waveform; 2) stabilization in the nasal airflow and in pharyngeal pressure; 3) maximum of nasal airflow and of pharyngeal pressure; 4) start of an increase in the audio waveform amplitude; 5) maximum oral airflow; 6) start of the next vowel.

giving rise to numerous articles

LES TRILLES BILABIALES DU MANGBETU

Didier DEMOLIN*

Relation entre pression sous glottique et intensi

étude des voyelles du francais

Véronique Lecuit[1*] et Didier Demolin[2]

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av. F.-D. Roosevelt, CP110,
B-1050 Bruxelles– Belgique

FROM ALVEOLAR [r] TO
THE SYMBIOSIS OF DIALECTOLOGY,
SOCIOLINGUISTICS, PHONETICS AND PHONOLOGY
TO EXPLAIN SOUND CHANGE IN PROGRESS

Hans Van de Velde
Fryske Akademy
Universiteit Utrecht
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Didier Demolin
Université Paris III – Sorbonne Nouvelle
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The multiple dimensions of language sound systems

Contribution of African and Amerindian languages

Didier Demolin

An MRI Study of Articulatory Compensation

Didier Demolin, Angélica Sampaio, Thierry Metens

Université de Bruxelles

AN MRI STUDY OF FRENCH VOWELS

Didier Demolin*, Jean-Marie Hombert°, Véronique Lecuit*,
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Phonological Universals and the Control and Regulation of Speech Production

Didier Demolin

The Rhythm Class Hypothesis and Indigenous Languages

Luciana R. Storto & Didier Demolin
Universidade de São Paulo and Université Libre de Bruxelles

LES TRILLES BILABIALES DU MANGBETU

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SOUND SYMBOLISM IN !xóõ

Stéfania Bettex and Didier Demolin
Phonology Laboratory, Université Libre de Bruxelles

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The multiple dimensions of language sound systems

nguages

The vowel system of Nasa Yuwe

Didier Demolin; Angélique Amelot; Lise Crevier-Buchman; Tulio Rojas; Esteban Diaz

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BRAZILIAN PORTUGUESE
A NASOFIBERSCOPIC STUDY OF NASALIZED DIPHTHONGS IN

AN MRI STUDY OF FRENCH VOWELS

Demolin*, Jean-Marie Hombert°, Véronique Lecuit*,
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A COMPARATIVE APPROACH TO THE LARYNGEAL SOUND SOURCE OF PRIMATES: IMPLICATIONS FOR THE EVOLUTION OF SPEECH

Didier Demolin
Laboratoire de phonétique et phonologie, CNRS-UMR 7018, Sorbonne nouvelle
didier.demolin@sorbonne-nouvelle.fr

The Rhythm Class Hypothesis and Indigenous Languages

Vowel and consonant effects on subglottal pressure

Didier Demolin; Silvain Gerbers; Sergio Hassid

September 4-5, 2015

The contribution of the kymograph to the description of African languages

Didier Demolin
Laboratoire de Phonétique et Phonologie, CNRS/Sorbonne Paris Cité
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Experimental methods in phonology

Didier Demolin
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Didier.Demolin@gipsa-lab.grenoble-inp.fr

THE INFLUENCE OF AERODYNAMIC CONSTRAINTS ON THE SHAPE AND THE DYNAMICS OF PHONOLOGICAL SYSTEMS

Didier Demolin

Acoustic characteristics of Ekonda scrapers

Didier Demolin; Stephanie Weisser

The vowel system of Nasa Yuwe

Didie

REAL TIME MRI AND ARTICULATORY COORDINATIONS IN VOWELS

Didier Demolin*, Thierry Metens° and Alain Soquet*

Christoph Segebarth*#, and Alain Soquet*

The whistled source of Gibbon vocalizations

Shi Yu; Didier Demolin

EVOLUTION OF SPEECH

Didier Demolin
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Variations in the anatomic constraints on sound patterns

Didier Demolin

categories upon which language is built. About this relation Ohala (1990: 168) proposed the following: *'My own view is that between phonology and phonetics, phonology is the super-ordinate discipline, not because it has accomplished more or is better developed -the opposite may be true- but simply because it looks at and seeks answers to a much broader range of phenomena involving speech behavior'*. Phonetics is thus an unescapable component within

Interactions mimétiques entre locuteurs : une étude expérimentale

Véronique Delvaux[*], *Didier Demolin*[+], *Alain Soquet*[#]

Recursion in non human primate vocalizations

Didier Demolin (1)

Phonology Laboratory, Université Libre de Bruxelles

Perception des tons du mandarin par les apprenants français : effets des contextes segmental et syllabique

Qing Zhou (1) , Didier Demolin (1)

Demolin, D. (2002). The search for primitives in phonology and the explanation of sound patterns: the contribution of fieldwork studies, In C. Gussenhoven e N. Warner (eds.), Papers in Laboratory Phonology 7.

Didier Demolin; Angélique Amelot; Lise Crevier-Buchman; Tulio Rojas;

ÉTUDE DU SYSTÈME VOCALIQUE FANG PAR RÉSONANCE MAGNÉTIQUE

Didier Demolin, Jean-Marie Hombert, Pierre Ondo, Christoph Segebarth

Didier Demolin
Laboratoire de phonétique et phonologie, CNRS-UMR 7018, Sorbonne nouvelle

Didier Demolin; Silvain Gerbe

Didier Demolin
Laboratoire de phonétique et phonologie, CNRS
didier.demolin@sorbonne-

A Phonetic Study of Subglottal Pressure Effects on Stress and Fundamental Frequency

Shi Yu, Sergio Hassid, Didier Demolin

Variations in the anatomic constraints on sound patterns

Didier Demolin

Complexity in phonological systems

Didier Demolin
LPP, Université de Sorbonne nouvelle, Paris 3.

Subglottal pressure differences between voiceless bilabial stops and ejectives

Didier Demolin[1], Sergio Hassid[2]

Fieldwork data, models and theory in phonetics and phonology

Didier Demolin

Gipsa-Lab, Université de Grenoble, Alpes

Clicks, stop bursts, vocoids and the timing of articulatory gestures in Rwanda

Didier Demolin (1) , Clothilde Chabiron (1)

AERODYNAMIC TECHNIQUES FOR PHONETIC FIELDWORK

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A Phonetic Study
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[Automatic Processing of Aerodynamic Parameters in Parkinsonian Dysarthria](#)

Clara Ponchard, Alain Ghio, Lise Crevier Buchman, Didier Demolin
Pages 60-76

Subglottal pres
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Whispery voiced nasal stops in Rwanda

Didier Demolin and Véronique Delvaux*+*

ensions of language sound systems

African and Amerindian languages

Didier Demolin

culatory gestures in

y Phonology 7.

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Didier D
LPP, Université de Sorb

Laboratory Sociolinguistics

From the book Cognitive Sociolinguistics Revisited

Hans Van de Velde, Anne-France Pinget, Cesko Voeten and Didier Demolin

https://doi.org/10.1515/9783110733945-045

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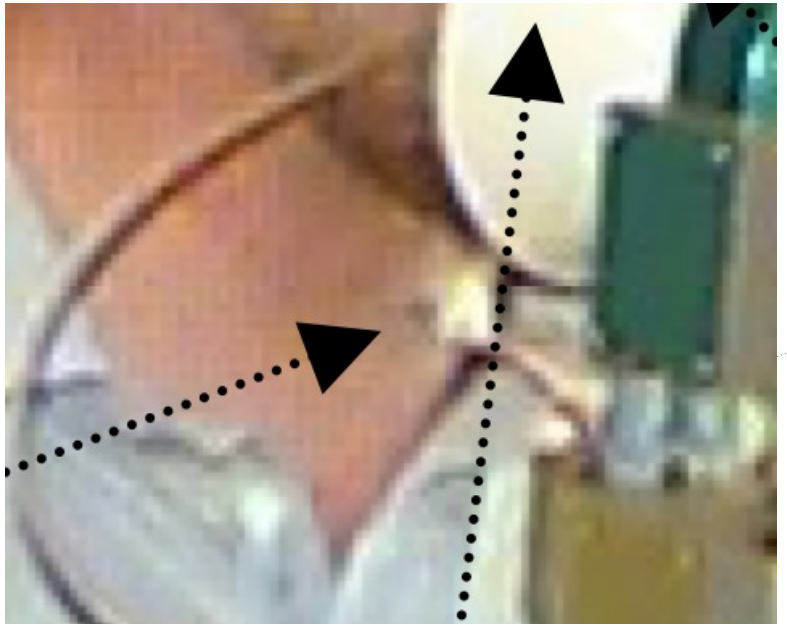
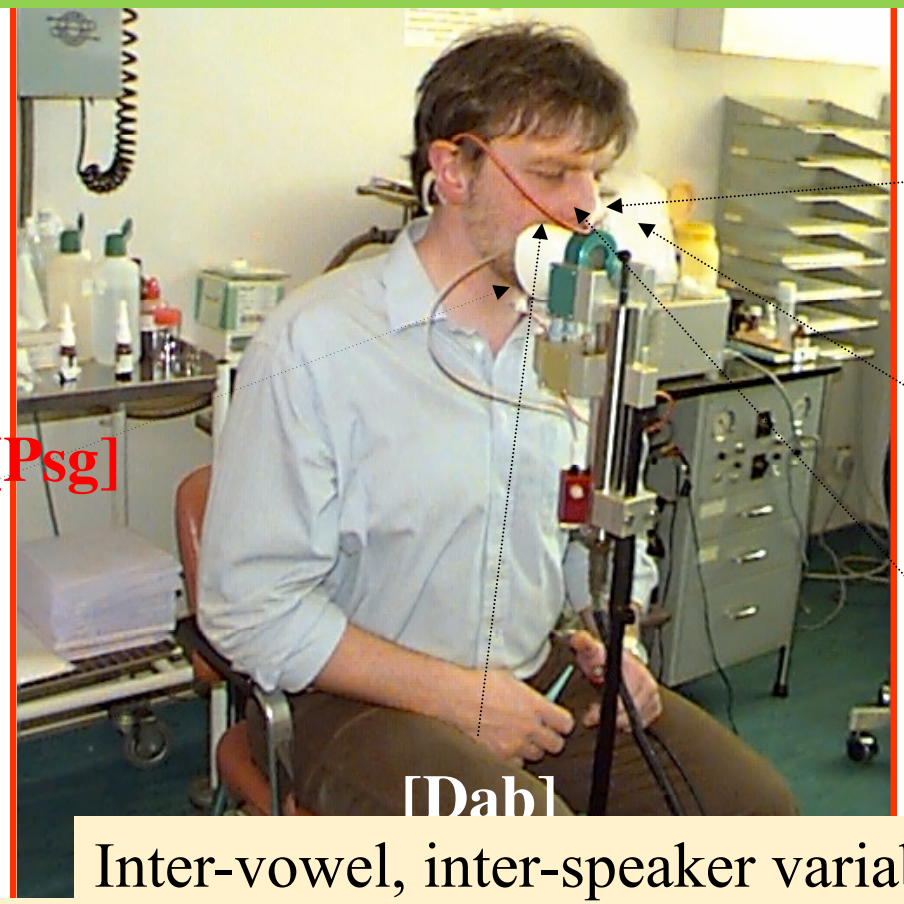
And John and Didier dared to make direct measurement of Ps ☺





Inter-vowel, inter-speaker variability

A needle between the first and the second rings of the trachea or between the cricoid cartilage and the first tracheal ring to record the subglottal pressure

Figure 4: Variation of f_o an Ps of sentence 30 (group 5)

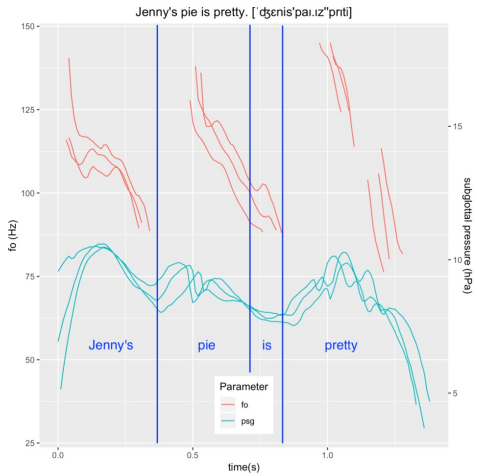
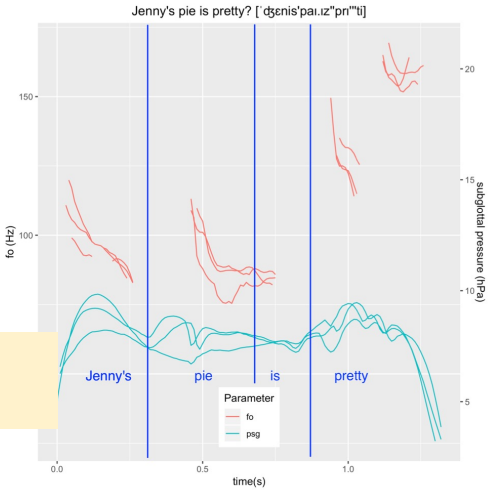


Figure 5: Variation of f_o an Ps of sentence 34 (group 5)



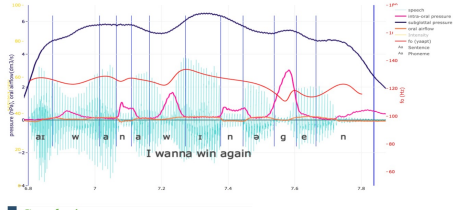
in particular in the relationship between Ps, Rg and FO

Pulmonic force

stress

prominence

Vocal effort



Subglottal pressure

Glottal resistance

tension

stiffness

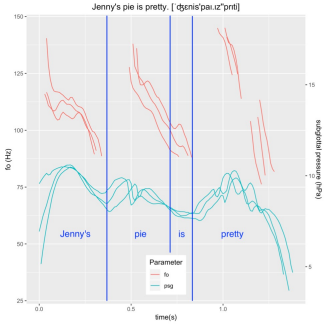
Vocal folds

Intensity

Vowels
consonants

Fundamental frequency

Figure 4: Variation of f_o an Ps of sentence 30 (group 5)



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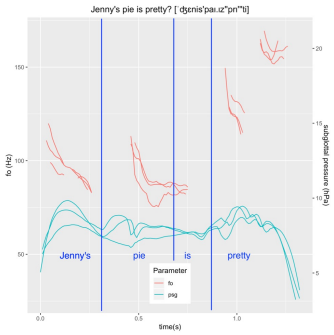
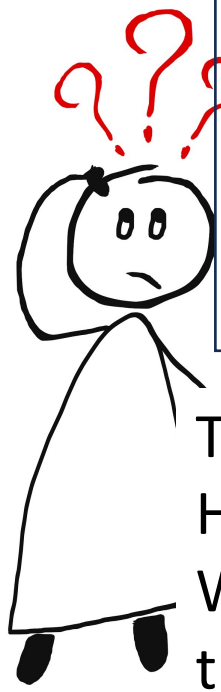




Comment çà marche?

Sound changes???

Rear sounds???

The basic scientific question Didier is asking : « is How does it work? »

What is controlled and what is not controlled? How the sounds, the frequent ones and particularly the rare ones are produced?

Nasal aerodynamics

The same spiritual father

Professor

instrumentations

History of phonetics

In commun

Invasive inves

Old books

3) The same taste for ethology

Ethology

Paris

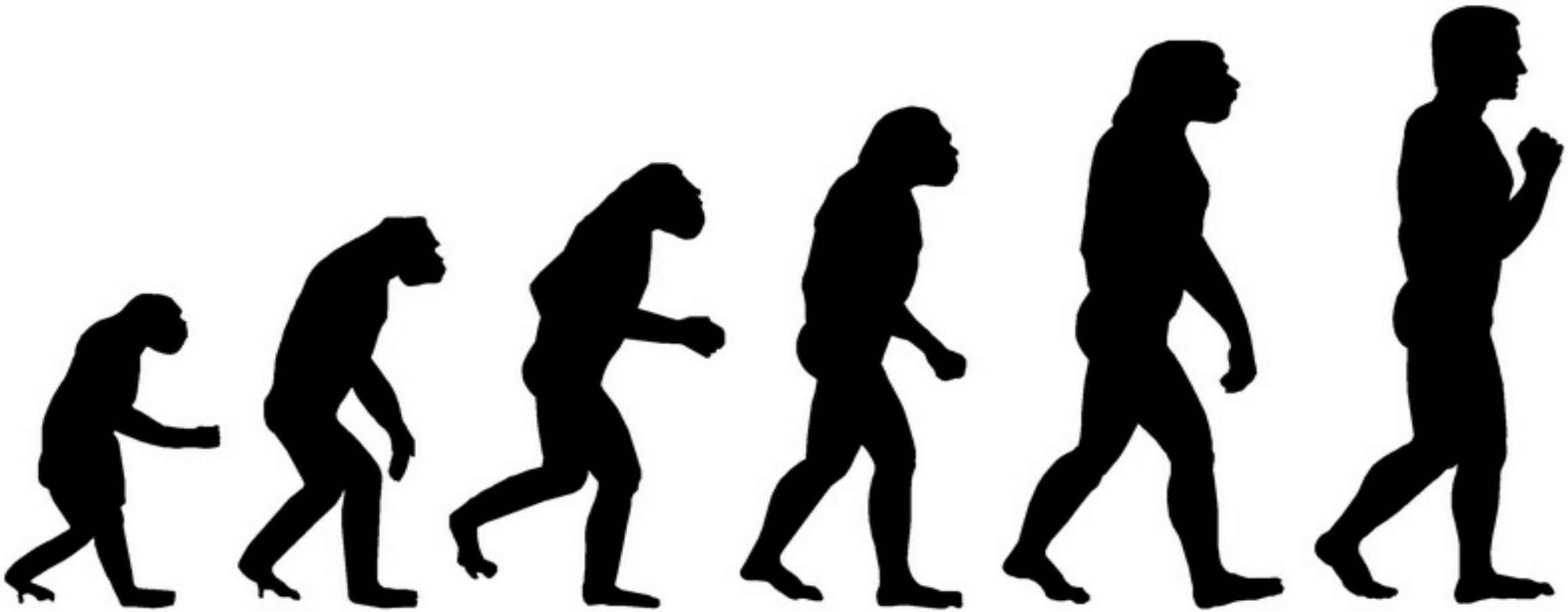
Heart brake

mountain

physicians

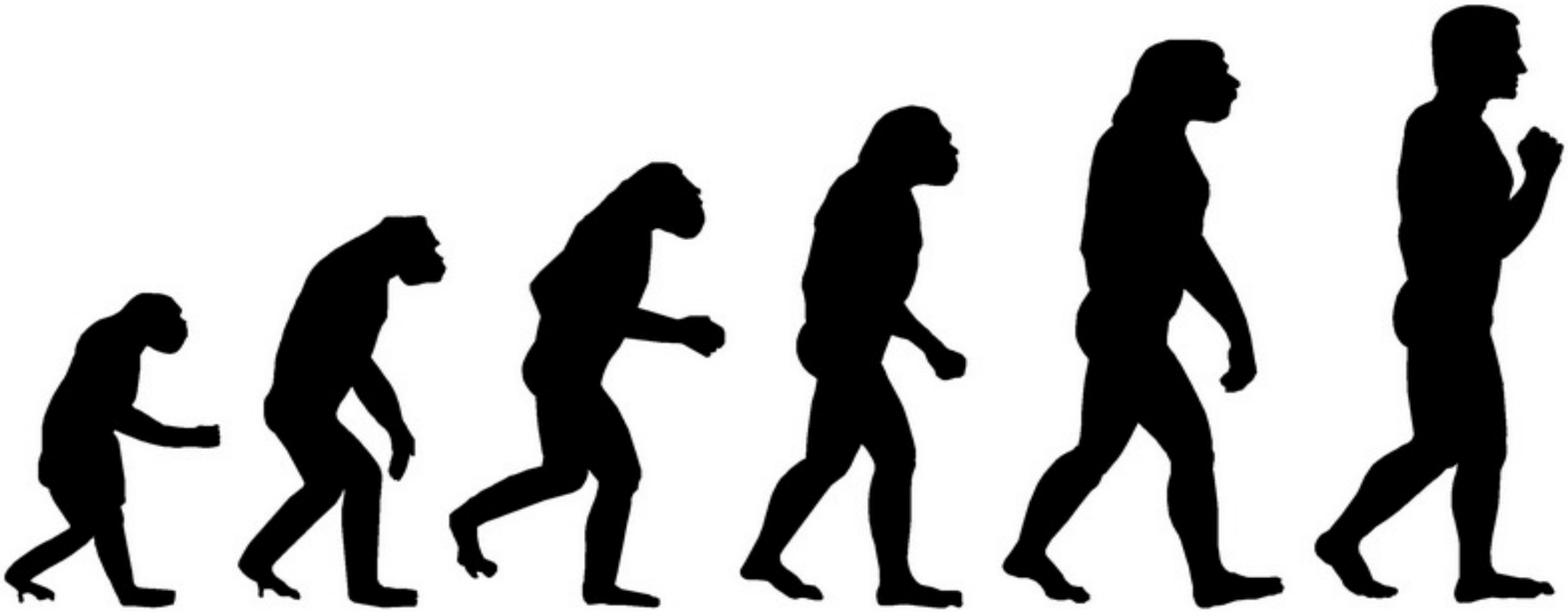
Many mutual riends

John refined the Frequency Code

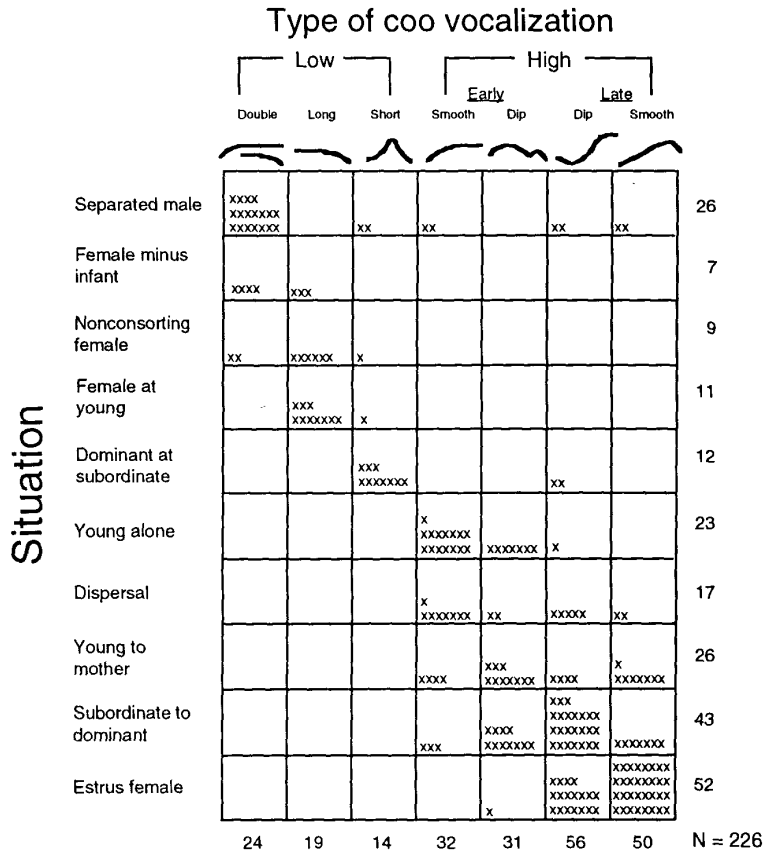


Ethology

Ethology, the study of animal behavior.



John refined the Frequency Code.



the **longer** a cavity

the **lower** its resonances

vocal tract resonances are called formant

the **more massive** the vocal folds

the **lower** the rate of vibration

fundamental frequency

the ancestral role of formant perception and Fo

was to provide indexical cue **about the size** and **age** of the conspecifics

John refined the Frequency Code

- **high Fo : dependency**
- **non-finality, subordination**

- **low Fo : independency**
- **finality, dominancy**

1) continuation

2) **question**

(the question depends on the answer and the speaker depends on the goodwill of the listener)

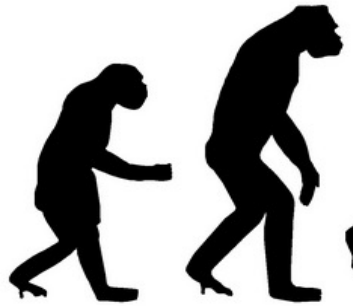
3) politeness, uncertainty, doubt, submissive

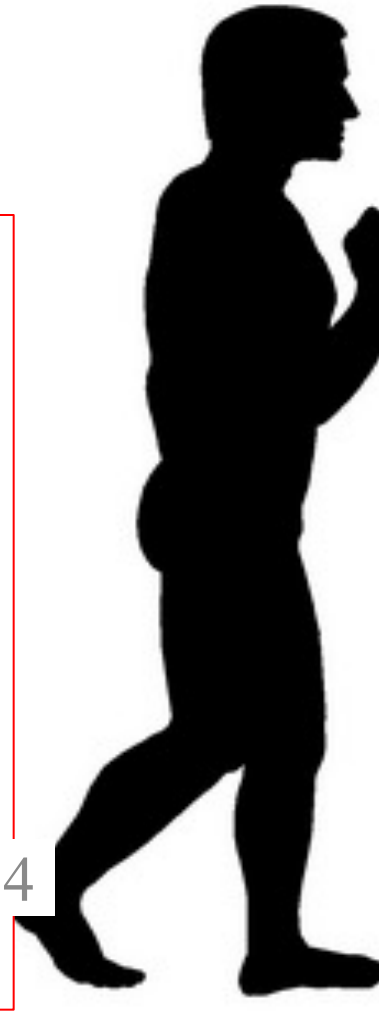
high tone: feminity and smallness

1) finality

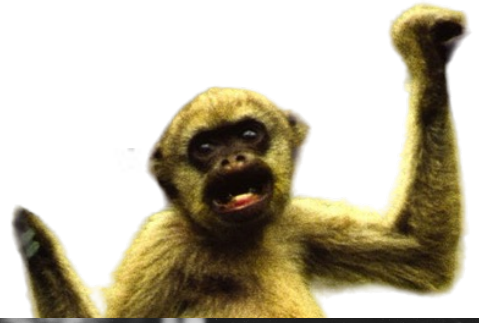
2) answer or **order**

3) certainty





Didier : vocalization of chimpanzees and bonobos



Karisote research station Rwanda

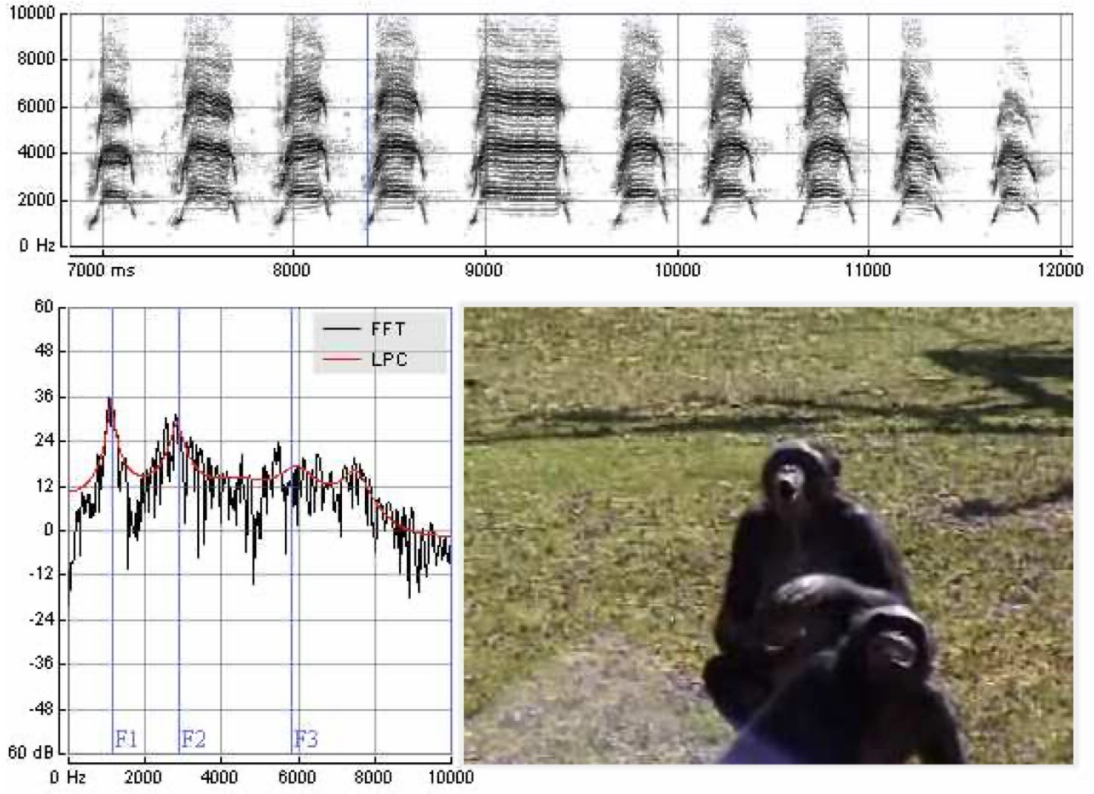
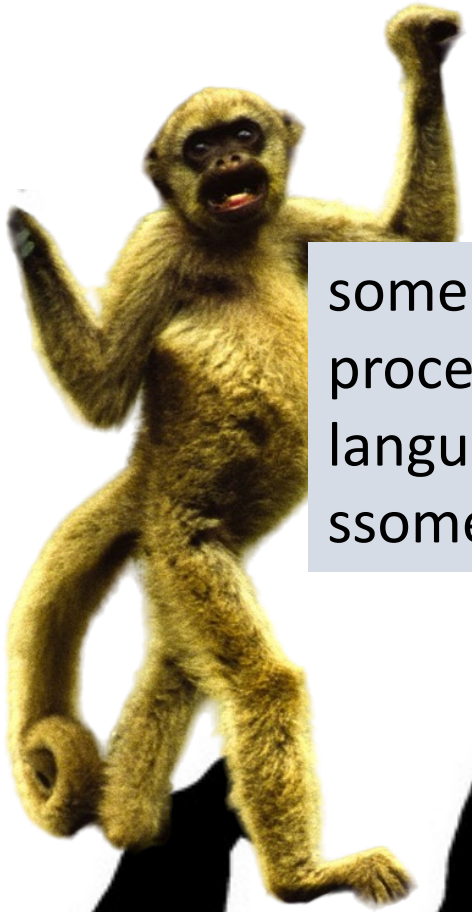


Figure 2. Spectrogram, FFT and LPC spectra of a bark scream produced by the Bonobo staying at the back of the picture. The spectrogram suggests that the formants and the set of harmonics are produced by two different sources. The barks are also modulated in duration.

Didier's vocalization of chimpanzees and bonobos: publications



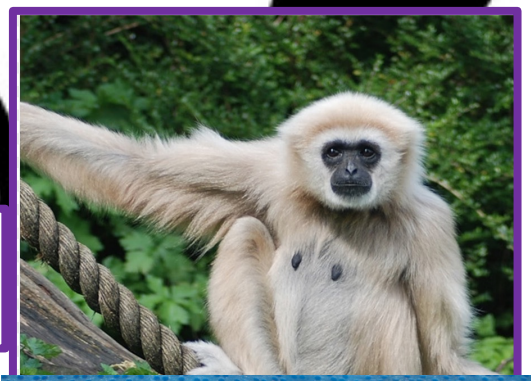
some of the essential mental processes underlying human language are shared by primates, ssome are not.

Deducing articulatory capacities of Bonobos from acoustic da
Demolin, Didier; Delvaux, Véronique

PROSODIC FEATURES IN NORTHERN MURIQUIS VOCALIZATIONS

DIDIER DEMOLIN, CÉSAR ADES, and FRANCISCO D. C. MENDES

cal data between the vocal folds of humans and bonobo. Evolution of
Language. New-York, World Scientific. 428-429.



The whistled source of Gibbon vocalizations

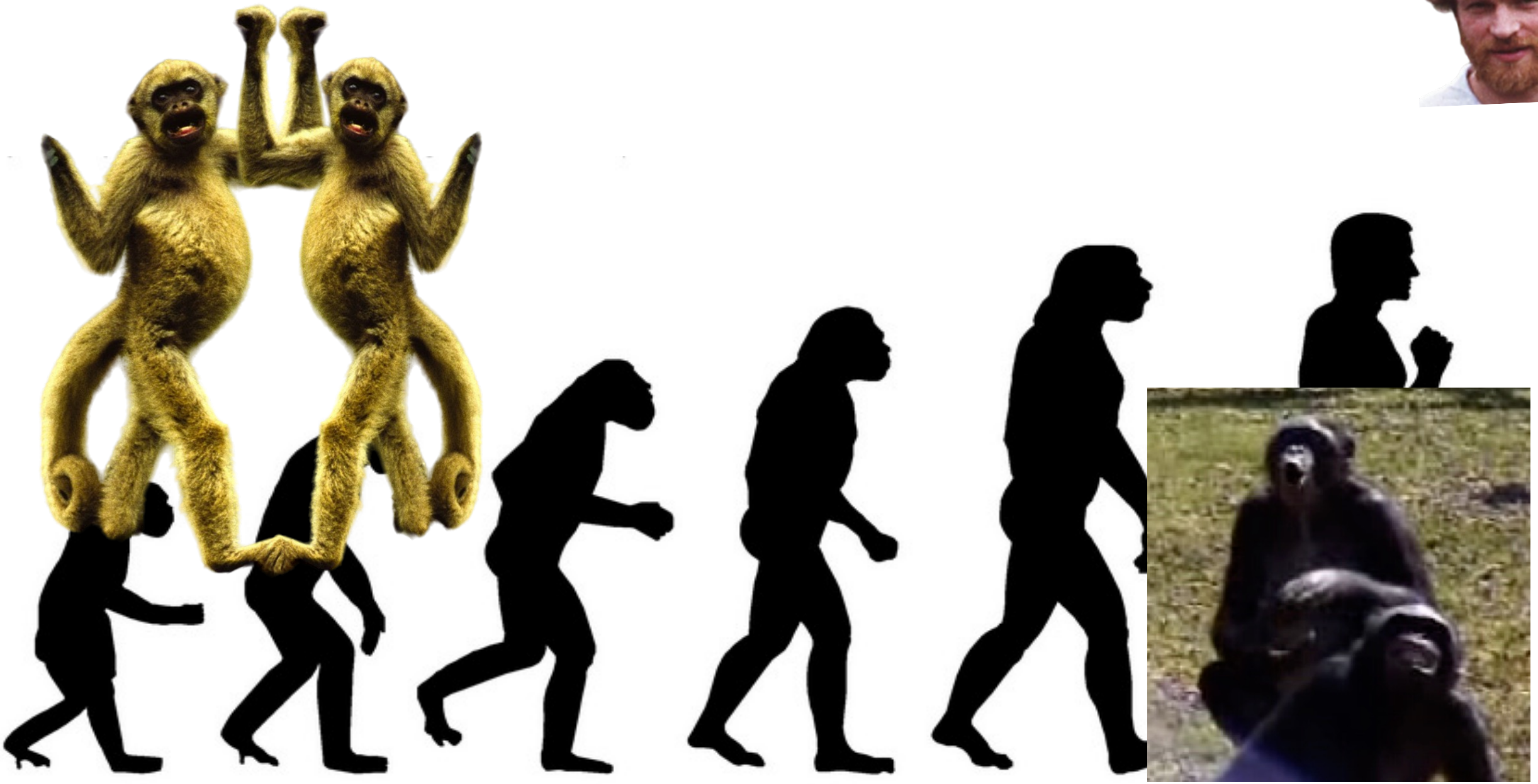
Shi Yu; Didier Demolin

A COMPARISON OF THE ARTICULATORY PARAMETERS INVOLVED IN THE PRODUCTION OF SOUND OF BONOBOS AND MODERN HUMANS

A COMPARATIVE APPROACH TO THE LARYNGEAL SOUND SOURCE OF PRIMATES: IMPLICATIONS FOR THE EVOLUTION OF SPEECH

Didier Demolin

Didier also discoved syntax and recursion in animal communication



And was interviewed recently on TV5 about it ☺

Safari Fichier Édition Présentation Historique Signets Développement Fenêtre Aide — Mer. 17 mai à 18:53

www.dailymotion.com/video/x5qyx04

DAILYMOTION — Recherche — + Uploader — Se connecter — S'inscrire

Le langage des muriquis : plus sophistiqué que le français !

TV5MONDE — Suivre — Like — Favori — Partager — Signaler

il y a 6 ans

Didier Demolin est linguiste, professeur à l'université Paris-III Sorbonne nouvelle, spécialiste d'acoustique et de phonétique. Depuis de longues années, il étudie le langage des primates et il est formel : « Les muriquis disposent du système de communication vocale le plus avancé découvert jusqu'ici dans le monde non humain. »

Masquer

Recommandée

RDC: "Aucune force politique ne représente une alternative à Kabila"

TV5MONDE

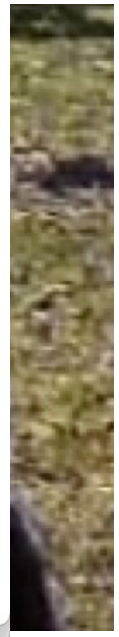
DF #193 - LOVETCH - Pourquoi participer aux Olympiades de français ?

TV5MONDE

En marche ! : "On élit un député qu'on connaît!" (Thomas Cantaloube)

TV5MONDE

Francophonie: Une revue à l'écoute




invasive
inves
4) Both love Paris and Paris love both !
riends

Nasal aerodynamics

The same spiritual father

Professor

instrumentations

History of phonetics

In commun

Invasive inves

Old books

5) A lot of collaborators

Ethology

Paris

Heart brake

mountain

physicians

Many mutual riends

Both have a lot of collaborators around the world!!!

- **Belgium and France**
- **Brazil** (Francisco Mendes, César Ades, Eleonora Albano et Luciana Storto)
- **China** (Fang Hu)
- **Colombia** (Tulio Rojas)
- **Congo** (André Montingea)
- **Edimburg** (Alice Turk, Jim Scobbie)
- **Ethiopia** (Moges Yigezu)
- **France**
- **Glasgow** (Jane Stuart)
- **Japan** (Shigeki Kaji et Hirosi Nakagawa)
- **Mexico** (Esther Zendejas)
- **South Africa** (Tony Traill)
- **United States** (Peter Ladefoged, John Ohala et John Kingston)

Nasal aerodynamics

The same spiritual father

Professor

History of phonetics

instrumentations

In commun

Invasive inves

Old books

Et

ris

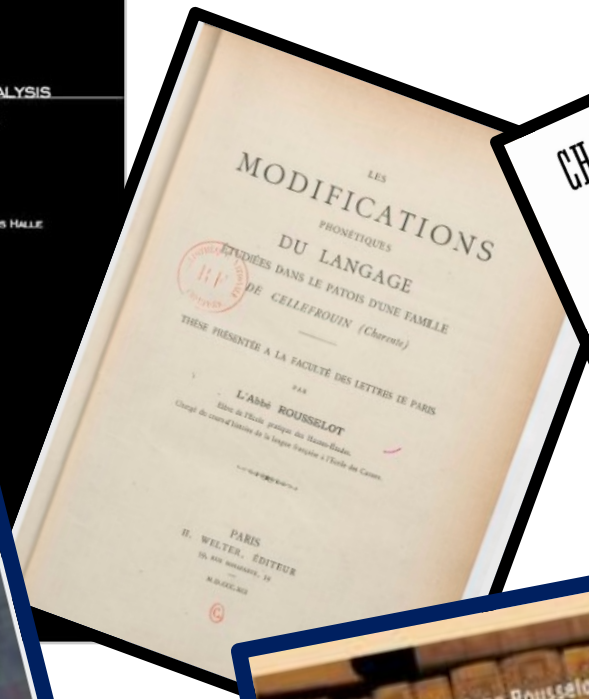
in

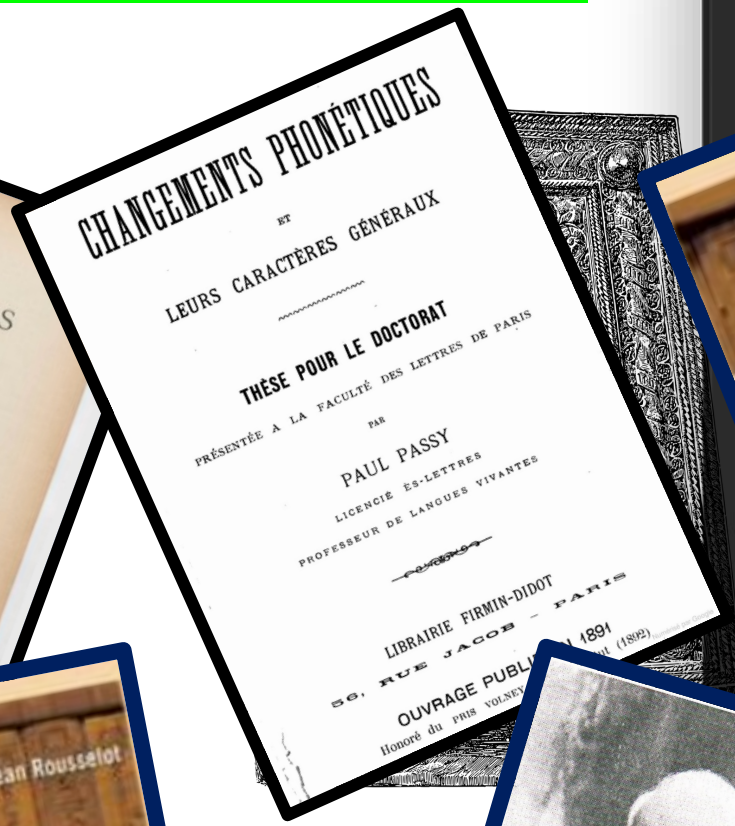
physicians

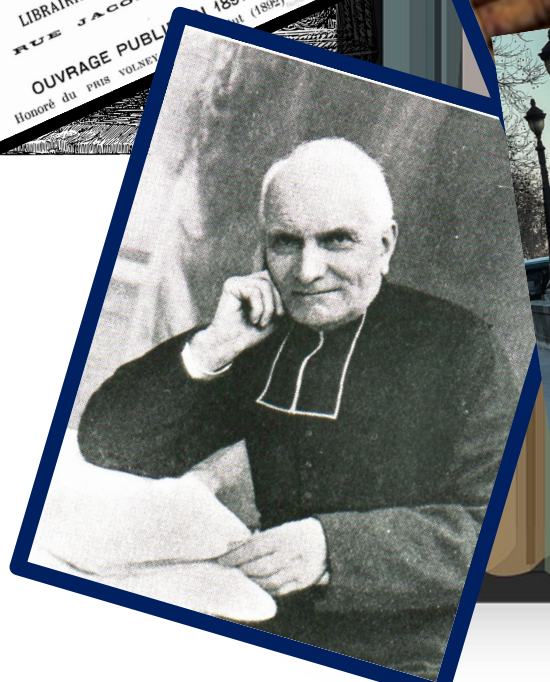
Many mutual riends

6) The taste for old books,
Particularly John,
And the knowledge on what was already done before

The same taste for old phonetic books!!!







Distinctive Features and Thei

Jakobson, Roman, Gunnar, C., Fant, M.

Nasal aerodynamics

The same spiritual father

Professor

instrumentations

History of phonetics

In commun

Invasive inves

Old books

7) Excellent teachers !

Ethology

Paris

Heart brake

mountain

physicians

Many mutual riends

All three have taught in Paris ☺ and have the same reputation as excellent teachers

- Phonétique expérimentale
- Phonétique physiologique et acoustique
- Phonétique générale
- Phonétique comparée des langues du monde
- Linguistique historique et comparative

Professor *at*
Sorbonne nouvelle, Paris3 (2014 >)
Stendhal, Grenoble 3 (2010-14)
Libre de Bruxelles (2003 and later)
Aix-en-Provence (1996-199)

- **VISITING PROFESSOR**
- 2022: Porto Novo, Benin.
- 2018: Grahamstown, South Africa
- 2016: Holland;
- 2003-2014, 1999: Brazil
- 2002: Congo
- 2000: Ethiopia

Nasal aerodynamics

The same spiritual father

Professor

instrumentations

History of phonetics

In commun

Invasive inves

Old books

8) Humor

Ethology

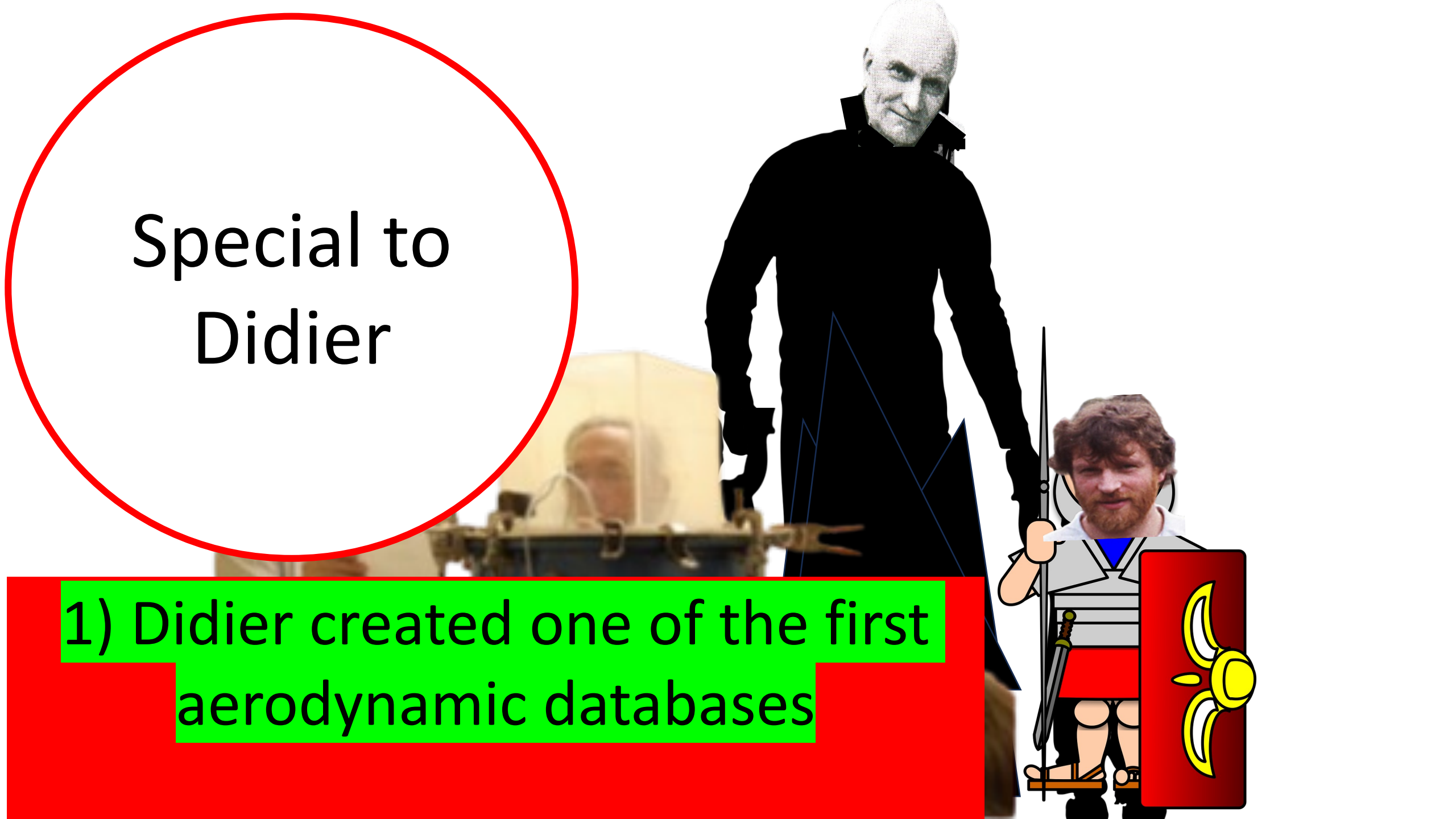
Paris

Both also inherited the sometimes Rousselot's borderline humor, especially John.

Didier has more Belgian humour,

that is to say more inclined to make fun of himself than of … phonologists.

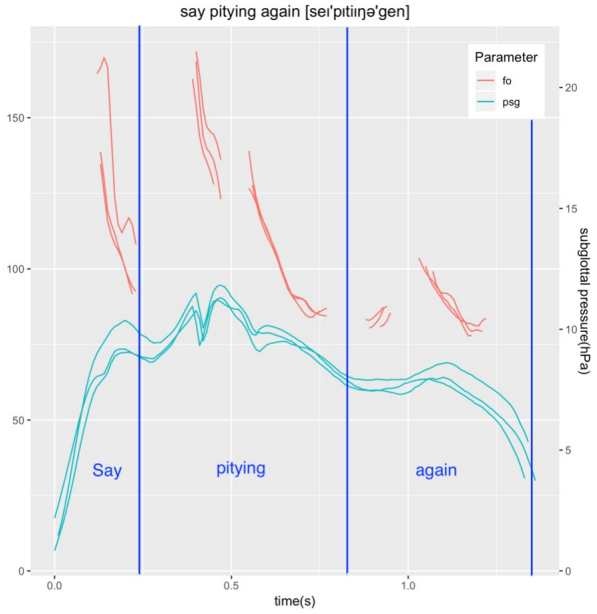
Special to Didier



1) Didier created one of the first aerodynamic databases

Didier created one of the first aerodynamic databases

This database is one of the very few databases of the aerodynamics of speech production available today to the scientific community.



In line with the speech archives, created by Ferdinand Brunot in 1911.

Speech Aerodynamics Database, Tools and Visualisation

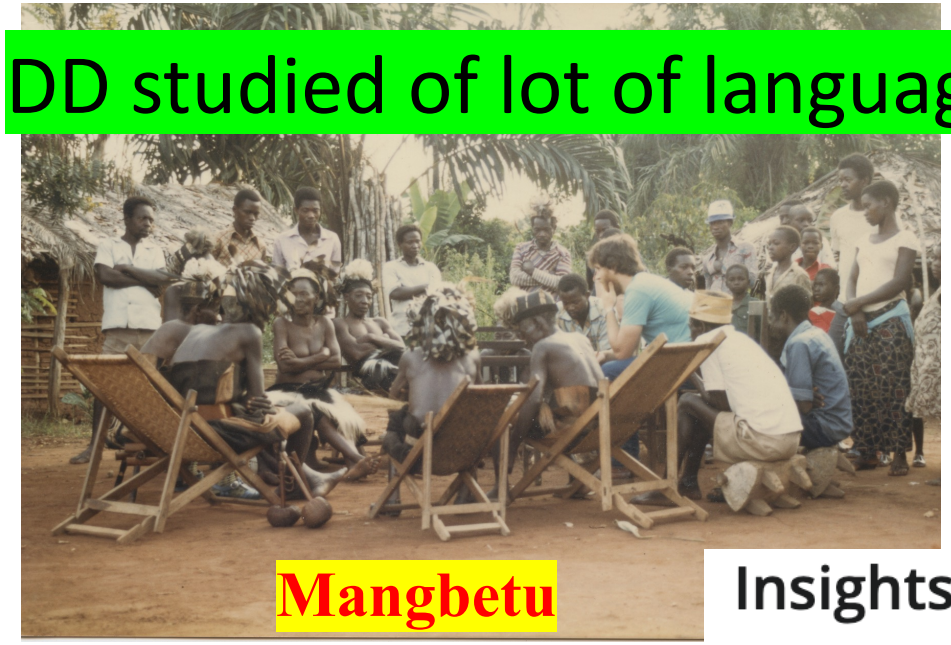
Shi Yu (1) , Clara Ponchard (1) , Roland Trouville (1) , Sergio Hassid (2) , Didier Demolin (1)

udra att

Special to Didier

2) Didier studied a lot of languages, rare phonemes, possible phonemes

DD studied of lot of languages and rare phonemes



Mangbetu

Insights from the Field

Didier Demolin

Namtrik Colombia

Hadza Tanzania

Nasa Yuwe Colombia

DD studied of lot of languages and rare phonemes

Congo
Ethiopia
Botswana
Tanzania
Kenya
Rwanda
Brazil
Colombia

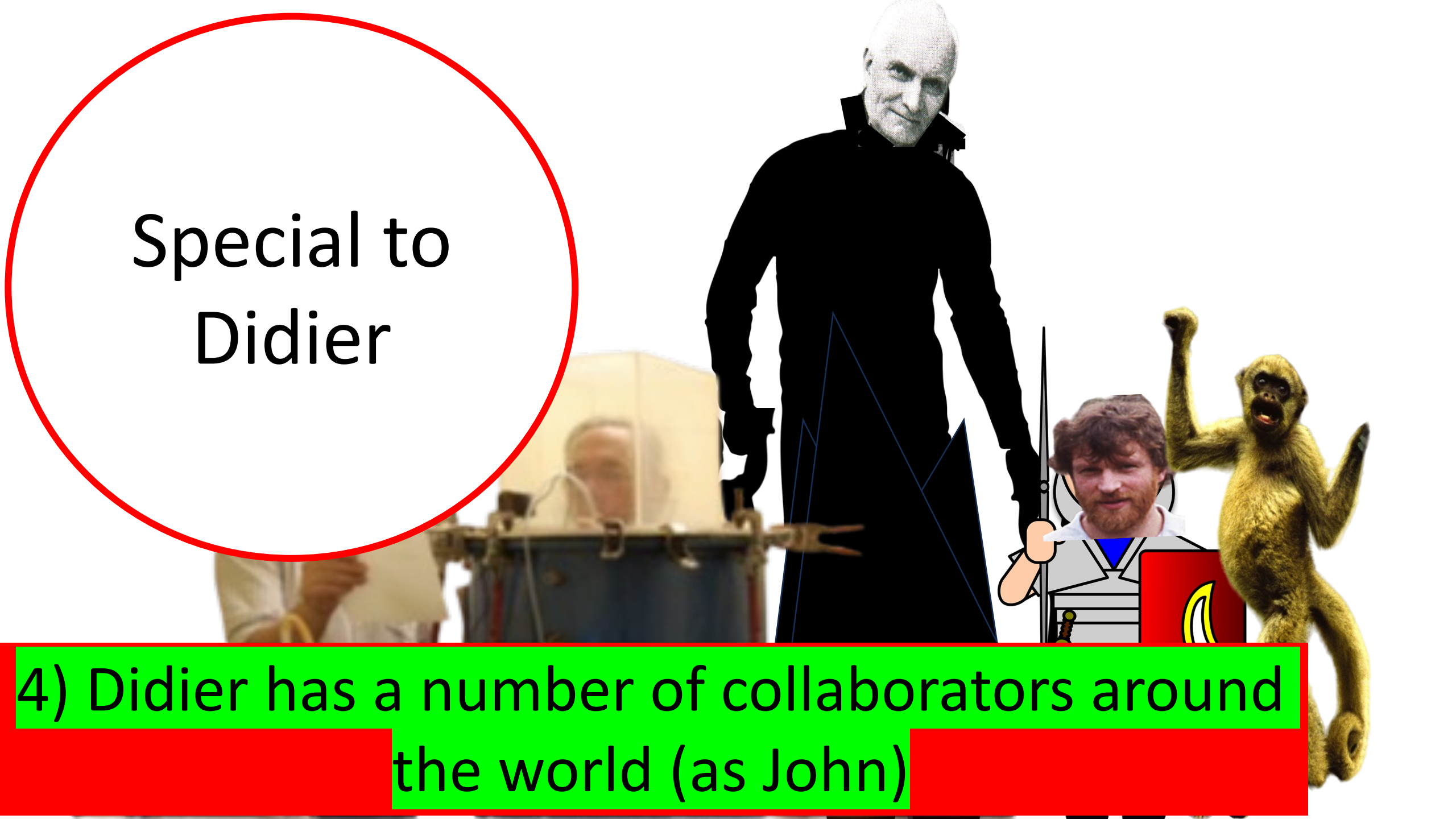
Special to Didier

3) Didier published with quite a number of reseachers

Didier published with quite a number of researchers

Alain Soquet	Christoph Segebarth	Monique Radeau
Alexis Dehais Underdown	Christophe Savariaux	Nathalie Vallée
Ana Georgina Flesia	Clara Ponchard	Paul Vignes
Angélique Amelot	Francesca D'Errico	Pierre Badin
Anne Cros	Françoise Raby	Qing Zhou
Anne-France Pinget	Gérard Bailly	Rita Demasi
Antonio Galves	H. Raeymaekers	Roland Trouville
Arthur Givois	Hans Van de Velde , ,	Rosario Signorello
Barbara Kühnert	Ibrahima Abdoul H. Cissé	Sergio Hassid
Bernard Harmegnies	Isabella Poggi	Shi Yu
Bernard Teston	Jean-Marie Hombert	Shi Yu
Bjorn Lindblom	Lise Crevier-Buchman	Thierry Metens
Bruno Nazarian	Marie-Pierre Lissoir	Thomas Hueber
Cécile Colin	Martine George	Véronique Delvaux
Cédric Gendrot	Peter Branderud	Véronique Lecuit
Cesko Voeten		

Special to Didier



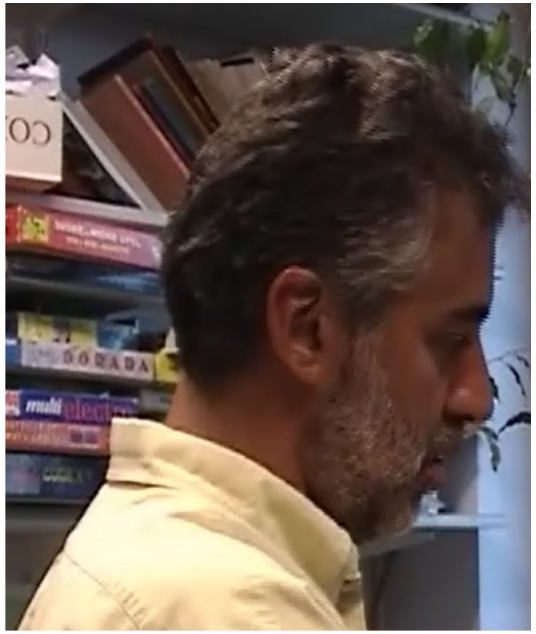
4) Didier has a number of collaborators around the world (as John)

A lot of French and collaborators due in part to multiple stays in researc

- 2022- : Chercheur EVALAB - Equipe Anthropologie Évolutive, Institut des sciences de l'évolution, Montpellier
- 2014- : Chercheur Laboratoire de Phonétique et Phonologie, Paris 3, UMR 7018
- 2010-2014 : Chercheur Gipsa-Lab Grenoble
- 2002 : Chef de Travaux Université Libre de Bruxelles
- 1993-2001 : Premier assistant Université Libre de Bruxelles.
- 1992-1998 : Chercheur, Laboratoire Dynamique du Langage, Université de Lyon2.
- 1991-1993 : Assistant ad interim université Libre de Bruxelles.
- 1990-1992 : Chercheur, Laboratoire des Langues et Civilisations de tradition orale (LACITO-CNRS, Paris).
- 1989-1991 : Chercheur au Département de Linguistique, Université Libre de Bruxelles.
- 1987-1990 : Chercheur, American Museum of National History.
- 1987-1988 : Chercheur, Harvard Ituri project.
- 1983-1986 : Chercheur, Centre Ethnomusicologique Paul Collaer, Tervuren.
- 1980-1982 : Chercheur, Institut National de Recherche Scientifique Butare, Rwanda

And DD maintains a close collaboration with medical doctors, which is essential for fundamental research in phonetics

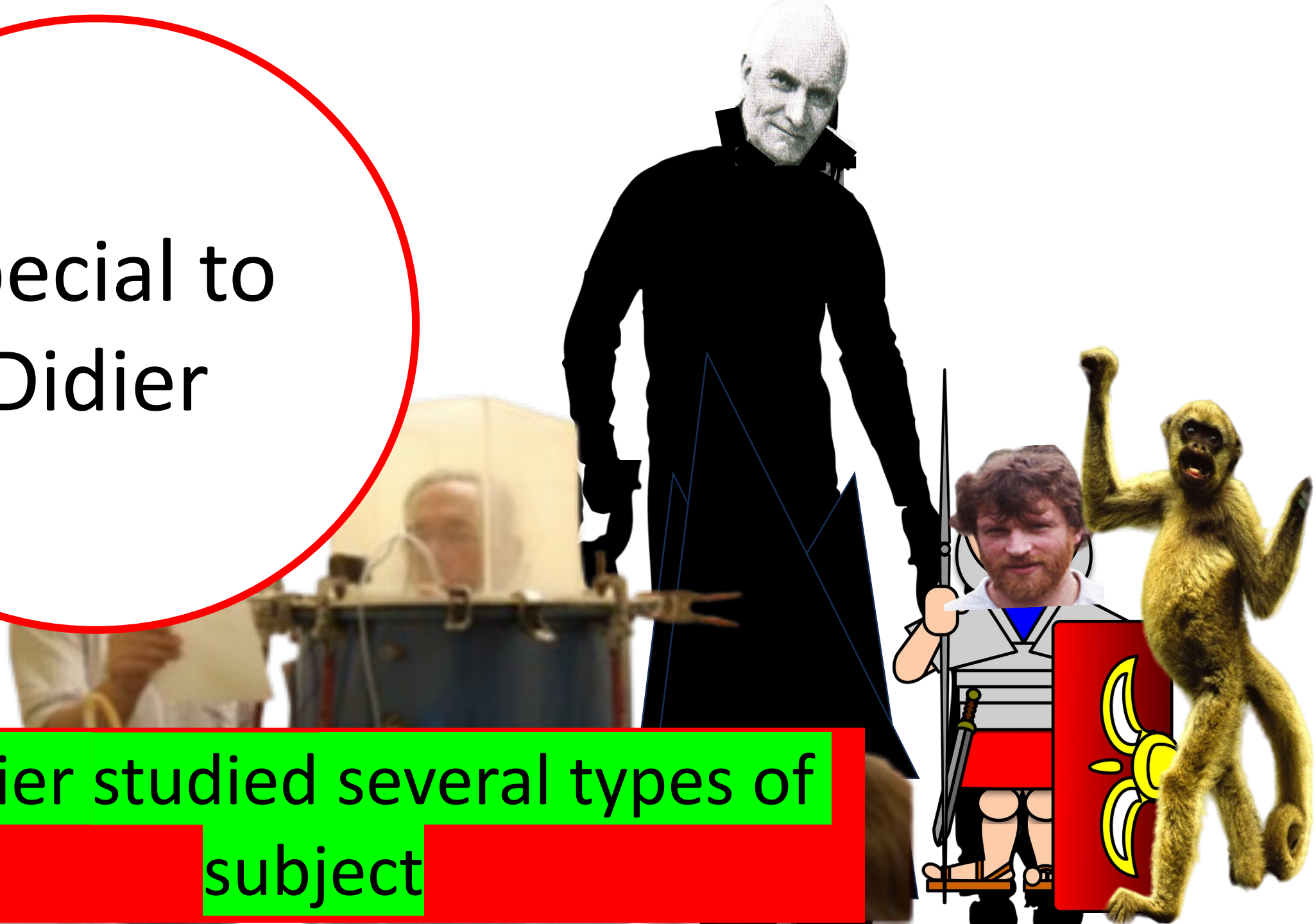
Erasme Hospital,
Université Libre de Bruxelles,
Sergio Hassid



Hôpital Foch,
Suresnes,
Lise Crevier, Stéphane Hans

From profile, I could not find another one ☺

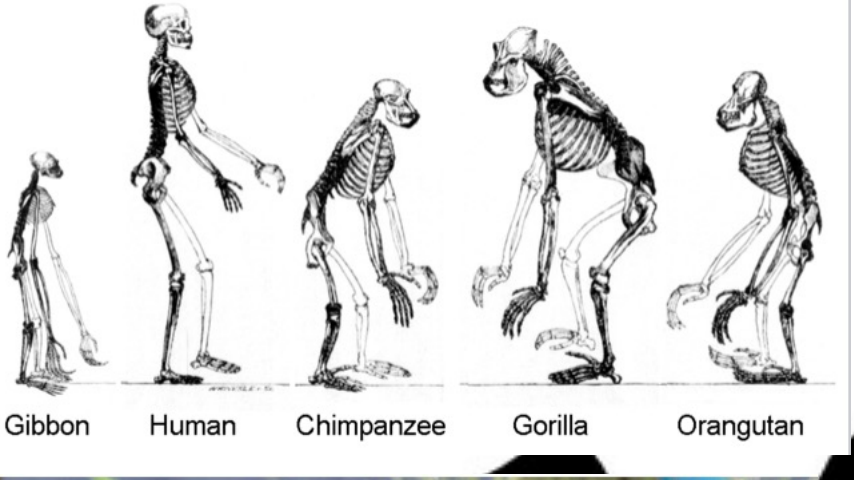
Special to Didier

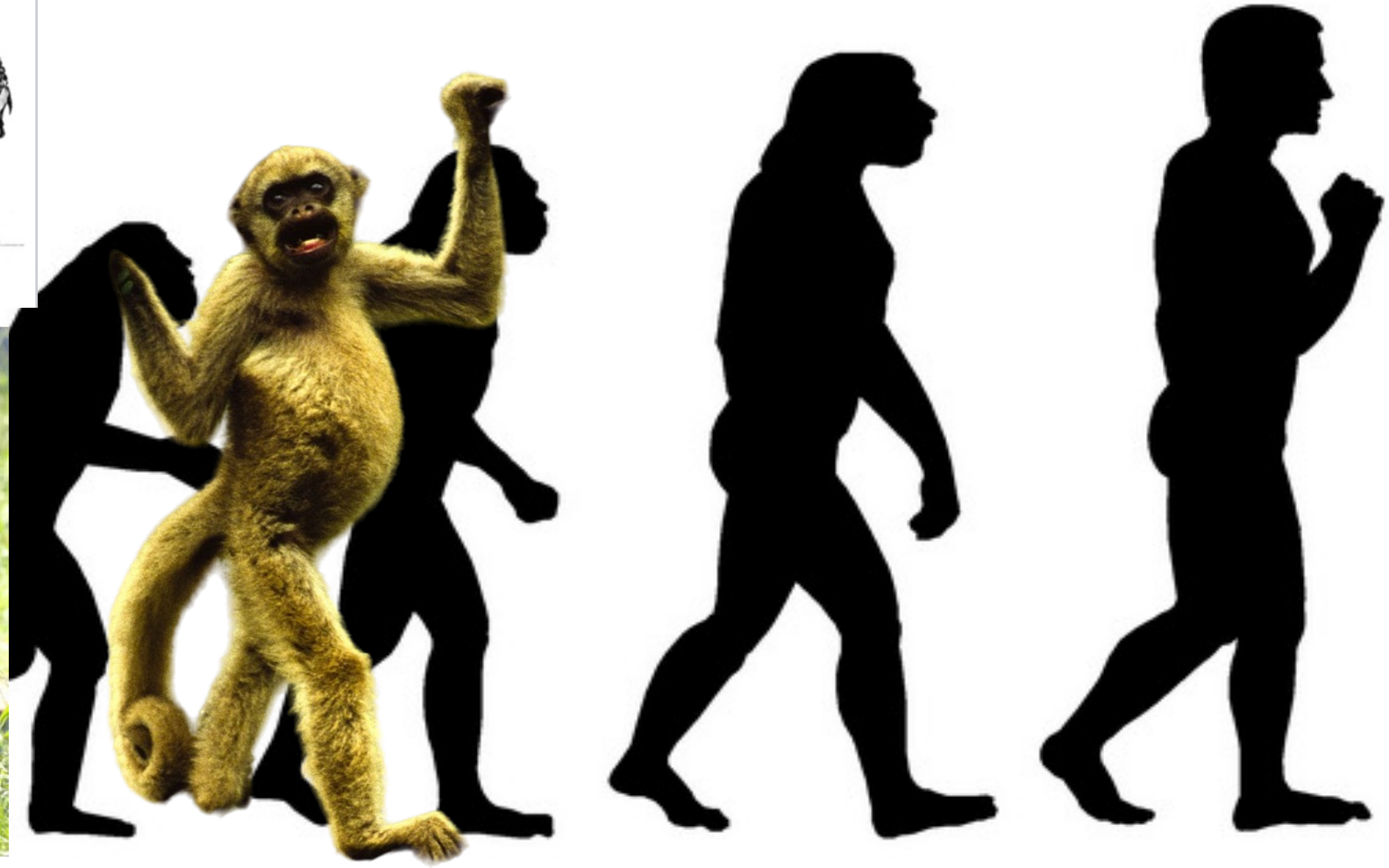


5) Didier studied several types of subject

DD studied several subject types!!!

Human Beatboxing is a great paradigm to explore the vocal tract capacities during



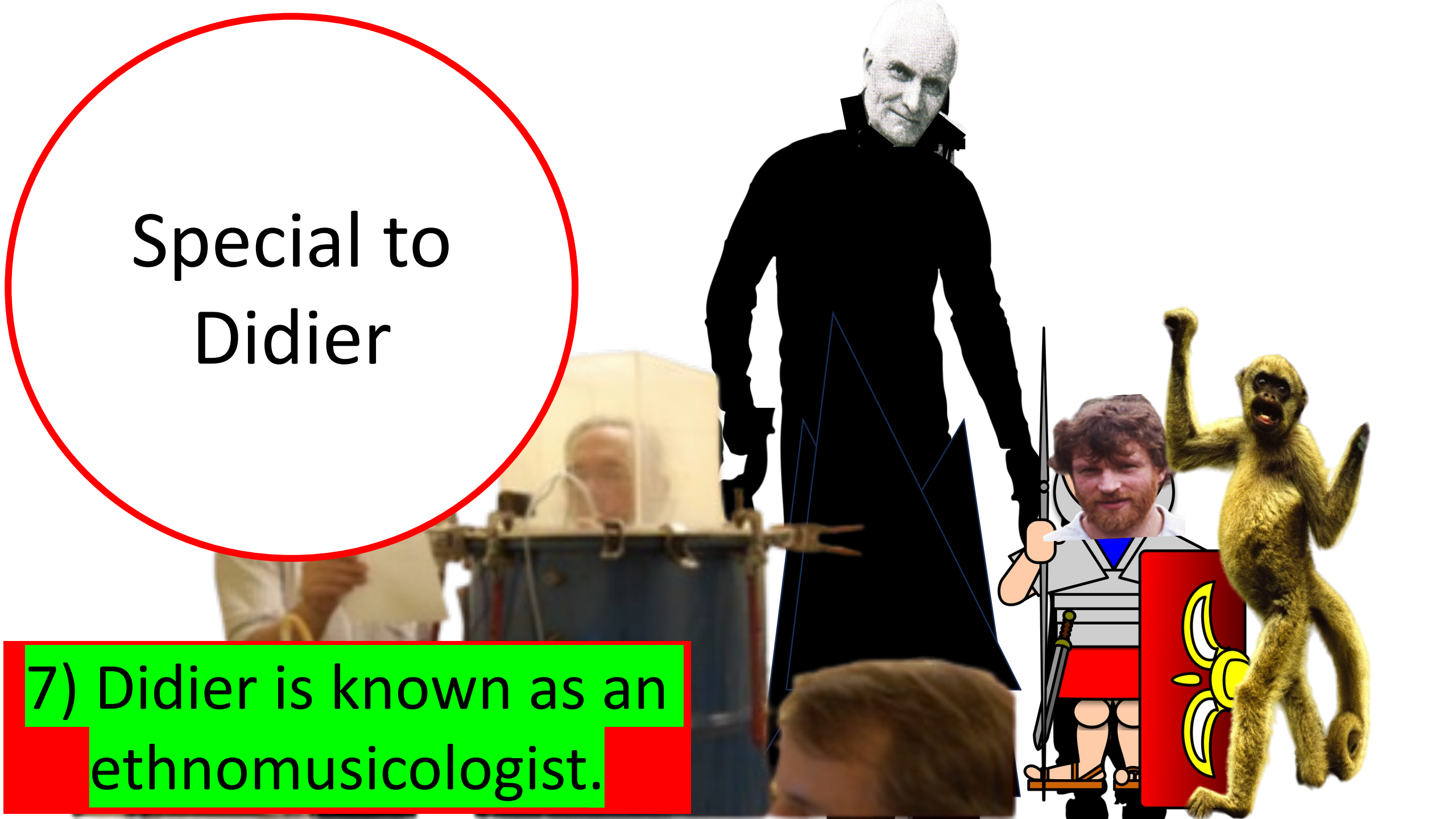


Special to Didier

6) Didier highly respected as a ILPGA’s director ☺.

DD’s as highly respected director of the ILPGA

Special to Didier



7) Didier is known as an ethnomusicologist.

Ethnomusicology





De haut en bas et de gauche à droite : Pygmées Efe © Didier Demolin - Elanga Nkake © Benoît Quentin - Xylophone Zande © Didier Demolin - Tambour à fente Mangbetu © Didier Demolin - Femmes Efe © Didier Demolin





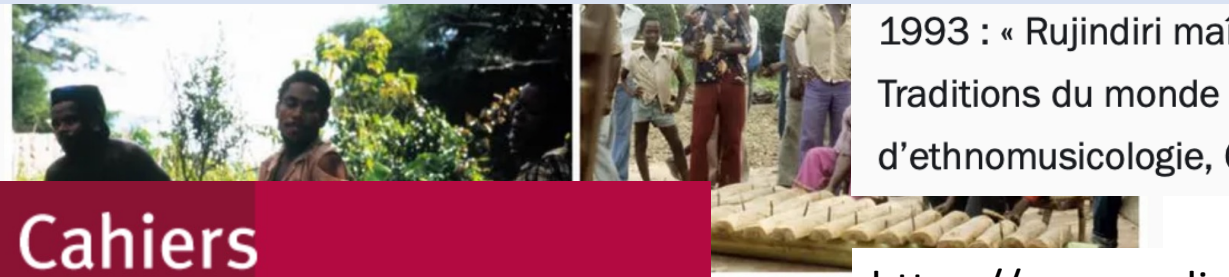
De haut en bas et de gauche à droite : Baali Cithare Mafili - Mangbetu, cloche double - Ambala Mangbele - Musicien de cour Mangbetu - Lababo Kechabo - Crédits photos : Didier Demolin

Ethnomusicology

JOURNAL ARTICLE

Les rêveurs de la forêt: Polyphonies des pygmées Efe de l'Itur

Central Africa (Zaire) and East Africa (Kenya).



1993 : « Rujindiri maître de l'inanga, musique de l'ancienne cour du Rwanda », Fonti
Traditions du monde et Centre Ethnomusicologique Paul Collaer, paru dans Cahiers d'ethnomusicologie, 6.

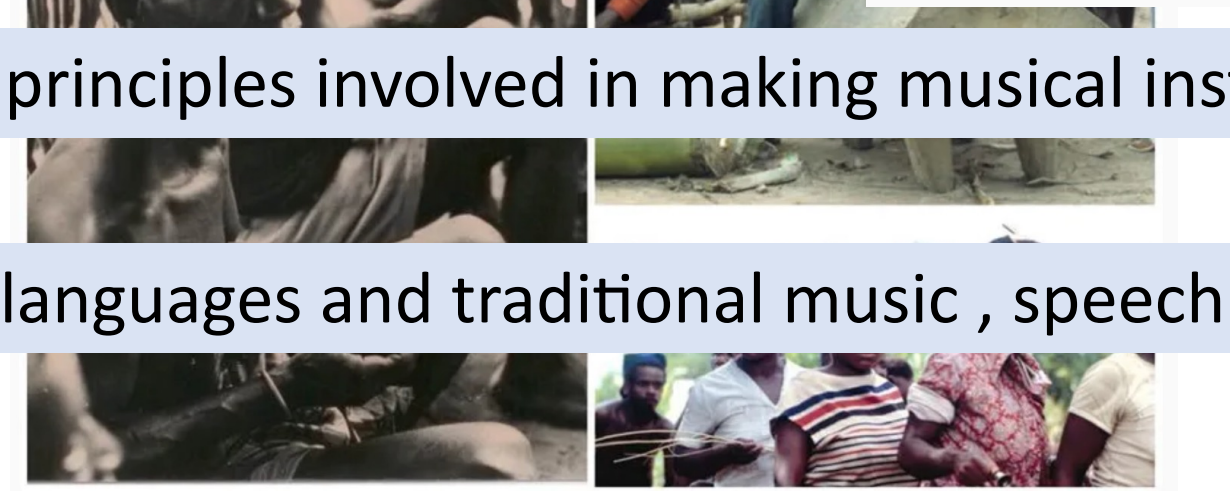
Cahiers d'ethnomusicologie

https://www.radiofrance.fr/francemusique/podcasts/carnet-de-voyage/carnet-de-voyage-au-congo-dans-les-regions-de-uele-ituri-et-equateur-avec-didier-demolin-5789306

https://capture.dropbox.com/gji3oDdmBC3wtkCO

1995 : « Naissance de la voix d'un tambour à fente chez les Mangbetu. Du geste de l'artisan à celui du musicien et du danseur », paru dans Cahiers d'ethnomusicologie, 8.

principles involved in making musical instruments



De haut en bas et de gauche à droite : Pygmées Efe © Didier Demolin - Elanga Nkake © Benoît Quentin - Xylophone Zande © Didier Demolin -

De haut en bas et de gauche à droite : Baali Cithare Mafili - Mangbetu, cloche double - Ambala Mangbele - Musicien de cour Mangbetu - Lababo Kechabo - Crédits photos : Didier Demolin

languages and traditional music , speech tones and song

Ethnomusicology

JOURNAL ARTICLE

Les rêveurs de la forêt: Polyphonies des pygmées Efe de l'Ituri (Zaïre)

Didier Demolin

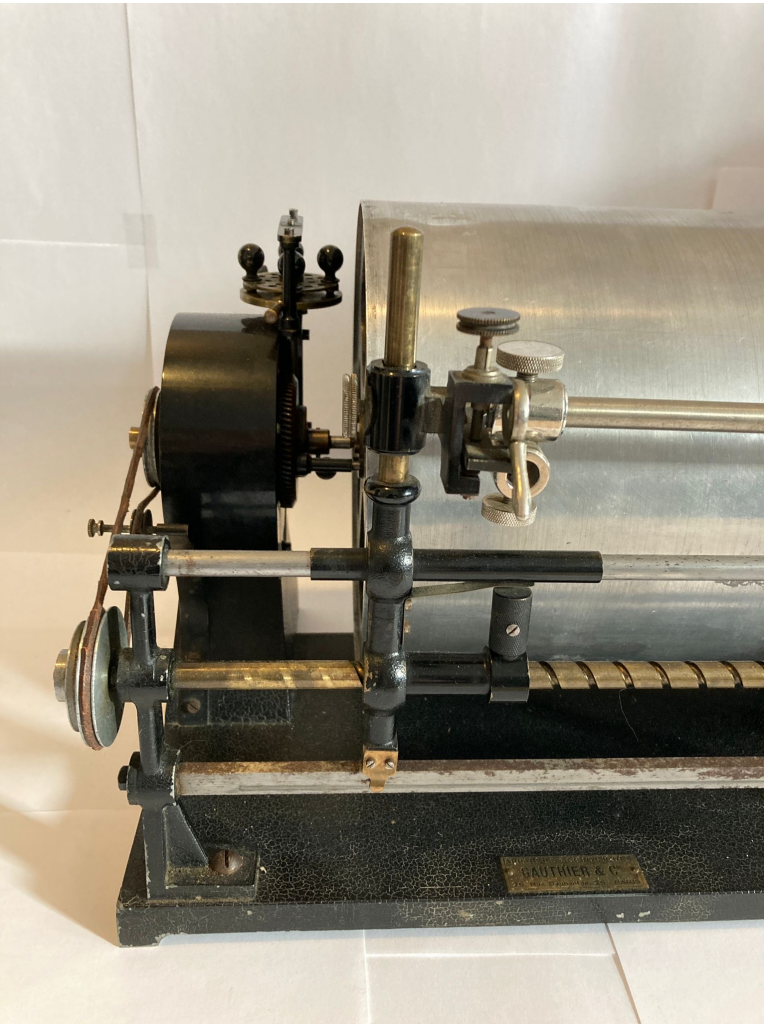
De haut en bas et de gauche à droite : Pygmées Efe © Didier Demolin - Elanga Nkake © Benoît Quentin - Xylophone Zande © Didier Demolin - Tambour à fente Mangbetu © Didier Demolin - Femmes Efe © Didier Demolin

De haut en bas et de gauche à droite : Baali Cithare Mafili - Mangbetu, cloche double - Ambala Mangbele - Musicien de cour Mangbetu - Lababo Kechabo - Crédits photos : Didier Demolin

Special to Didier

8) Didier rebuilded with Teston (and later A. Ghio) a kymograph.

DD rebuilded with Teston (and later A. Ghio) a kymograph



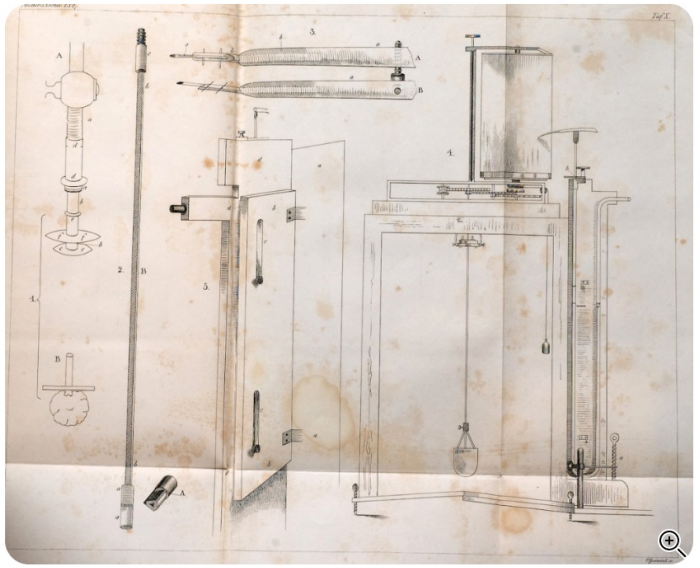
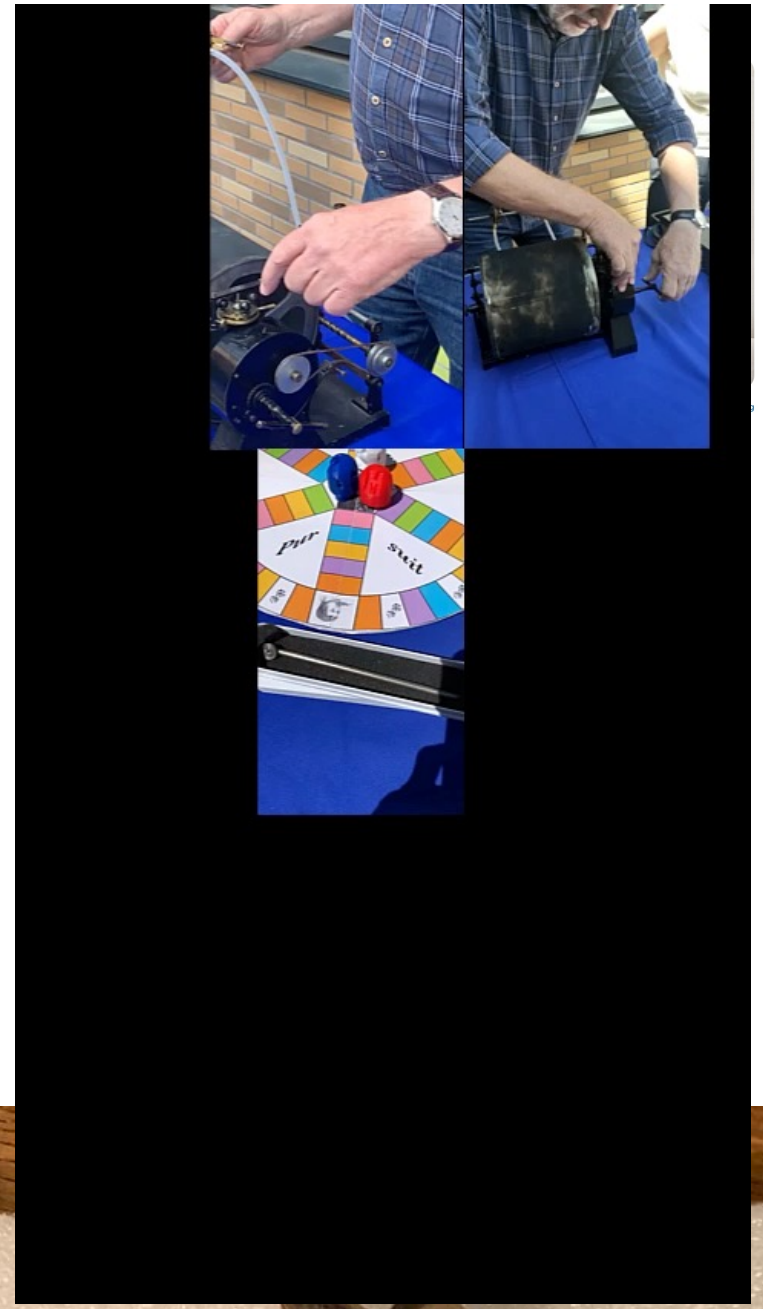


Image Source: www.themitralvalve.org

Ludwig's original illustration of his kymograph

DD rebuilded with Teston (and later A. Ghio) a kymograph



Special to Didier

9) DD is very present on Youtube but did not know it ☺.

DD is very present on Youtube, but did not know it ☺

www.youtube.com › watch

Didier Demolin 4 - YouTube

Entretien avec **Didier Demolin** (Gipsa-lab), par Gabriel Bergounioux - Partie 4.Réalisé à l'Université d'Orléans le 28 novembre 2013 après la ...

YouTube · LLLCanal · Apr 2, 2014

twitter.com › status · Translate this page

TV5MONDE Info on Twitter: "Le langage est le propre de l ...

Didier Demolin, professeur à l'université Paris-III Sorbonne nouvelle, spécialiste d'acoustique et de phonétique, nous explique l'inédite ...

Twitter · May 25, 2017

aovivo.abralin.org › Lives · Translate this page

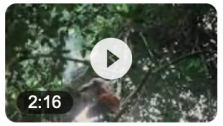
Didier Demolin – Abralin ao Vivo: Linguists Online

Didier Demolin. Os sons e sistemas de som da linguagem: diversidade, complexidade e dinâmica. 12.05.2020, 1:00 PM (UTC)12.05.2020, 6:00 AM…

Abralin ao Vivo · Abralin · May 11, 2020

twitter.com › BLSoundHeritage › status

BL Sound Heritage on Twitter: "Recorded by Didier Demolin in ...

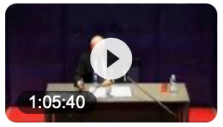


Recorded by **Didier Demolin** in 1987. Recently digitised by #UOSH This recording features in our latest radio programme for.

Twitter · Jun 7, 2021

www.dailymotion.com › xdchs6 · Translate this page

IEA de Nantes - Conférence Didier SICARD - Vidéo Dailymotion



Regardez IEA de Nantes - Conférence Didier SICARD - IEANANTES sur Dailymotion. ... IEA de Nantes - Conférence de **Didier DEMOLIN**.…

Dailymotion · IEANANTES · May 18, 2010

amupod.univ-amu.fr › video › 2501-... · Translate this page

Journée D'Etudes Sur La Parole 2018, Session… - AMUpod

Jacqueline Vaissière & **Didier Demolin**, Laboratoire de Phonétique, CNRS, Univ. Paris 3, "Du kymographe à EVA : petite histoire de ...

AMUpod · Mar 7, 2019

www.radiofrance.fr › carnet-de-voyage · Translate this page

Musique et culte des ancêtres chez les Maale d'Éthiopie

Carnet de voyage au Congo dans les régions de Uele, Ituri et Equateur avec **Didier Demolin**. 3 mai 2015 • 1h 19. Voyage musical au Viet-Nâm.

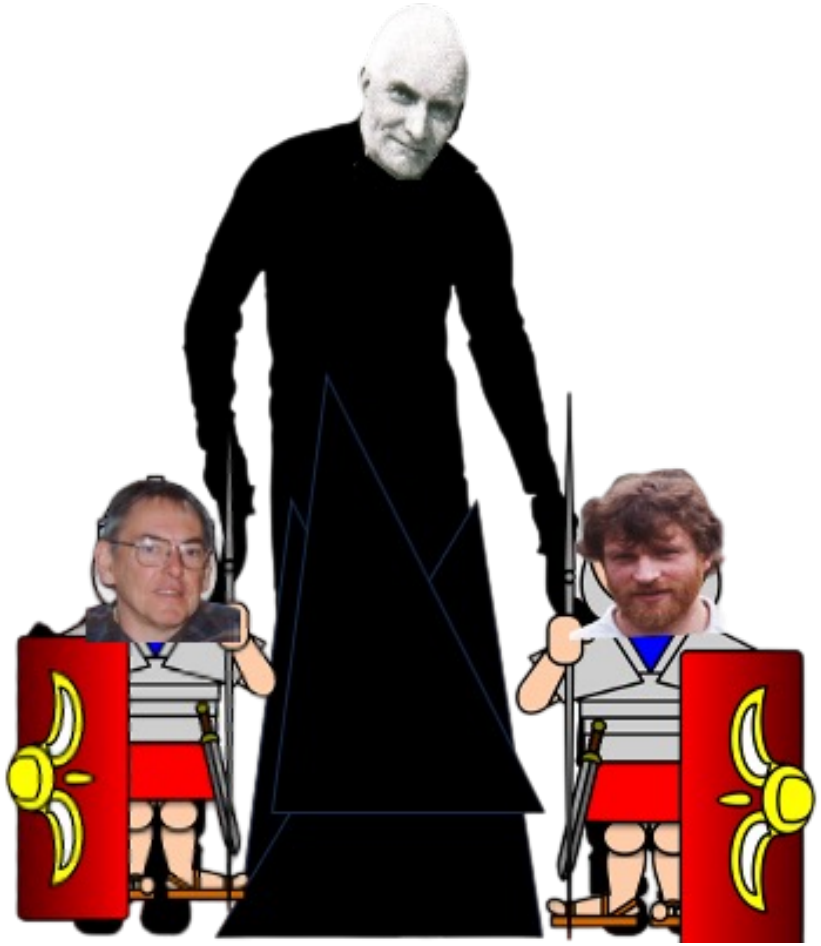
Radio France · May 17, 2015

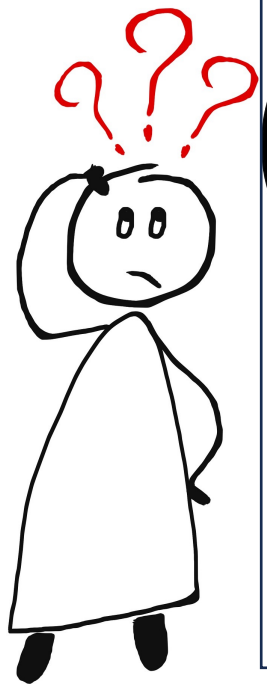
Special to Didier

10) Four « nationalies » ! ☺.

Conclusion

What next ?





Comment çà marche?

Still the same question !

Very productive at the moment

No time to dream for the moment

- 5 papers for ICPHS 2023!
- A 65-page long paper on the evolution and initiation of non-pulmonic consonants (with John Kingston)
- Recent stay at Zanzibar, plans to go back to Tanzania at the end of the year

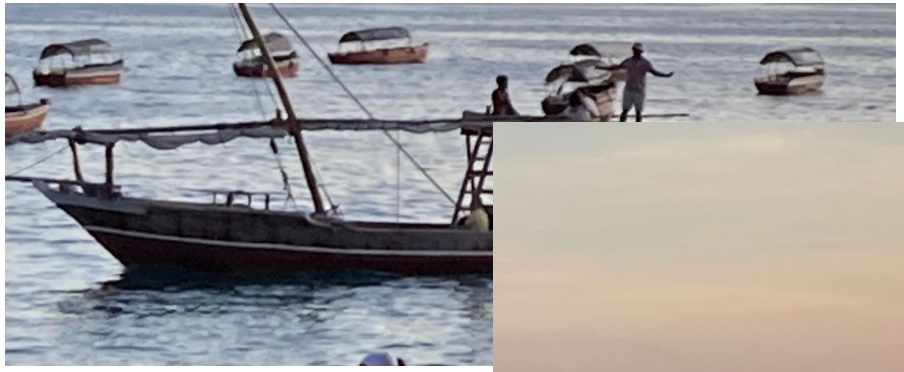
  Accepted a professorship in Africa
- He has a lot of work to do, articles, theses,

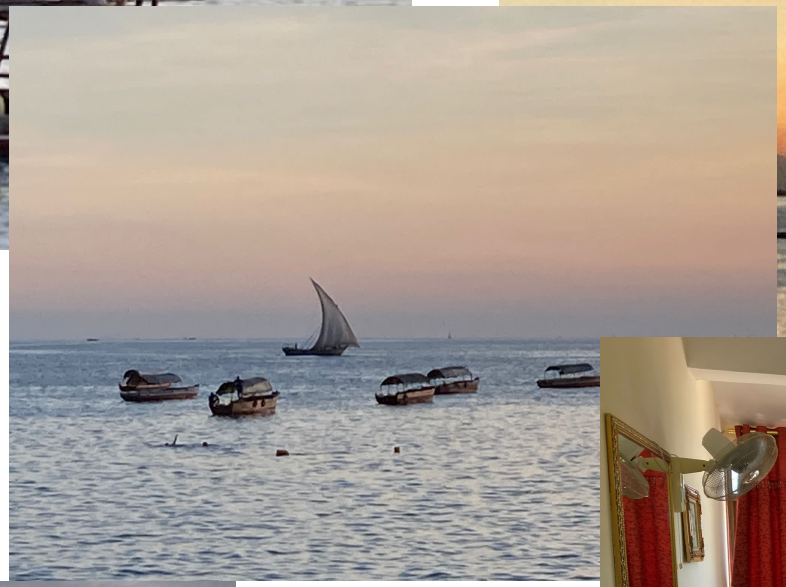
  projects to finish.

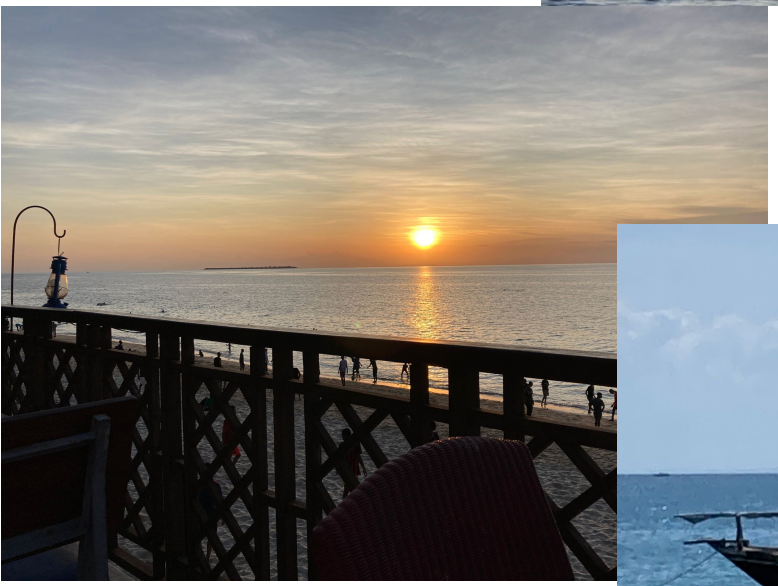
Two books to write

accepted by Wiley: *Origine et évolution de la parole*

Sounds of languages: foundations of phonetics

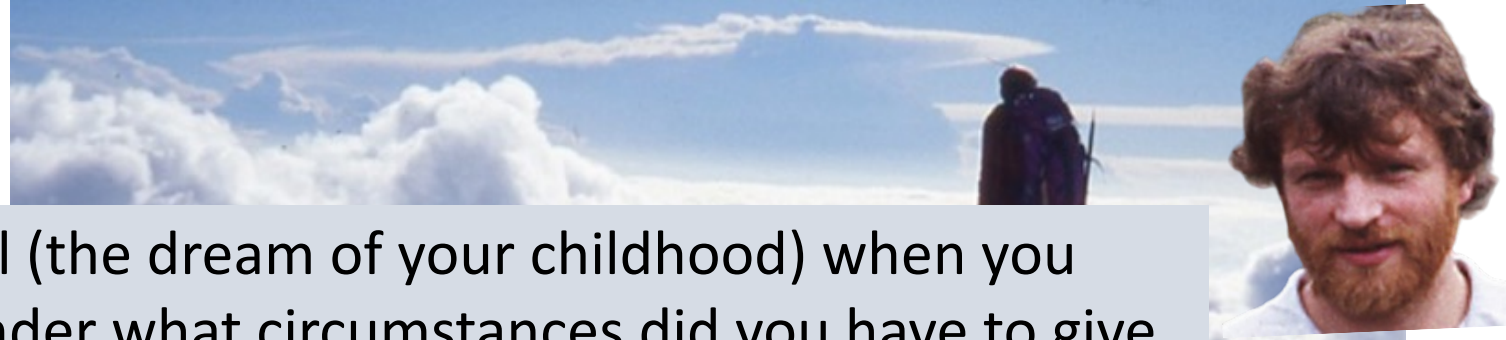






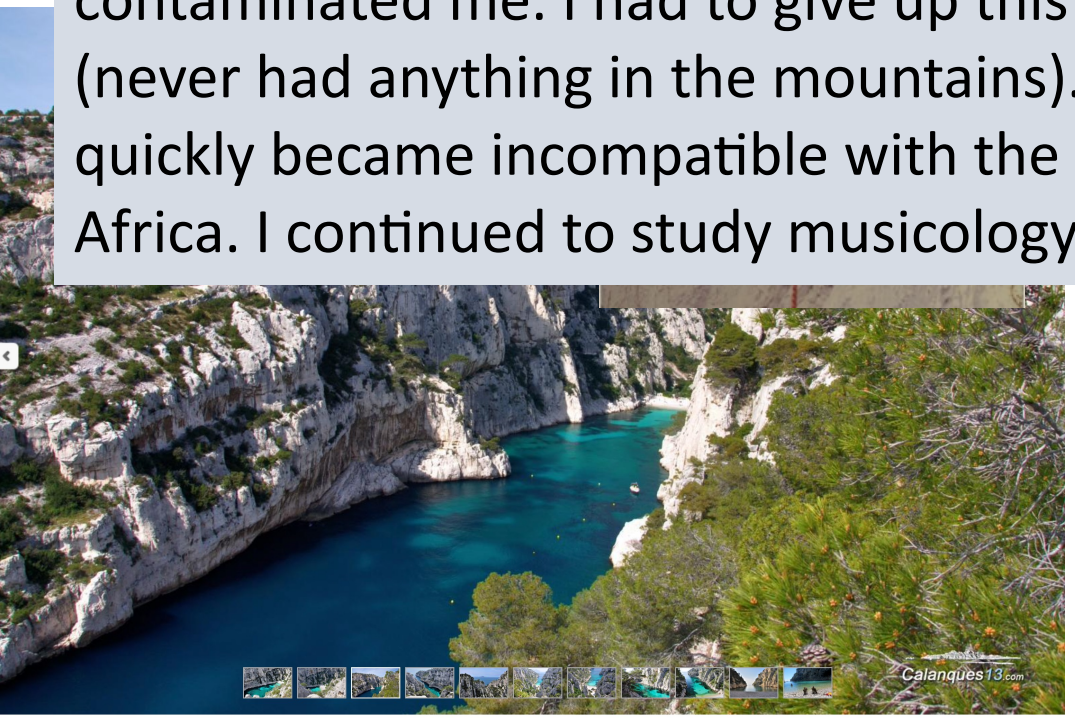
Last week-end in Zanzibar

DD’S first dream



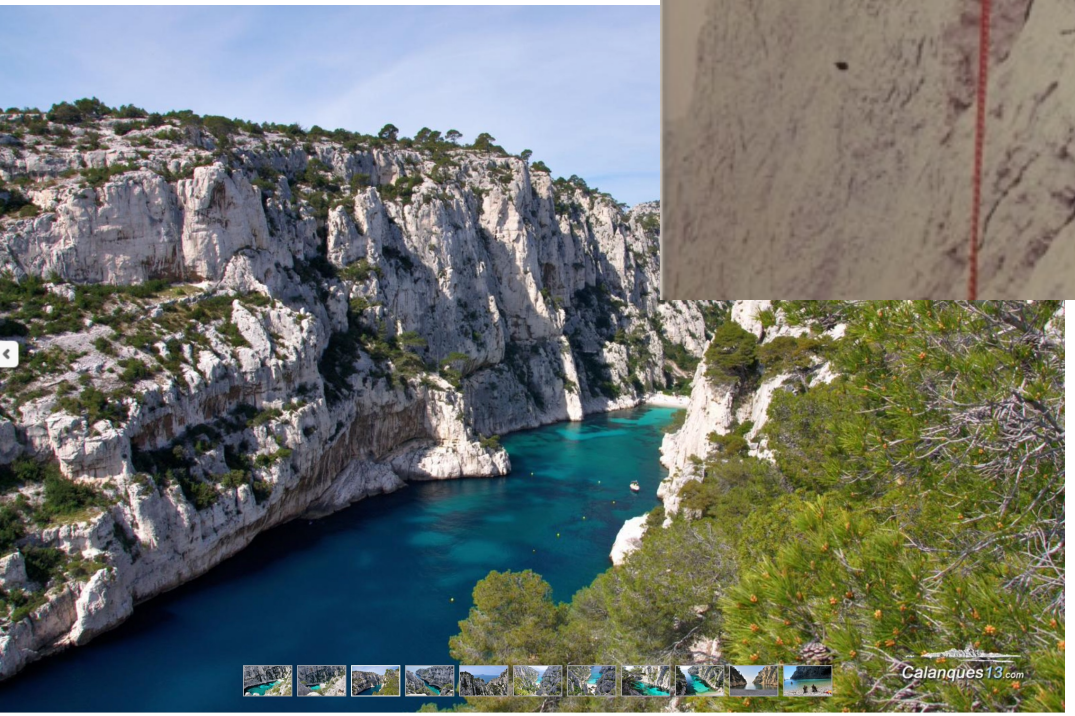
My question: What was your first goal (the dream of your childhood) when you were a child), your first project and under what circumstances did you have to give up and when?

DD’s answer: I wanted to become a mountain guide and to make music.
I went to Switzerland when I came back from Congo and there the mountain virus contaminated me. I had to give up this idea because of a gymnastics accident (never had anything in the mountains). For the music, the practice of an instrument quickly became incompatible with the mountain and then the numerous stays in Africa. I continued to study musicology.



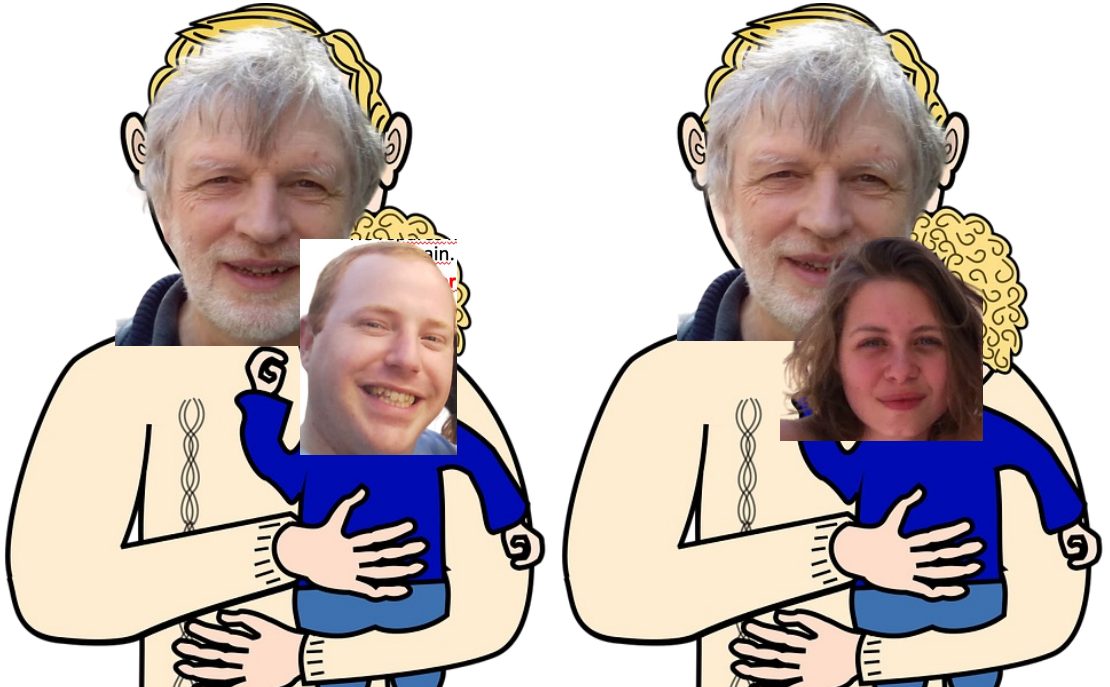
DD’S first dream

Calanque d'En Vau 1978



Next dream?: of becoming a lazy old grandfather

- To become a grand-father , you need to have children ☺
- He got a son, Louis, in Belgium and a daughter, Sarah, in Brazil.



Next dream?: of becoming a lazy old grandfather

- **Old?** He has his heart broken once, but his heart was surgically repaired and he got a brand new one ☺
- **Lazy?**

Never !

- **Grandfather**? he seems to be a very devoted grandfather and a very proud patriarch of his family.

Next dream?: of becoming a lazy old grandfather

- **Old?** He has his heart broken once, but his heart was surgically repaired and he got a brand new one.
- **Lazy?**

Never.

- **Grandfather**? he seems already

to be a very devoted grandfather

and a very proud patriarch of his family.

Corpus phonetics
Field phonetics
Laboratory phonetics
Clinical phonetics
Historical phonetics
Instumental phonetics
Laboratory phonology
Laboratory sociolinguistics

domain

Acoustic
Perceptual
Anatomical
Physiological
Articulatory

data

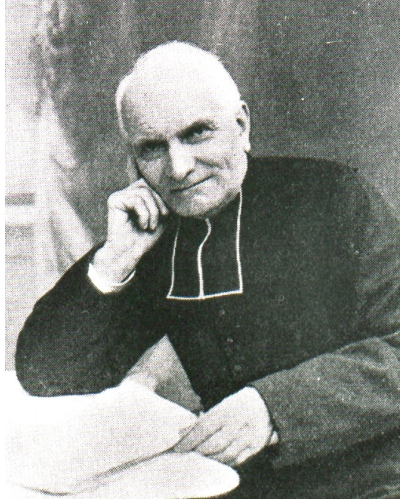
Linguists
Doctors
Physicists
Sp. Therapists
Statisticians
Mathematicians
Ethnologists
Antropologists
Speech technology
Modelization
Constructors

collaborations

The future of phonetics; Search of plausible hypotheses about the speech code

Merci !

References ?



Sorry, too many articles written by John and Didier, ask Google Scholar !

Rousselot’s book can be found on the Web