ON THE EARLY HISTORY OF THE
INTERNATIONAL CONGRESS OF PHONETIC SCIENCES: FROM 1932 TO 1938

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Abstract: The proceedings of the International Congress of Phonetic Sciences (ICPhS) reflect the research in phonetics since 1932. Some important metadata like language of the authors for writing the papers, number of papers, geographical distribution of authors as well as paper format and structure shows substantial differences between the early period in the 1930s and the recent ICPhS meetings. As an example, for a historical research object, the introduction of 'coarticulation' as a core term in phonetics was analyzed with a focus on the early phase of ICPhS. This type of research was enabled by a digitization project of ICPhS proceedings at Saarland University.

1   Introduction

The International Congress of Phonetic Sciences (ICPhS) is one of the largest and one of the earliest conferences for all aspects of phonetic research. Usually held every four years there were up to now 19 meetings since its inauguration in 1932. Although phonetics was established as a scientific discipline at universities substantially earlier than 1932, the proceedings of the various ICPhS meetings provide a representative resource of this research discipline across the last nine decades.

This paper has two general aims. One aim is to uncover the differences between the contributions to the proceedings in the foundation time in the 1930s and the standards of ICPhS papers in the 21st century. Another aim is to find out more about the start of the usage of the term coarticulation which represents an important concept in phonetics that is still core today.

The optimal environment for studying the proceedings would be having access to all of them in an electronic format including a search option. Until the ICPhS in Barcelona 2003 it was usual to publish the proceedings in printed paper format. The ICPhS in Saarbrücken in 2007 made its proceedings online and – importantly – maintained them online for the first time with all contributions as searchable PDF documents. The subsequent congresses made their proceedings also online. They can be accessed via the website of the International Phonetic Association (IPA). In addition, the digital versions of the proceedings of the 2003 and the 1999 congresses were also made digitally available there.

Probably there are only few academic institutions with an access to all printed ICPhS proceedings before 1999. For this reason, the phonetics group at Saarland University decided to make the proceedings from 1932 to 1999 available for free as searchable PDF documents as well [1].

2   Timeline of international congresses of phonetics

2.1   Predecessors of ICPhS

Prior to the first ICPhS meeting in 1932 there were two international congresses in the phonetic sciences that should be regarded as forerunners of ICPhS. The first conference of this kind was the "Erster Internationaler Kongress für Experimentelle Phonetik" held in Hamburg (Germany) 1914 [6]. The second conference to be mentioned in this context was the "Erste Tagung

der Internationalen Gesellschaft für Experimentalphonetik", again organised in Germany: in Bonn 1930 [6]. Two things are remarkable here: one is the temporal distance of 16 years between both events (including the first World War) and the other one is the similarity or even the confusability of the names of both events.

2.2 Early ICPhS meetings

Only two years later than the Bonn meeting in 1930, the first ICPhS was held in Amsterdam (the Netherlands) in 1932. It was also the "First Meeting of the Internationale Arbeitsgemeinschaft für Phonologie" as can be seen in the front matter in Figure 1. Please note that it seemed not to be a problem to mix languages, here English with German.

Figure 1. Front cover of the proceedings of the 1st ICPhS 1932 which was held in conjunction with the first meeting of the international working group for phonology.

From then on, the meetings took place in an interval of three years. The second ICPhS was organised in London (UK) in 1935, during a time in which the Nazi regime in Germany has already beein in place for two years. The third meeting of ICPhS was hold in Ghent in Belgium in 1938, one year before the second World War started. It took another 23 years before the fourth ICPhS took place in 1961.

In Figure 2 the time line of ICPhS and the predecessors meetings in the 20th century are sketched. From now on we refer to the first three meetings from 1932 to 1938 that all happened between the two world wars as the early period of ICPhS. The recent period refers to 1999 to 2019, i.e., between the 14th ICPhS (in San Francisco) and the 19th ICPhS (in Melbourne).
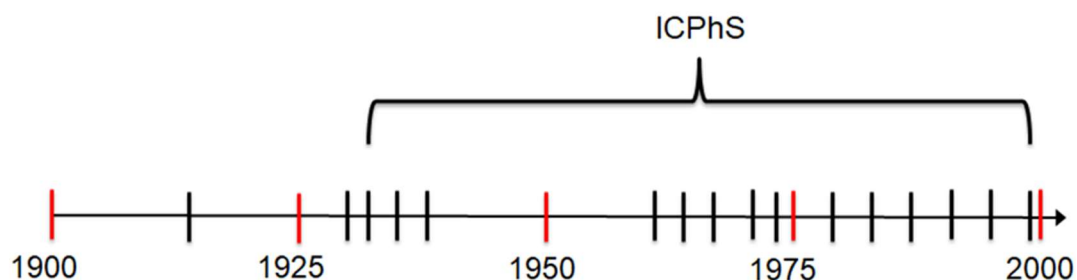
Figure 2. Timeline of the phonetics congresses in the 20th century. The first two congresses were not part of the ICPhS series. Red bars indicate periods of 25 years.

3   Differences between early and recent time

When looking at contemporary ICPhS meetings we can see that this sort of conference is a typical example of a world-wide congress that is presumably organized in many other research disciplines in a similar way. Regular features of the proceedings from the recent period (1999 to 2019) are (see [11] for a specific example):

- Language of the papers: all contributions written in English.
- Distribution of researchers across countries: participants from c. 50 countries.
- Conference size: several hundreds of papers and participants.
- Number of authors per paper: very often multiple authors nowadays.
- Format and structure of papers: papers similarly structured with title, abstract, introduction, methods, results, discussion, conclusion, references, and standardized length.
- Paper content: papers mainly report on experimental studies.

There are large differences of the contributions represented in the proceedings of the early time and those in the recent time which are presented and discussed in this section.

3.1   Language of the papers

Since 1995 it is required that all contributions are in English as it is the most wide-spread language in academic fields. In the early period it was quite different. In Table 1 it is visible that English and German are at a par with a bit more than one third of all contributions, and French with about a quarter. The very few contributions in Italian do not weigh to the total distribution but show that using multiple languages was standard in the academic life of the early period. However, it is not clear whether there were restrictions regarding language use these days as it is today with the restriction to English. It might even be that German would have been more popular in the early period if the second meeting had not been in an English-speaking country.

Table 1. Language of papers as percent of all contributions in the early period.

	English	German	French	Italian
Early period	38%	37%	24%	1%
Recent period	100%	-	-	-

Probably also important is the fact that Nazi Germany may have been perceived as an unattractive country for the others and therefore the German language was used less than before.

Nevertheless, there is a substantial number of contributions in German (language) in the 1938 proceedings by authors affiliated with an institution not in Germany or in Austria during that time. More than one third of all contributions written in German originate from authors affiliated in Hungary, Norway, the USA, the Netherlands, Portugal, Yugoslavia and Finland.

3.2 Distribution of researchers across countries

By definition, an international congress hosts participants from different countries. In the 19th century we can see that European countries are strongly dominating when looking at the numbers that Panconcelli-Calzia [9] gives in 1941 for this early era of phonetics. Compared to the affiliations of the members of "Internationale Gesellschaft für Experimentalphonetik" in 1930 [6] we can see in Table 2 some slight changes regarding the continents. The numbers of active researchers from America, and to a small degree from Asia, raises from 3% to 12.5% before 1932.

Table 2 show the strong domination of European researchers in the early period. Among them, Germany, France and the UK are the most popular countries. The London meeting in 1935 showed a great number of participants from UK and USA, probably due to the place (UK) and the same language (USA). In the recent period, see the numbers for 2019, the European over-representation has been diminished to below 40%. Over the decades, ICPhS has turned from an international European to a more global conference.

Table 2. Distribution of researchers across countries or regions in the early period of ICPhS compared to the time before and at the last ICPhS in 2019. All values are given in percent.

	Germ.	France	UK	Rest of Europe	USA	Asia	Rest of N. Am.	South Am.	Africa	Oceania
19th c.	40	30	15	12	3	0	0	0	0	0
1930	21	4	11	52	12	0.5	0	0	0	0
1932	18.4	2.6	10.5	63.2	2.6	2.6	0	0	0	0
1935	14.7	5.9	26.5	30.9	13.2	7.4	0	1.5	0	0
1938	23.6	6.9	8.3	52.8	4.2	1.4	0	0	2.8	0
2019	8.6	5.4	8.6	15.2	23.6	21.7	5.6	1.5	0.8	9.0

3.3 Conference size – number of papers

The conference size in terms of number of papers was of course much smaller in the beginnings of ICPhS. The first congress started with just 38 contributions in 1932 – such a number would nowadays have the character of a "workshop". However, just three years later at the congress in London in 1935, the number of papers substantially grew to 67. This number was slightly topped with 72 at the third congress in Ghent in 1938. The proceedings of modern ICPhS meetings comprise nearly 800 papers, making for instance the conference in 2019 about 11 times bigger than the one in 1938.

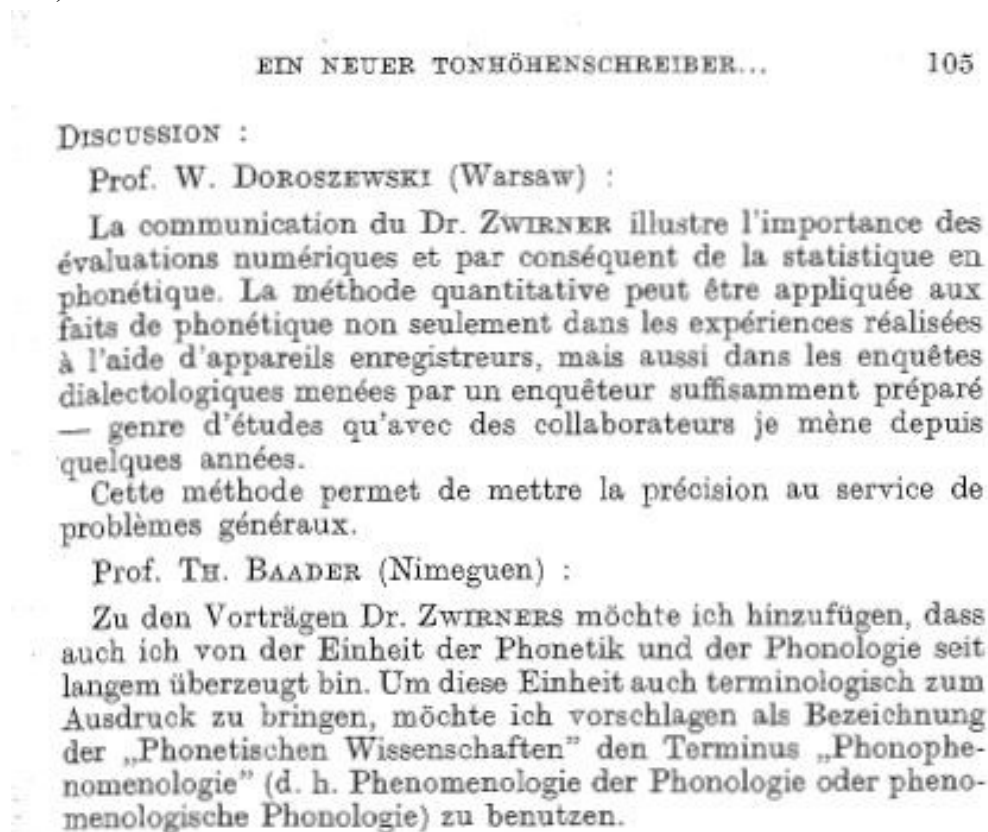## 3.4 Number of authors per paper

In the recent period, most ICPhS papers are authored by more than one person, for instance at ICPhS 2019 only about 20% were single-authored contributions. In contrast, the meetings in the early period show exclusively papers by a single author.

There are probably several reasons that can explain this contrast. One reason in modern research is that many studies are not performed by just one person. So, several persons are

needed and it became usual that all or nearly all individuals contributing to the study are mentioned by name. It seems plausible that in the early period only the main contributor was mentioned and that smaller contributions of other team members, if any, were nominally not reflected in the proceedings. A good example for such a habit is the contribution of Menzerath in 1935 [7] who explicitly refers to the work co-authored with Lacerda [8]. Today, probably both authors would be mentioned for the contribution in the proceedings, no matter whether the co-author was present or not at the congress itself.

3.5 Paper format

The format and structures of papers have dramatically changed when looking at the early years. The 'papers' were often transcripts of the oral presentations, be it with or without a manuscript to be read aloud. Not always, but often, different contributions of the discussion after the talks were also recorded and transcribed. The example in Figure 3 (top) gives evidence for this 'paper culture' which also reflects the usage of different languages at the same conference. It was also possible that only the names of the discussants were mentioned, for instance in Figure 3 (bottom).

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DISCUSSION :

Prof. W. DOROSZEWSKI (Warsaw) :

La communication du Dr. ZWIRNER illustre l'importance des évaluations numériques et par conséquent de la statistique en phonétique. La méthode quantitative peut être appliquée aux faits de phonétique non seulement dans les expériences réalisées à l'aide d'appareils enregistreurs, mais aussi dans les enquêtes dialectologiques menées par un enquêteur suffisamment préparé — genre d'études qu'avec des collaborateurs je mène depuis quelques années.

Cette méthode permet de mettre la précision au service de problèmes généraux.

Prof. TH. BAADER (Nimeguen) :

Zu den Vorträgen Dr. ZWIRNERS möchte ich hinzufügen, dass auch ich von der Einheit der Phonetik und der Phonologie seit langem überzeugt bin. Um diese Einheit auch terminologisch zum Ausdruck zu bringen, möchte ich vorschlagen als Bezeichnung der „Phonetischen Wissenschaften" den Terminus „Phonophenomenologie" (d. h. Phenomenologie der Phonologie oder phenomenologische Phonologie) zu benutzen.

The papers were followed by an interesting discussion in which the following members of the Congress took part: Professors BÜHLER, CHATTERJI, HORN, ISSERLIN, MUKAŘOVSKÝ, STETSON, THUDICHUM, TRUBETZKOY, VAN GINNEKEN, Dr AREND, Dr VON KUENBURG, Miss FOGERTY, Miss PATERSON, Mr COLEMAN.

Figure 3. Top: Discussion with explicit formulations as part of the paper, example from ICPhS 1938. Bottom: note on a discussion printed after a paper at ICPhS 1935.

Using references to research work of others did not follow any standard in the early years. References could be mentioned either in prose in the text or in footnotes (as it still usual in other research disciplines) or not at all. Sometimes a reason is given for ignoring references, as Figure 4 shows.

> *Anm.* Autoren werden bei der Kürze der Darstellung grundsätzlich nicht genannt.

Figure 4. Example from ICPhS 1935 for a note (Anm. = "Anmerkung") indicating that "authors will principally not be mentioned due to the shortness of the text".

3.6 Paper content and topics

The recent period contains papers that mainly report on experimental studies. In the early period we can mainly see programmatic and theoretical papers, often with a descriptive character. Frequently, methods and techniques in their phase of development are in focus. It is remarkable that in both periods a very broad range of topics is present which justifies the plural "Sciences" in the conference name. The usage of the plural form actually resulted from obstinate discussions between the experimental phoneticians on the one hand and the linguistic phoneticians and phonologists on the other hand in advance of the first ICPhS.

It remains to future investigations to trace back the development of experimental studies in phonetics. This will concern several methodological elements such as the number of participants for an experimental study (which often was n=1 in the early period), the standards in statistical analysis of data (after the early period), or the types of recordings (acoustic recordings alone, predominant in the recent period, seem to be only one of many techniques used to observe speech production in the 1930s).

4 Research example: the development of 'coarticulation'

In this section we attempt to show how 'coarticulation', a core term in phonetics, was introduced and reflected in the early years of ICPhS. This short treatment is meant as an example how the proceedings can be used to trace back the development of key concepts in a research discipline (cf. also Šturm [11]). An optimal outcome for such a historic consideration would be that the display of the When, How and Why would lead to a better understanding of the solutions that are used today for similar or even the same problems and challenges. At best, such historical work can help to prevent to invent the wheel again or sometimes also parts of the wheel.

4.1 Menzerath and Lacerda 1933 and 1935

"The concept of coarticulation, i.e. the apparent variation of segments due to the influence of adjacent or nearby segments, is central to almost any area in phonetic research" as Kühnert & Nolan [5] remark. There are numerous descriptions in the early period that refer to the complex of cross-segmental continuous movements of various articulators. However, there was no commonly accepted name for this concept. The term coarticulation was coined by Menzerath and de Lacerda in 1933 with their book "Koartikulation, Steuerung und Lautabgrenzung" ("Coarticulation, Control and Sound Segmentation") [8]. In the ICPhS proceedings, the word coarticulation first appeared in 1935. There, Menzerath [7] points out to his book co-authored with de Lacerda [8] where they argue against the picture of the chain of segments when considering and analysing fluent speech. They favour the picture of a "weave/net/braid" (German: "Geflecht") of articulations:

"Alle Artikulation aber verläuft in Dauerbewegung und wiederum so, dass die Art der Bewegung vom folgenden Laut bestimmt wird und die Bewegungsfolge durch die strukturgemässe Artikulationsverbindung, die ich als Artikulationsverflechtung bezeichnete und womit ich sagen wollte, dass das alte Bild der "Kette", der "Anreihung", in der die Lautfolge erscheinen soll, nicht zutrifft und durch ein anderes zutreffenderes Bild, z. B. des "Geflechtes" ersetzt werden muss."

"But all articulation is in a constant movement and in a way that the type of movement is determined by the following sound, and the sequence of movement by a structural joint link of articulation which I referred to as weave of articulation. What I wanted to express is that the

old metaphor of the 'chain', of the 'bead' in which the sound sequence appears, is not appropriate and has to be replaced by a different more appropriate metaphor, e.g. the 'weave'."^

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48. Prof. P. MENZERATH (Bonn): *Neue Untersuchungen zur Steuerung und Koartikulation.*

In meiner Arbeit über *Steuerung und Koartikulation* (Bonn, Dümmler, 1933) konnte ich mit Dr. DE LACERDA die Unzuverlässigkeit in der artikulatorischen Ausdeutung der Mundstromkurven, der Labiogramme usw. nachweisen. Zum anderen ersetzten wir auf Grund unserer Ergebnisse die alte Dreiphasentheorie der Lautartikulation durch eine Zweiphasentheorie. Wir leugneten die frühere Auffassung, die Anglitt-Stellung-Abglitt schied, und setzten an ihre Stelle die Zweiphasentheorie. So ist die konsonantische Artikulation stets eine Schliessungs-Öffnungsbewegung, mit einem artikulatorischen Maximum zwischen diesen beiden Phasen; die vokalische ist eine Öffnungs-Schliessungsbewegung, mit einem artikulatorischen Minimum in der "Fuge".

Figure 5. The first paragraph of the paper by Menzerath in ICPhS 1935 [7].

Presenting the concept of coarticulation was not only restricted to the replacement of the appropriate metaphor but also involved a new theoretical view how the production of vowels should be distinguished from the production of consonants as depicted in Figure 5 and translated here:

"In my work on *Control and Coarticulation* (Bonn, Dümmler, 1933) I was able to prove with Dr. DE LACERDA the unreliability in the articulatory interpretation of the oral stream curves, of the labiograms, etc. On the other hand, we replaced based on our results the old three-phase theory of phonetic articulation by a two-phase theory. We denied the former approach that distinguishes between onglide – steady state – offglide, and replaced it with the two-phase theory. Thus, the consonantal articulation is always a closing-opening movement, with an articulatory maximum between these two phases; vocalic articulation is an opening-closing movement, with an articulatory minimum in the "fugue"."

Menzerath [7] also showed a talking X-ray movie of speech articulation. In those days, "speech movies" (German: Sprechfilme mit Ton) and "talking X-ray movies" (German: Röntgentonfilme) were several times used for demonstrations and not so much audio signals alone as it is the case nowadays. In the proceedings, an interaction between seeing such a demo and the content to the own presentation was visible, as can be seen in the first lines of the contribution of Russell [10] in Figure 6.

45. Prof. G. OSCAR RUSSELL (Ohio): *Synchronized X-ray, oscillograph, sound and movie experiments, showing the fallacy of vowel triangle and open-closed theories.*

It is to be hoped that all of you were fortunate enough to see the very fine talking X-ray movie of Prof. MENZERATH. You noticed how movements of the velum, larynx, and tongue could be readily followed. And that the tongue was not the only organ occupied in creating vowel quality differences. Furthermore, that the back throat was obviously fully as much, if not more, involved than the front mouth.

Figure 6. Reaction of Russel [10] to Menzerath's demonstration [7] of his talking X-ray-movie.

4.2   Lacerda at ICPhS 1932 and 1938

The contribution of Lacerda for the prior congress in 1932 [3] can be seen as a predecessor of the work on coarticulation. He questions the interpretations of the traditional curve measurements with ostensibly clear options for sound segmentation. His and Menzerath's ideas

[8] were based on studies with a labiograph, the kinematics of the oral airflow and a "Kehltonschreiber" as a recording device of the phonatory activities, however with a certain degree of imprecision.

In his talk but also in an extra demo session he presented a new tool, the polychromograph (see Figure 7). With this newly developed instrument it was possible to make synchronous recordings of various signals with a degree of precision that was higher than before: from the nose (nasal airflow), the throat (phonation) and the mouth (oral airflow). Obviously, the polychromograph is an apparatus that is well suited to study coarticulation in speech.

Interestingly, the problem of "Abteilung", i.e. the segmentation of speech stream into sound segments, has survived into modern times which is still of high relevance today, when we think for instance of automatic but also manual segmentation of sound segments in large acoustic datasets of speech.
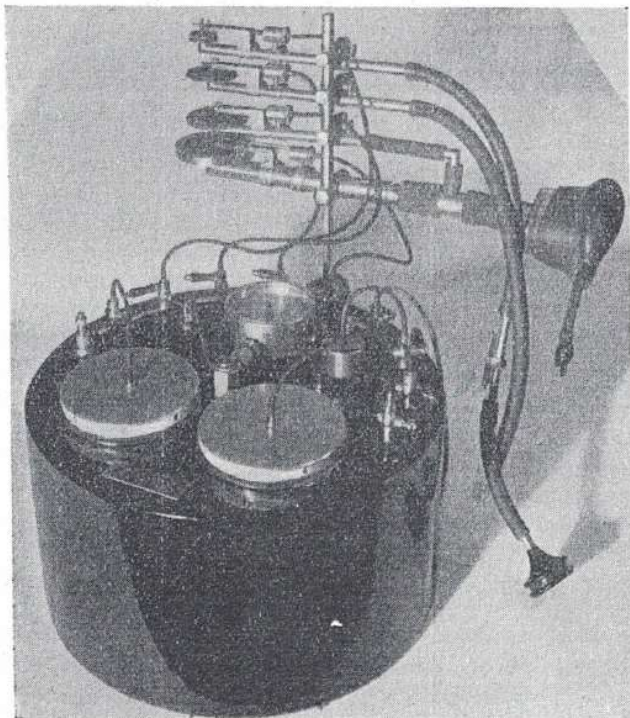

Fig. 19. Dr. LACERDA's Polychromograph (D.R.P. ang.)

Figure 7. Lacerda's polychromograph in the ICPhS proceedings from 1932 [3].

Lacerda's contribution for the third ICPhS in 1938 [4] focused on intonation. He developed an approach towards the tonal characteristics of words uttered in isolation versus in a sentence context, such as in a statement or in a question. Based on these distinctions he showed how his approach could be successfully used for teaching intonation of Portuguese to German learners. He stresses the independence of tonal and coarticulatory characteristics. Regarding the correlation of the melodic and the dynamic (or temporal) structure, he refers to Menzerath who recognizes a certain degree of coupling between both structures, but also its principal independence.

5   Conclusions

Providing the proceedings of ICPhS from 1932 in a digital and searchable format is a solid fundament for historical investigations of this congress series and the content of the phonetic sciences. Nevertheless, there are more steps to go, such as the digitization of more resources, cf. [2], including technical details such as using digital object identifiers, and raising the

awareness for those resources in the different communities. On this occasion it should be pointed to the advantage of the print over the digital versions. Printed documents will very likely maintain readability for a long time, whereas digital versions can become unusable when not curated and technically adapted over time. In addition, keeping the printed original as the primary source is key when retaining missing or possibly faulty information (which also happened during our digitization project).

As shown in section 2, there are several substantial differences when comparing the early period of ICPhS with its recent period. Uncovering those differences can help to understand the progress of the discipline at many levels. At some instances it gives us insights from a rather distant past which can lead to some fresh ideas or in some cases also to a déjà-vu.

There are many options for future studies. One option is to integrate additional sources of information: e.g. other types of publication (journals, books), the chronicles of academic institutes and scholar societies, but also other metadata regarding each specific congress such as the list of members or the entertainment programme. Several aspects deserve a closer look, for instance the distribution of gender and the role of female researchers in phonetics. Another example is the development of the geographical distributions of the authors and institutions at ICPhS. Its context of colonies in non-European countries can play also a role regarding the investigated non-European languages, cf. [6].

Having the links to the various ICPhS proceedings available at one digital place also allows to do research on methods and techniques that were used to answer various research questions. It can represent a source for inspiration that invites scholars for looking for historical material like the mentioned talking X-ray film by Menzerath which would be indispensable treasure that can be used in teaching of linguistics and phonetics.

Acknowledgments

References

[1] https://www.coli.uni-saarland.de/groups/BM/phonetics/resources.html

[2] ASHBY, MICHAEL. 2017. The digital history of phonetic science. In *Proc. Second International Workshop on the History of Speech Communication Research (HSCR 2017), Helsinki*, 7–15. https://doi: 10.21437/HSCR.2017-1.

[3] LACERDA, ARMANDO DE. 1932. Neue Untersuchungen und Ergebnisse über das Problem der Abteilung. Der Polychromograph. In *Proc. First International Congress of Phonetic Sciences, Amsterdam,* 174–179. https://www.coli.uni-saarland.de/groups/BM/phonetics/icphs/ICPhS1932/p01_174.pdf

[4] LACERDA, ARMANDO DE. 1938. Die Flexion des Sprechtones im Portugiesischen. In *Proc. Third International Congress of Phonetic Sciences, Ghent,* 396–402. https://www.coli.uni-saarland.de/groups/BM/phonetics/icphs/ICPhS1938/p03_396.pdf

[5] KÜHNERT, BARBARA & NOLAN, FRANCIS 1999. The origin of coarticulation. In: Hardcastle, W. J. & Newlett, N. (eds): Coarticulation: Theory, Data and Techniques. Cambridge: CUP, pp. 7–30.

[6] MEHNERT, DIETER, PÉTURSSON, MAGNUS & HOFFMANN, RÜDIGER. 2016. Experimentalphonetik in Europa. Institute, Wissenschaftler, Leistungen Ende des 19. / Anfang des 20. Jahrhunderts. Dresden: TUDpress.

[7] MENZERATH, PAUL. 1935. Neue Untersuchungen zur Steuerung und Koartikulation. In *Proc. Second International Congress of Phonetic Sciences, London,* 220–225. https://www.coli.uni-saarland.de/groups/BM/phonetics/icphs/ICPhS1935/menzerath_220.pdf

[8] MENZERATH, PAUL & LACERDA, ARMANDO DE. 1933. *Koartikulation, Steuerung und Lautabgrenzung. Eine experimentelle Untersuchung.* Berlin & Bonn: F. Dümmler. https://www.coli.uni-saarland.de/groups/BM/phonetics/icphs/Menzerath_Lacerda_1933.pdf

[9] PANCONCELLI-CALZA, GUILIO. 1941. *Geschichtszahlen der Phonetik – 3000 Jahre Phonetik.* Hamburg: Hansischer Gildenverlag (reprint 1994 in Studies of the History of the Language Sciences 16).

[10] RUSSEL, OSCAR G. 1935. Synchronized X-ray, oscillograph, sound and movie experiments, showing the fallacy of vowel triangle and open-closed theories. In *Proc. Second International Congress of Phonetic Sciences, London,* 198–205. https:// www.coli.uni-saarland.de/groups/BM/phonetics/icphs/ICPhS1935/russell_198.pdf

[11] ŠTURM, PAVEL. 2015. International phonetic congresses: The shift in research practices and areas of interest over 44 years. In *Proc. First International Congress of Phonetic Sciences, Glasgow,* paper 182. http://www.internationalphoneticassociation.org/icphs-proceedings/ICPhS2015/Papers/ICPHS0182.pdf