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Scientific Work in Intersteno

1 - Introduction

Historically, the congresses since 1887 have always provided contributions for the scientific work in our fields. Most of the congress reports contain valuable articles on shorthand, typewriting, teaching, office work and reporting. In the meantime, the computer has replaced the typewriter, offering new features besides simple writing. The competitions, which have been introduced in the 1950s, have also brought along discussions about the way to measure and compare performance in the different disciplines.

As for the organisational background, the contributions for scientific work came mostly from individuals, national or regional institutes or companies. International projects on the level of Intersteno have always been a goal of the member countries and the congress participants. Some rather ambitious projects have been started, for example the plan in 1908 to create one worldwide shorthand system (which finally was considered to be Utopian) and in 1926 the creation of a complete book on the history of shorthand (which finally was realised by Olof Melin alone).

The introduction and development of international competitions, in particular the comparability of shorthand performance in different languages, brought with it the necessity of scientific work in Intersteno. This scientific work was done individually or in cooperation with other colleagues in Intersteno. It is mainly documented in the congress reports of the 1960s and 1970s.

A new development came with the increasing availability of the computer in the 1980s. Although manufacturers of shorthand machines and typewriters have always been present in Intersteno, the progress in hardware and software created a dependence on equipment which was not used exclusively in our sector. As a consequence, developments in the fields of personal computers and office software were difficult to influence.



In 2003, Intersteno introduced a Scientific Committee in order to combine the efforts of the scientists in Intersteno. After a first election period from 2003 to 2007 when the Scientific Committee rather functioned as an

extension of the Board of Intersteno, the elections of 2007 brought a larger group of scientists into the Scientific Committee. Their task now is to identify and work on subjects related to our fields which permit international cooperation and, possibly, are required for the day-to-day work of Intersteno. However, as these experts are not working full-time for Intersteno, progress will not be very fast, but they will make use of international help if their projects, too, benefit from the cooperation.

2 - Running projects

2-1 Comparability of shorthand performance in different languages

Evaluating a performance in shorthand is not handled identically worldwide. In some countries, text quantity counted in words, in others in syllables, in others (east asiatic languages!) in signs. Transcription quality is evaluated in percentages of correct words or syllables or indicating penalty points or by awarding grades.

If the performances in different languages have to be compared, the subject gets more complicated and has been vividly discussed for several decades. In general, almost every language group considers themselves unfairly treated. A scientific solution to this problem remains impossible as political considerations will block every new compromise. We can only try to summarize the facts here:



Languages are not equal. According to the experience of multilingual shorthand writers, there are „easier“ and „more difficult“ languages to write and transcribe. The exact factor in this is hard to tell as the mastering of a foreign

language is always somewhat different. From my own experiences, I can say that I have about the same language competence for Swedish (low syllable yield) and Spanish (high syllable yield). My competition results in syllables are about 25 - 30 % higher in Spanish. These results are confirmed by other multilingual shorthand writers, but we cannot give a numeric solution to the problem.

The approach chosen in early 1970s for the world championships in shorthand was to base the text quantity to be written in each language on the same information content. If one uses a pictorial writing system it would be identical for all languages as only content and not words would be reproduced. When using shorthand, the versions of the same text in different languages have the same content, but, of course, look different, as every language will use different sounds, different words, different grammar. High level shorthand will use abbreviations and abbreviating rules to reduce the redundancy of the text leaving behind only the essentials to reproduce the original text. Theoretically, the pictures of pictorial writing are these essentials. Therefore, the same information quantity should be written in every language.

However, for practical reasons, it seems to be impossible to count the written text in „infos per minute“. The procedure from Intersteno's regulations says „translate the whole text and distribute it into different dictation minutes“. As the distribution into dictation minutes is a problem within one language, the national syllable counting rules can now be applied.

This theory came from Milos Matula in the 1960s and was supported by others. It has been opposed mainly by representatives of languages where the same information quantity is expressed by more syllables (high syllable yield). Roughly speaking, the same information is expressed by 100 syllables in English and more than 150 syllables in Spanish. When the Chinese entered the competitions in 2007, the discussion was renewed as the 100 syllables in English correspond only to about 90 syllables in Chinese (Mandarin).

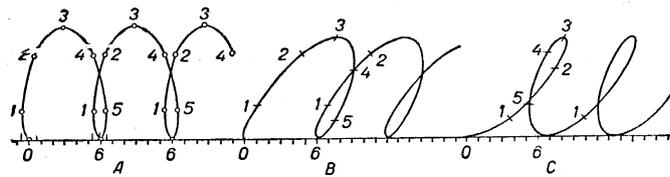
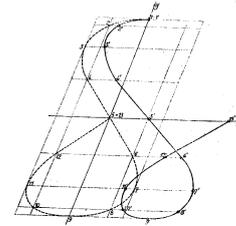
At the moment, the solution realised by the regulations of Intersteno is as follows: the base text (usually English in order to have enough text) is translated into all languages where participants are expected. In each language, the number of syllables is counted. The sum of syllables in each language is brought in accordance with the foreseen cases expressed by different columns. A low sum of syllables correspond to a low column, a high sum of syllables to a high column. The maximum allowed difference between the texts is 15 % of the syllables. That means that using an English base text (corresponding to column I), syllable-rich languages will result in a translation which has 50 % more syllables. As only 15 % more are allowed, the rest has to be compensated by the translation, which is usually very difficult. For Chinese, additional text has to be added in order to reach the same number of syllables as English. In the result list, two persons with the same number of validly transcribed minutes may be indicated with different numbers of syllables if their languages do not have the same syllable yield. As the next criterion after the number of minutes is the number of penalties, somebody with many penalties with a syllable-rich language as Spanish may be ranked behind than somebody with few penalties and a syllable-poor language, e. g. 440 syllables/min English with 3 penalties before somebody with 500 Syllables/min Spanish with 5 penalties. That is unclear (and looks unfair) for most observers who look only at the number of syllables/min.

What could scientists do to help with that problem? In general, one can investigate „the syllable“. Doing that, one finds that there are several definitions for a syllable (by phonetics and by word structure) in general and that syllable counting for one language is not identical to that in another language, e. g. the counting of the word fragments „ia“, „ija“, „iya“, „ja“ may be one or two syllables according to the pronunciation. As pronunciation rules differ from one language to another, syllable counting differs as well. An approach could be to introduce an (artificial) international syllable, where a cluster of vowels is always counted as one syllable. In many languages, the final vowels are redundant and may be dropped, but sometimes they are needed and would have to be counted. Though a solution of this seems to be possible, it would lead to an international way of counting syllables different to those of every involved language. In addition, the same information quantity will certainly correspond to different numbers of international syllables, too (i. e. no advantage for this method).

Intensive contacts with many experts (inside and outside of the Scientific Committee) show that no quick agreement is in reach at the moment. On the other hand, the results of the last world championships show at the top of the list participants with languages of high syllable yield and languages of low syllable yield. So the system cannot be totally wrong and we will live with it for the next years.

2-2 Mathematical theory of shorthand and computer-aided generation of stenographics

The theory of graphic shorthand is the fundamental background for each system. Therefore, many inventors of shorthand systems have thought thoroughly about the graphics (signs, joining of graphemes etc.). With the development of analytic geometry and numerical mathematics, it has become possible to base this theory on mathematics, making it much more precise and at the same time using this precise mathematical description in order to be able to calculate the joints between graphemes by a computer. Several programs are already developed or are about to be developed which can transform ordinary script to shorthand, thus allowing the generation of conveniently graphic shorthand for the use in textbooks or readers.



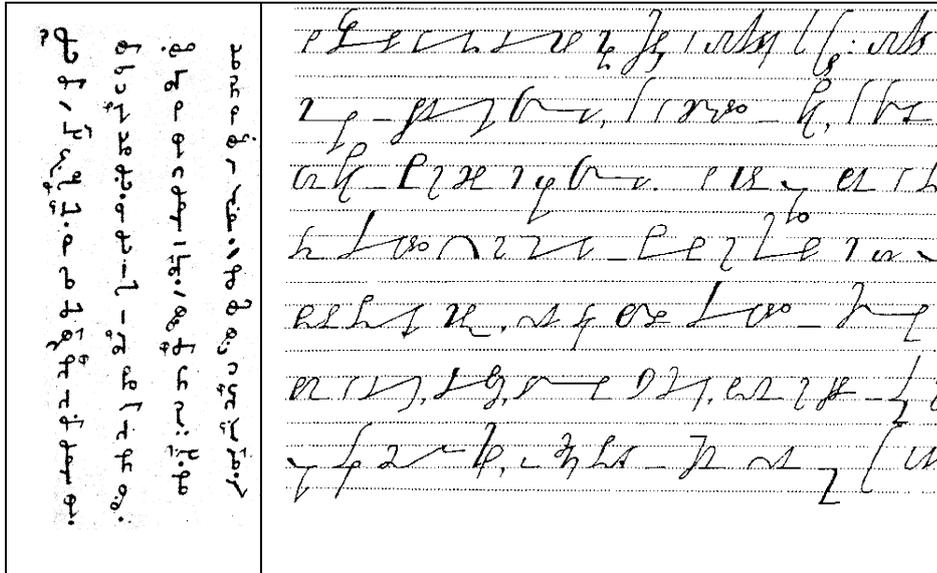
Among the remaining open questions is how one can describe the influence of a certain writer.

If this could be filtered out, an optical recognition of shorthand graphemes would be possible, i. e. one can leave the reading of one's stenogram to the computer.

Even more challenging is to define (using mathematics) the rules governing how graphic shorthand works. Such detailed rules have only been known to autographers writing the ideal outlines of graphic shorthand.

2-3 Shorthand history

Not many thorough books have been written about shorthand history. Many books about shorthand history contain only text, but no outlines. Only a few try to describe the development in all the important countries. The Forschungsstätte Bayreuth (German National Research Institute for Shorthand and Information Processing) has taken the initiative to renew one of the most renowned books on shorthand history, the „Allgemeine Kurzschriftgeschichte“ of 1940 by Christian Johnen. As an international platform for shorthand specialists, Intersteno is a very appropriate forum to collect the necessary information in all the countries. The work is already running. Several experts try to add the late history in this field.



Beside the renewal of this German book, the work could lead to a book on world-wide shorthand history in English language, which up to now has not been realised.

A similar work on shorthand machines and machine shorthand describing also the technical details is needed as well. Most of the authors describe one machine or the machines of one company, a few comment on all the machines of one country. As it is rather difficult to access the technical details of the most recent machines, nobody has accompanied the history of machine shorthand by documenting the situation. A group of experts from different countries (including the corresponding members of the SciCom) could take over this task



3 - FUTURE PROJECTS

3 - 1 Research projects in fields depending strongly on commercial software

The competitions in keyboarding, text and information processing attract a large number of participants for their world championships. As a consequence, these subjects are also natural topics for scientific work in Intersteno. Unfortunately, the boundary conditions are firmly set. That applies for the well-established keyboards (i. e. the keyboard layouts) as well as for the software in use which is typically the last or the penultimate version of MS Office. Both the keyboarding and the use of the software is also well supported by teaching and training.

Possible topics aside, this complex could be

- tailoring open-source systems for the competitions
- including other software of the office packages into the competitions
- creation of a program for the use in competitions which reduces the need of frequent software adaptations

Though all these issues are interesting and their realisation is desirable, it will not be easy to find experts with the necessary software skills who are eager to work for Intersteno.

A similar situation is to be found in speech recognition. The software

development of Dragon and ViaVoice happens in the respective labs. Fundamental research on the signal processing of audio data, pattern matching strategies etc. is done in the universities. Here as well, topics have to be identified which need the practical know-how of reporters in Intersteno which can contribute to a significant improvement of such software. Even more important seems to be the support of open source solutions where our help will certainly be welcomed.

3- 2 Linux live-systems as a base for the application of computers in competitions

Linux systems which can be booted from CD/DVD or from a USB-stick represent an interesting alternative to the individually used Windows systems. Intersteno could provide such a preconfigured system to assure equal means for all participants and prevent communication from one computer to another. Though this seems to be a reasonable way to make the competitions fairer, individual preparation of the participants relating to the introduction of personal abbreviations cannot be included easily. In this field, the national associations organising national championships in keyboarding, text processing etc. have a strong interest in obtaining such a software solution. Therefore, cooperation between Intersteno and the national groups could lead to the preparation of such a program

Boris Neubauer

Thanks to Peter Walker for the revision of the text.

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