

CZECHOSLOVAKIA'S EARLY APPLIED PSYCHOLOGY
-PSYCHOTECHNOLOGY- IN INTERNATIONAL CONTEXT †

Josef BROZEK ††
Department of Psychology
Lehigh University, U.S.A.

Jirí HOSKOVEC †††
Department of Psychology
Charles University, Czechoslovakia

INTRODUCTION

As used in the current report, the term "Applied Psychology" refers primarily to psychotechnology. The areas of psychodiagnostics in childhood and youth - a direct predecessor of the later field of clinical child psychology - and of vocational guidance call for separated studies.

Psychotechnology is a relatively young branch of psychological research and application. In the international context we can recall that Hugo MÜNSTERBERG, then Prof. at Harvard University, gave the first lectures on psychotechnology at the University of Berlin in 1910. His Psychologie und Wirtschaftsleben -Psychology and Economy-, the first systematic treatment of the subject, appeared in print in 1912.

During the First World War applied psychology developed particularly rapidly in Germany and the United States. In Germany the psychotechnological examinations were focused on the selection of individual pilots and drivers while in the United States group tests of intelligence were developed and widely applied in the armed forces.

† A draft of the present paper was prepared during BROZEK's stay at the Institute of Psychology, Czechoslovak Academy of Sciences, Prague, in the framework of the program of exchange of scientists and scholars with the -U.S.- National Academy of Sciences.

†† Josef BROZEK: Department of Psychology, Lehigh University, Bethlehem, PA 18015, U.S.A. Preferred address: 265 E. Market Street, Bethlehem, PA 18018, U.S.A.

††† Jirí HOSKOVEC: Department of Psychology, Charles University, Hradcanské náměstí 5, Prague 1, 118 42, Czechoslovakia

In Czechoslovakia the Psychotechnický ústav -Psychotechnological Institute- was founded in 1920 as the first of the Institutes established within the framework of the newly founded Masaryk Academy of Work (M.A.P.). The task of the Institute was defined as research on the efficiency of the human physical and mental work and the application of the research findings -BROZEK and HOSKOVEC, 1986 a,b-.

The tasks of the psychotechnological Institute were specified in the greater detail in the document, entitled "Organization and basic rules" -MAP PtU XIII.2.1141- and formulated in 1926, as follows: "To engage in the research and in practical activities in the field of psychotechnology -psychotechnika-". This involves analysis of occupations, development of methods for the assessment of abilities for specified occupational activities, and statistical analysis of the results -with reference to the intercorrelations of the test scores and their validation in the terms of the criteria of occupational effectiveness-.

It was noted that "the concerns of the psychotechnological Institute will extend to all areas of human work, including industry, business, transportation as well as intellectual pursuits".

In accord with the increasing range of responsibilities, the title of the Institute changed between two World Wars from Psychotechnological Institute to Central Psychotechnological Institute -1932- and to Institute of Human Work -1938-.

Our earlier papers -op. cit.- were intended as contributions to the regional history of psychology in Czechoslovakia. In the present paper we shall consider the developments in a wider context, as a part of the international history of applied psychology.

We shall approach the subject in terms of the following categories of criteria: Personal contacts, bi directional in nature, i.e., involving visits and other professional contacts of scientists and technical personnel from abroad, and visits and longer periods of study of the Czech Psychotechnologists in other European countries. We shall consider the exchange of letters as well as citations of foreign authors in selected publications, and international congresses.

The pertinent materials are held in the Central Archives of the Czechoslovak Academy of Sciences in a folder designated MAP 361 XIII. 8.1149, bearing the title " Psychotechnological Institute. Foreign contacts. 1921-1926".

1. DIRECT CONTACTS

The first director of the Psychotechnological Institute, Dr. Petr RUZEK, was trained as an engineer and had served prior to the foundation of the Institute as assistant at the Czech Technical University in Prague. He agreed with the plan, approved by the scientific council of the Masaryk Academy of Work, that a professionally trained psychotechnologist should be in charge of the professional matters concerning the Institute. Unfortunately, at that time there was no such a person available in Prague. It was agreed that the consultant should be engaged. On the recommendation of Prof. W. STERN of Hamburg and Prof. O. LIPMANN of Berlin, arrangements were made with Dr. W. BLUMENFELD that he would serve as a consultant during 1921 and 1922, coming to Prague from Dresden.

1.1 VISITS AND STUDIES ABROAD

The visits abroad made by the staff of the Psychotechnological Institute were of two kinds: shorter and longer. For shorter periods of time the Prague Psychotechnologists visited a variety of institutions abroad, specially in Germany.

On 12 May 1922 the Prague Psychotechnological Institute addressed a request directed to the Vienna Büro für unentgeltliche Berufsberatung -Bureau for free vocational counseling- to permit two members of the staff to visit the bureau so that they could get familiarized themselves with the procedures being used.

A communication sent by the director of the Prague Institute to the Czechoslovak Embassy in Vienna, dated 29 May 1922, indicates that a permit was being requested to visit also another Viennese institution, Hauptstelle der niederösterreichischen Landesberufsvormundschaft

In September of 1926 Ing. A. DRATVA from the construction division of the ministry of the public works, and very active in the Masaryk Academy of work, visited the Psychotechnische Versuchs-Stelle der Deutschen Reichsbahnen and Verwaltungsakademie nebst Deutsches Instituts für wirtschaftliche Arbeit in der öffentlichen Verwaltung.

Longer study visits were made by V. FORSTER to Paris in 1922 and 1923. The journeys made in the early 1920s by J. STAVEL and by J. VANA, which included stays of several months in England, but are not documented in the archival materials to which we had access -cf. VANA, 1926-.

1.2 VISITS FROM ABROAD

In the early years of the Psychotechnological Institute professional visitors came from United States of America, France, Switzerland, Germany, and Spain.

1.2.1 United States of America

A great deal of interest was generated by the visit of Frank GILBRETH to Prague from the 24th to the 28th of February 1922. His public lecture was given on the 25th of February in the Physics Hall of the Czech Technical University. The large hall was filled to capacity. The presentation, accompanied by slide projection and given in English with simultaneous translation into Czech, was followed with vivid interest. The subsequent question and discussion period extended to almost three hours.

The author focused on procedures for increasing productivity and increasing the wages while reducing the production costs. He noted that some translations of his writings into German were incorrect and led to a faulty presentation of his views. His attitudes to the traditional methods of production were critical. He said, literally: Instruments and equipment, such as chairs, are usually made like coffins. The worker who actually makes the coffin is not interested in using the product. The person who orders the coffin and pays for it does not need it for himself while the person for whom it was made, has no longer anything to say about it.

The appreciation in high places is reflected in the fact that on the 27 February GILBRETH was received at a lengthy audience by T.G.MASARYK, president of Czechoslovakia, in his country residence of Láň, near Prague.

The account of "the visit of an outstanding American engineer, prepared for internal records of the Psychotechnological Institute" - item 441-22 - notes that "he -F.G.- was received very warmly by the President and that he regarded this encounter as a great event in his life".

1.2.2. France and French-Speaking Switzerland

Similarly, the visit of I.MEYERSON, director of the laboratory of physiological psychology at the Sorbonne, attracted substantial attention. On the 4th of October 1923 MEYERSON spoke in the Hall of the Chemical Institute of the Czech Technical University on the assessment of performance capacity of the military and civilian aviators from the medical and Psychotechnological point of view. Using slides he showed some of the instruments that were actually used. This lecture was considered as an outstanding introduction into the use of Psychotechnological methods for an effective utilization of the human factor.

At the recommendation of Pierre BOVET, director of the institut J.J. Rousseau, Geneva, Miss Martha GAIRING -of St. Gall, Switzerland- received a stipend from the Czechoslovak Ministry of Education which made it possible for her to observe and take part in the activities at the Psychotechnological Institute of Prague between 10/IX and 19/X 1925.

1.2.3. Germany

An early reference was made to the contract with Dr. W. BLUMENFIELD, of the Technical University of Dresden, who was to render consulting services to the Psychotechnological Institute of Prague during its first two years.

In 1928 the Institute was visited by Jan DOLEZAL, a Leipzig University Ph. D.-1930-then assistant at the Psychotechnological Institute of the technical University of Dresden. DOLEZAL discussed the potential participation of the Psychotechnological Institute of Prague in a new journal for applied psychology, to be edited by Prof. E. SACHSENBERG, director of the Dresden Institute. Subsequently -on 7 Feb. 1931- Prof. SACHSENBERG paid a professional visit to the Psychotechnological Institute of Prague. He was accompanied by Dr. DOLEZAL who in 1932 became a vice-director of the Prague Institute, renamed Central Psychotechnological Institute -cf. RICHTER, 1981-.

1.2.4. Spain

The Spanish psychotechnologist D. César de MADARIAGA served as the Spanish delegate to the Prague International Management Congress -abbreviated as PIMCO- which was held in 1924. Apparently he made personal contacts with his Czech counterparts.

In a letter dated 6-II 1926, Dr. STANGLER, member of the II. division of the MAP, communicated to the Psychotechnological Institute in Prague, that during his recent stay in Spain he had the opportunity to visit also the Instituto de Reeducación Profesional del Trabajo, Carabanchel Bajo, Madrid -Institute for Professional Reeducation of Handicapped Workers-, where the MADARIAGA informed him about the activities of its psychotechnological laboratory.

Dr. STANGLER notes that he is forwarding a copy of the reprint of the MADARIAGA's paper on psychotechnology, presented at a conference in the Institute of Civil Engineers -de MADARIAGA, 1925-, a document which is preserved in the Central Archive of the Czechoslovak Academy of Sciences -MAP 361 XIII.8-. Dr. STANGLER comments that the staff of Psychotechnological Institute of Prague should maintain active contacts and collaborations with specialists from abroad, including Spain which, for various reasons, is isolated from other countries. The writer of the letter recommends that de MADARIAGA be nominated as a foreign correspondent either of the Psychotechnological Institute or of the Masaryk Academy of Work, should such a class of membership be established.

There are preserved in the Archives also several forms -fichas- used by the Madrid laboratory, such as the ficha informativa, psicológica, psicotécnica, fisiológica. The "psychological" form deals with intellectual functions -general intelligence, attention, imagination / several kinds of memory (visual, auditory) /, reaction times, and suggestibility. The "Psychotechnological" form served to record the results of the examination of motor functions -including strength, speed, and precision of movements-, fatigability, and perceptual functions -perception of forms, lengths, weights, speeds, and rhythms-.

1.3 CORRESPONDENCE

We shall divide the correspondence into three categories: 1. correspondence from abroad, 2. correspondence directed abroad, 3. relevant correspondence within Czechoslovakia.

1.3.1. Correspondence from abroad

P. PERSANT SNOEP, a Dutch engineer, holder of doctor's degree from the Technical University of Delft -Dissertation: Technisch-hygienische Beschouwingen over the Economie van der Industriellen Arbeid, published in Leyden, Holland- inquired on 13 January 1921 about the possibility of familiarizing himself with the activities of the Prague Psychotechnological Institute during the Summer of 1921. F. PAULSEN, editor-in-chief of the journal Bauwelt, in his communication dated 29-XII- 1921, informed an inquirer - Psychotechnological Institute - about initial observations concerning the psychotechnological and physiological aspects of bricklaying. The material, obtained on behalf of the Forschungsgesellschaft für wirtschaftliches Baubetrieb -Research Society for Public Construction-, were deposited at the Architektenverein zu Berlin, Wilhelmstrasse 22.

In his "Thank you" note, dated 29-III 1922, Frank GILBRETH, American specialist in scientific management who had visited Prague and gave public lectures, wrote: "I am placing your name -Dr. RÚZEK's- among those of the Fatigue Committee of the Society of Industrial Engineers and am sending under separate cover a copy of "Nation's Health" for February 22, 1922, which shows the work one of our members, Prof. Henry J. SPOONER of the London Polytechnic Institute of England is doing. His work in Fatigue Elimination is attracting a great deal of attention on both sides of the Atlantic, and I hope that you will find his article of interest and value". GILBRETH added: " I am also enclosing applications for membership in the Taylor Society and the Society of Industrial Engineers".

In a later communication -letter of 13 Febr. 1923- GILBRETH informs Dr. RUZEK that he received applications of two Czech specialists - C.J. NIEDERLE and E. SLECHTA- and that he sent the applications to the American Society of Mechanical Engineers, together with his endorsement of the applications.

On 17 April 1922 Curt PRIORKOWSKI, director of an Institute for the Study of Human Work and Psychotechnology - Orga-Institut für Arbeitswissenschaft und Psychotechnik, in Berlin- wrote a personal letter to Dr. RUZEK, director of the Prague Psychotechnological Institute, in which he informs RUZEK that he has available unpublished articles on the measurement and on the broader issue of assessing the abilities -Eignungsprüfungen-. He would welcome their publication in Czech as well as in Russian and writes about this matter, since Dr. RUZEK spoke to him about a plan to visit Moscow.

On 16 April 1922, Curt PIORKOWSKI, informed the "Psychotechnological Division" of the Masarik Academy of work that they have available all the apparatus required for testing the aptitudes of drivers of automotive vehicles - such as streetcar conductors, car drivers, and railway engineers-. He notes that the equipment is being used by the testing center -Prüfstelle- of the Streetcar Co. of Berlin, and specifies the costs and arrangements for delivery of the apparatus. Enclosed was the reprint -from Monatsblätter des Berliner Bezirksvereins Deutscher Ingenieure, Nr. 12, December 1919, pp.159- of an article on "Eignungsprüfung und Ausbildung von Fahrzeugführern auf psychotechnischer Grundlage" -Examination of the abilities and the training the drivers -Psychotechnological foundations-.

Letters concerning psychotechnological apparatus and its cost were received also from Hans RUPP -Division of Applied Psychology, Psychological Institut of the University, Berlin-. One letter is dated 20-VIII 1923, the other letter is undated.

M. PONTÉGRAL -Commissariat Générale de la République Française-, in a note written in Strasbourg on 3-I 1923 acknowledges the receipt of a medical questionnaire, prepared by the Psychotechnological Institute in Prague, but finds it too detailed. He writes: "Scientifiquement parlant, votre fiche médicale est parfaite, mais l'application en sera-t-elle de même? Je crois que si nous voulons arriver à des résultats positifs et pratiques, nous devons nous limiter à l'essentiel. C'est la méthode que nous employons à Strasbourg et je m'en trouve, pour le moment, très satisfait."

Several communications -25 Sept., 20 Nov., 3 Dec. 1923- deal with the application of Dr. FORSTER for an individual membership in the Personnel Research Federation -New York-. The letterhead specifies that the object of the Federation, then chaired by Robert M. YERKES -National Research Council-, is "Correlation of research activities pertaining to personnel in industry, commerce, education and government whenever such researchers are conducted in the spirit and with methods of Science".

A program of courses given at the Institut de Psychologie -Université de Paris-, including courses in applied psychology, attests that the Prague Institute keep itself informed about teaching activities abroad.

In the letter dated 19 September 1925 and sent from Solothurn, Switzerland, Franziska BAUMGARTEN-TRAMER informs Dr. FORSTER that she is engaged in writing a book on psychotechnological selection and would appreciate receiving detailed information about the examinations used for testing applicants for such occupations as streetcar conductors and pilots. The author adds personal greetings, indicating that she was acquainted with the addressee.

1.3.2. Correspondence directed abroad

In a letter dated 10 January 1921, Petr RUZEK thanks Ales HRDLICKA -Curator of the Anthropological division of the U.S. National Museum, in the Smithsonian Institution, Washington D.C.- for making available "samples of psychotechnological examinations". RUZEK acknowledged warmly Hrlicka's interest in the institute, then in its very beginnings, and noted that "specialized literature that is being published in America" would be most welcome. Since it was planned to establish several vocational guidance centers, "books and -other- publications in this field" would be particularly appreciated. RUZEK expressed also interest in exchanging future publications of Prague Psychotechnological Institute with similar institutions in the U.S.A. The Institute's publications were to have summaries in French and in English.

Several letters dated 10 April 1923 refer to a report presented in 1922 at the Milano Congress of psychotechnology and sent out for information -e.g. to Frank GILBRETH in the U.S.A. or to Dr. G. van WAYDENBURG in Amsterdam-.

On 6 June 1923, Dr. V. FROSTER, who replaced Dr. RUZEK as the director of the Prague Psychotechnological Institute, contacted by letter Henry PIÉRON -Laboratory of Physiological Psychology at the Sorbonne- thanking him for the kindness shown to him -FORSTER- during his stay in Paris. PIÉRON's visit in Prague, with the support of the Czechoslovak Ministry of Education, was considered for the coming school year -1923-1924-. PIÉRON's counsel would be much appreciated. Concretely, FOSTER asked Prof. PIÉRON to kindly check if the equipment purchased from the company Piard and Boulet is in working order. Reference is made also to the anticipated visit of I. MEYERSON who was to give public lectures and consult with the staff of the Psychotechnological Institute.

On the same day, 6 June 1923, FORSTER wrote directly to Dr. I. MEYERSON -Laboratory of Physiological Psychology at the Sorbonne- to invite him to speak in Prague under the auspices of the Masaryk Academy of Work. MEYERSON's reply is missing in the files but the President of the Academy issued a formal invitation to MEYERSON on 24 August 1923.

2. CITATION ANALYSIS

Citations of the literature and, more broadly, references in general, provide objective criteria for the quantification of the "realm of awareness".

During the period between the two world wars no periodical specifically devoted to applied psychology was in existence in Czechoslovakia. The relevant articles were widely scattered.

Consequently, we have chosen three book-length publications as sources of data for a citation analysis: 1) An introduction to psychotechnology, published in the mid-twenties -VANA, 1926-, 2) A monograph on the measurement of intelligence -STEJSKAL, 1934-, and 3) the first volume of the Encyclopedia of Efficiency -VERUNAC, 1934-.

Since here we are interested in the interaction of the Czech authors of the 1920's and 1930's with the international body of literature, only the references to the works published in other languages than Czech and Slovak will be considered. In the few cases in which translations were cited, we have credited the publication to the language area of the original. There were special problems in the dealing with the work of Russian authors cited in the text by STEJSKAL -1934- who noted three publications in Russian and 16 publications of Russian authors that appeared in German. We have finally decided, not without uneasiness, to treat all 19 publications as "Russian". References to the proceedings of international congresses were omitted.

Both in VANA -1926- and in VERUNAC -1934- the references are given in the bibliographies at the end of the respective volumes. The bibliography in VERUNAC -1934- does not parallel the book chapters and the publications are classified by topics. We have analyzed the references for 20 categories considered as most directly relevant, such as psychotechnology, fatigue and recovery and vocational counseling.

The data for each of the three publications that were examined and for all of them combined are given in Table 1.

The figures indicate a heavy predominance of the references to the German and Anglo-American sources. It would have been desirable to separate references to materials published in Great Britain and the United States. Unfortunately such a separation was not technically feasible. The echoes of the French psychotechnological literature are substantially weaker while those of the Russian authors are weaker still and the references to the works in Italian represent less than one percent of the total references.

However, one may look at the data from another, perhaps more interesting and relevant point of view: In terms of their awareness of the technical literature of the day, the Czech psychotechnologists of the 1920s and the 1930s were truly "men of the world".

A systematic listing and analysis of journal articles dealing with applied psychology in the 1920s and 1930s will be published elsewhere.

3. INTERNATIONAL CONGRESSES

On 29 August 1922 the director of the Psychotechnological Institute in Prague made an inquiry in French at the Institut J.J. Rousseau in Geneva, Switzerland, as to whether the Geneva Institute and the French psychologists would take part in the international congress of psychology to be held in Milano, and if the French had accepted the participation of the Germans.

The second part of the communication deals with a broader issue or, more precisely, two issues: 1) The writer asks if the moment would be regarded as propitious for founding under the aegis of the International Labor Office, in Geneva, an international body concerned with exchange of information regarding the choice of vocation and psychotechnology and 2) if

the Prague group made such a proposal, would it be recommended and supported by the Institut J.J.Rousseau.

TABLE I: REFERENCES TO INTERNATIONAL LITERATURE IN 3 CZECH PUBLICATION

	ENGLISH	GERMAN	FRENCH	RUSSIAN	ITALIAN
VANA (1926,N=24)	11	8	5		
STEJSKAL (1934,N=341)	132	144	46	19	
VERUNAC (1934,N=229)	87	86	34	18	4
TOTAL (N=594)	230	238	85	37	4

Prof. P. BOVET responded on 3 September 1922, recalling with pleasure his earlier visit in Prague, including the Psychotechnological Institute. He informed the address that the International Congress of Psychotechnology -Psychotechnics- is being organized by Institut J.J.Rousseau. He -P. BOVET- will not be able to present but his colleague, E. CLAPAREDE, director of the Institute's Laboratory of Experimental Psychotechnology, will certainly be present as will LÉON WALTHER, director of the Institute's section of "technopsychologie". To P. BOVET's letter was attached a flyer -document No. 496/22 P.U.- which describes a course for psychological counselors -psychologues conseils-. The lectures were to deal both with vocational guidance -orientation professionnelle- and scientific management -organisation du travail, with sections on anthropometry, physiology, psychology, and industrial hygiene-. Practical exercises were to involve work in the laboratory, in industrial plants, participation in the practice of vocational guidance and placement, and assistance in medico pedagogical consultations.

L. WALTHER, the moving spirit of "technopsychology" at the Institut J.J.Rousseau, planned to visit Prague Institute following the Milano congress. BOVET noted that both the French and the German psychotechnologists would attend the Milano congress, as they already had done in Barcelona. He welcomed the idea of RUZEK regarding the establishment of a section on psychotechnology in connection with the International Labor Organization -Bureau International de Travail- and noted that for the time being the Institut J.J.Rousseau provides consultations to the I.L.O. in these matters.

In a letter of 28-VI 1923 LÉON WALTHER thanked his Prague host for a warm welcome in January 1923 and expressed the hope that the contacts between Geneva and Prague would become more frequent. WALTHER noted that he sent as printed matter some aptitude tests used at the Institute J.J. Rousseau and he would appreciate their transmission to the members of the staff -J. VANA and K. LORSCH- with whom he spoke about these matters during his visit.

For Czechoslovak applied psychology the most important international event was the VIIIth International Conference of Psychotechnology, held in Prague from 11 to 15 September 1934 -SERACKY, 1935-. SERACKY, professor of psychology at Charles University and director of the Central Institute Psychotechnology, served as the president of the Congress. The participation was truly international. For the Spanish readers it may be useful to note the presence of A. AZOY -Barcelona-, J. GERMAIN -director of the National Institute of Psychotechnology, Madrid-, Miss M. RODRIGO -Madrid- and J. XIRAU -Professor of the University of Barcelona-. Dr. J. GERMAIN, together with C. de MADARIAGA -Madrid- and EMILIO MIRA Y LOPEZ -Barcelona-, served on the International Executive Committee. Continuing interest in the work of some of these authors is documented in MATEJCEK's -1961- extensive, positive review of a volume on Myokinetic Psychodiagnostics by MIRA Y LOPEZ and the use of the publications of J. GERMAIN et al. -1959, 1970- in the work of HOSKOVEC and STIKAR -1976, esp. pp. 28 and 147-.

A number of presentations was made by the psychotechnologists of Czechoslovakia, both Czech and German. In the section dealing with industry, business and administration we encounter the reports of A. CIBULKA -Accident prevention in the steel mills in Vítkovice- and E. PECHHOLD -Selection of employees Vítkovice-. In the area of transportation J. MLS discussed intelligence in relation to the performance of the drivers of military vehicles while J. VANA reported on the accidents of streetcar conductors. In the section on counseling A SMRZOVA was concerned with the selection of nurses and J. STAVEL considered multidimensional psychodiagnostics. Particular attention was given to the selection of students for the university -J. DOLEZAL-, the testing of the university students -O. MATOUSEK- and psychotechnological examinations at the universities, with special emphasis on the analysis of the student's interests. O. FANTA, W. SCHÖFELD and W. SIMON considered the possibilities of using graphology for the assesment of intelligence and selection of employees while K TRISKA discussed the problem of speed as a factor in work capacity.

4. PSYCHOLOGICAL INSTRUMENTS AND TESTS

In the beginning years of psychotechnology particular attention was given to the use of specialized apparatus. Some equipment was constructed in Czechoslovakia. Internationally best known is FORSTER's multiple-choice reaction apparatus, widely used for the testing of pilots and drivers of automotive vehicles -FORSTER, 1928-. A modification of the apparatus -called Ostrava dispositiv- is used to the present time and is distributed by the company Psychodiagnostic and Didactic Tests in Bratislava.

Instruments used in psychotechnological examinations in general and in the Prague Psychotechnological Institute in particular are liberally illustrated in a chapter by SERACKY -1934-. Unfortunately, the origin of the instruments is not indicated.

The principal sources of the apparatus acquired by the Psychotechnological Institute in Prague were France and Germany. The equipment originating in France was purchased with the help of the Ministry of National Defense at the recommendation of Dr. FORSTER who spent some time in France in 1922 and 1923.

In Germany the apparatus was purchased from several suppliers, including the famous manufacturing company of E. ZIMMERMANN in Leipzig. A number of instruments came from Industrielle Psychotechnik, located in Charlottenburg and directed by W. MOEDE. It should be noted that members of the staff participated in courses offered by the German manufacturers to the potential users. Thus they attended a 3-month course held at Charlottenburg.

We wish to note that a small museum, attached to the Department of Psychology, Charles University -Hradc.nám.5,118 42 Prague 1-, contains a variety of psychological apparatus constructed before the Second World War. The apparatus served for research in general experimental psychology as well as psychotechnological practice. In addition there is in the museum a collection of catalogues of early psychological apparatus, mostly in German, some with English, French and Spanish descriptions. Many of the apparatus are illustrated in the catalogues -HOSKOVEC and STIKAR, 1984-. Attached to the Department is also an Archive of paper-and-pencil tests and questionnaires from different parts of the world.

5. COMMENT

Our earlier studies on the development of psychotechnology in Czechoslovakia during the period between the world wars -BROZEK and HOSKOVEC, 1986a, b-have dealt with local developments. Such studies are relevant to the history of psychology in a given country and as such have their justification. We hope to expand these studies to cover other facets of applied psychology in Czechoslovakia of the 20's and the 30's, including vocational counseling and psychodiagnostics of the child as well as the life and work of some of the contributors -such as V. FORSTER, 1882-1932, and JAN DOLEZAL, 1902-1965-.

In the present study we have endeavored to place the local scene in an international context, with special reference to personal contacts -visits abroad, viits from abroad, correspondence-, citation analysis of three major publications, participation in the international congresses, and psychological instruments, paper-and-pencil tests and questionnaires.

The present study will serve not only as a source of information on the particular country which we have examined but that it may provide a "model" for the study of other parts of the world, seen in an international, world-wide context. By combining a concern with the regional developments and the study of international interactions, historians of psychology will be able to avoid the dangers and limitations of parochialism.

Acknowledgements:

The authors wish to express their thanks to V. Kaifer and J. Levora for greatly facilitating our research in the Central Archives of the Czechoslovak Academy of Sciences in Prague.

SYNOPSIS

The present article is designed to supplement concurrent studies on the development of applied psychology in Czechoslovakia by placing the local scene within an international context. We have examined several aspects: personal bi-directional contacts, direct and by correspondence; networks of references to scientific literature; participation in international congresses; and psychological tests and instruments.

The data show convincingly that a small, land locked country does not need to be out of touch with contemporary international thinking in a given field. We hope that others will explore the approach followed in the present paper when dealing with their respective countries. Documentation of the complex process of the cross-fertilization of ideas in psychology as a science and of the spread of the psychological technology would strengthen the informational basis needed for the writing of a new type of a history of psychology of psychology, truly international in scope and content.

RESUMEN

El presente trabajo examina el desarrollo de la Psicología aplicada en Checoslovaquia, acentuando las relaciones que la enlazan con la comunidad científica internacional. Se estudian los contactos personales, las redes de referencias a la literatura científica, así como la participación en congresos y el desarrollo tecnológico de test e instrumentos.

Los datos muestran que ha habido una importante vinculación de este país con el contexto internacional y, por otra parte, su tratamiento se ha concebido en forma que pueda ser generalizada al estudio de otros países, en el contexto internacional en que se desarrolla la ciencia actual.

REFERENCIAS:

- BROZEK, J., HOSKOVEC, J.: "Kranému užití psychologie na Universite Karlove. -Contribution to the early history of applied psychology at Charles University, Prague-" *Acta Universitatis Carolinae*. Historia Universitatis Carolinae Pragensis, 1986a,26 -in press, with summary in English-.
- BROZEK, J., HOSKOVEC, J.: "Kranému institucionálnímu vyvoji užití psychologie v Československu: Psychologie práce. -Contributions to the early institutional development of applied psychology in Czechoslovakia: Psychology of work-." *Psychologie v ekonomické praxi*, 1986b,21 -in press, with summaries in English, Russian and German-.
- DOLEZAL, J.: "Über die Bewegungsform bei der Arbeit an Drehkurbeln." -Diss., Phil. Fak., Univ. Leipzig, 1930-. Beck-sche Verlagsbuchhandlung, München, 1930.
- FORSTER, V.: "A test for drivers". *The personnel Journal*, 1928,7, No. 3, 161-171
- GERMAIN, J.; PINILLOS, J.L.; PASCUAL, M.: "Las pruebas de selección de conductores y su validez: nota preliminar". *Revista de Psicología General y Aplicada*, 1959,14,421-429
- GERMAIN, J.; PINILLOS, J.L.; GARCIA MORENO, E.; De ABERASTURI, N.L.: "La validez de unas pruebas selectivas para conductores". *Revista de Psicología General y Aplicada*, 1970, 25, 1067-1114.
- HOSKOVEC, J.; STIKAR, J.: "Teorie nehod a motody psychologické prevence. -Theory of accidents and methods of psychological prevention-". *Charles University Press*, Prague 1976
- HOSKOVEC, J.; STIKAR, J.: "Historické přístroje v experimentální a pracovní psychologii.-Historical apparatus in experimental and industrial psychology-". *Psychologie v ekonomické praxi*, 1984, 19, 2, 63-70 -With summaries in English, Russian and German-.
- de MADARIAGA, C.: "La psicotecnia, disciplina moderna del ingeniero moderno". Reprinted from *Revista Moderna*. Madrid, 1925
- MATEJCEK, Z.: Review of E. Mira y López, *Psicodiagnóstico Miokinético -PMK-*, 1958, *Československá psychologie*, 1961, 5, 410-412
- RICHTER, P.G.: "Gründung und Entwicklung des Psychotechnischen Institutes an der TU Dresden 1920-1940". *Technische Univ. Dresden*, 1981
- STEJSKAL, C.: "Detská inteligencia / Child intelligence -The nature of intelligence and the methods of its study /. Profesorské nakladatelství. Prague, 1934.
- SERACKY, F.: "Psychotechniky vyber pro povolání -Psychotechnological vocational selection-". In Verunác, 1934, pp. 172-253.
- SERACKY, F. -Ed.-: "Comptes rendus de la VIII^e conférence internationale de psychotechnique tenue á Prague du 11 au 15 septembre 1934". *Orbis*. Prague, 1935.

- VANA, J.: "Industriální psychologie v Anglii.-Industrial psychology in England-". *Nova Prace* -Praha-, 1926, 8, 263-265
- VANA, J.: "Psychotechnika -Psychotechnology- Psychology in Practice-". *Topic* . Prague, 1926.
- VERUNAC, V. -Ed.-: "Encyklopedie vykonnosti -Encyclopedia of efficiency-". Vol. 1. *Sfinx* . Prague, 1934.

Revista de Historia de la Psicología
1986, Vol. 7, Núm. 3, 55-68.

EVOLUCION DE LOS CONCEPTOS PSICOANALITICOS EN ESPAÑA (1923-1936): UN ANALISIS BIBLIOMETRICO.

Isabel Muñoz
Elena Quiñones
Departamento de Psicología
Facultad de Filosofía y CCEE
UNIVERSIDAD DE MURCIA
30071 MURCIA

INTRODUCCION

La historia de la psicología como disciplina, ha conseguido dar cuenta de la complejidad que la ciencia psicológica presenta, cuando se trata de situarla y desarrollarla en su contexto histórico. Ello ha sido posible por la utilización de técnicas de reconstrucción histórica, servidas desde la historia y la sociología de la ciencia, y gracias a los avances metodológicos que desde los sesenta se han venido produciendo en este campo.

Efectivamente, a partir de la disminución de la "fiebre historicista" que la Estructura de las Revoluciones Científicas (Kuhn, 1962) generó, y de las interminables discusiones que en torno a la viabilidad metodológica del "paradigma" (ver la estimulante "La crítica y el desarrollo del conocimiento" y el "crítico" prólogo de Muguerza, 1975) se produjeron, se observa una separación clara entre historiadores y filósofos de la ciencia, a la hora de tratar la evolución de las disciplinas científicas. Mientras la filosofía de la ciencia se decanta por el estudio de la estructura interna de las teorías mediante métodos "informales", al estilo de Suppe y Sneed, basados en la teoría de conjuntos, los historiadores de la ciencia se inclinan por dos técnicas de gran potencial explicativo (Moulines, 1982):

-la metodología crítica-epistemológica, que utiliza el análisis de las prácticas científicas, según el esquema "revolución euantitativa mínima, revolución cualitativa máxima". Esta corriente en psicología se apoya en los primeros trabajos de Fromm y utiliza como marco teórico de referencia el que le