Voice Research and Treatment in the Czech Republic

by Jan G. Svec and Frantisek Sram

The Czech Republic has a long tradition of voice research and voice treatment. In the 1850s, the Czech-born physician J. N. Czermak played a crucial role in introducing the laryngeal mirror to clinical practice for diagnostics of voice disorders (Czermak, 1858). In 1922, M. Seeman, another prominent Czech physician, co-founded the field of phoniatrics—the medical specialty for voice, speech, and hearing disorders. In that decade, he introduced systematic preventive voice examinations for students of singing and acting and started to use laryngostroboscopy clinically.

The activities of M. Seeman and his pupils gradually evolved into an educational system, called the “Prague Phoniatric School,” which since 1967 has had its center at the Phoniatric Clinic in Prague. The Prague Phoniatric School trained high-quality phoniatrists in former Czechoslovakia (K. Sedláček, E. Sedláčková, F. Brohm, M. Sovák, A. Novák, F. Sram, I. Supáček, K. Vrticka, and many others) and in other countries behind the Iron Curtain (Hungary, Poland, Soviet Union, and Yugoslavia, among others).

The phoniatric research activities in Czechoslovakia were numerous (for more information see, e.g., Sram, 1980 or Dlouhá, 2001). However, for political reasons, the results were rarely published in other than the Czech language and access to scientific literature written in English was limited. In 1945, the phoniatrician M. Sovák, the author of the now-classic Czech two-volume monograph on laryngostroboscopy (Sovák, 1945a; 1945b), established in Czechoslovakia the official field of logopedics—the pedagogical specialty dealing with care of people with communication disorders.

After the “Velvet Revolution” in 1989 and the fall of the Iron Curtain, international collaboration with free-economy countries developed rapidly and the access to scientific information and literature published in English greatly improved. In 1993 Czechoslovakia was peacefully divided into the Czech Republic and Slovakia. Privatization led to improvement of the outpatient care of voice, modernization of ambulances (e.g., videolaryngostroboscopy is not uncommon), and assured individual care of patients in which prevention, early diagnostics, and treatment are the goals.

The restructuring, however, also led to systemic problems in financing the outpatient care of voice and communication disorders. Rather than quality of medical care, the current insurance system emphasizes quantity, which is limited by regulation mechanisms. The grant support system suffers from extensive bureaucracy and the research budget is limited when compared with the world’s most developed countries.

The Clinical System

The Czech Phoniatric School views effective communication as an inseparable unity of voice, speech, and hearing processes. In clinical practice, this view implies that patients with voice problems automatically undergo basic hearing tests also in order to investigate the potential negative influence of impaired perception on voice.

Preventive examination, diagnostics, medical treatment, as well as the voice rehabilitation in patients with voice disorders are the responsibility of phoniatrists, who collaborate with psychologists and voice pedagogues. Outpatient care is provided by a network of phoniatric ambulances distributed across the country. If phonosurgery is needed, the patient is referred to laryngologists at otolaryngologic clinics. Special diagnostic and therapeutic procedures are provided by phoniatric departments and otolaryngologic and related clinics. Speech rehabilitation is done mostly by logopedists.

The field of phoniatrics, which is an independent medical subspecialty of otorhinolaryngology, is organized in the Czech Republic around the “Czech Phoniatric and Pedaudiologic Society.” The field of logopedics is organized around two separate societies, “The Association of Clinical Logopedics” and “The Logopedic Society of Milos Sovák,” the first of which is oriented clinically and the second one pedagogically.

Current Research

In 1994, collaboration of Czech and Dutch scientists led to development of videokymography, a low-cost, high-speed imaging method for examination of vocal fold vibrations (Svec & Schutte, 1996). After its development in the Netherlands, the method was introduced to clinical practice in Prague where it has
become a routine complementary method to videoendoscopy for early diagnostics of voice disorders and for therapy evaluation at the Center for Communication Disorders, Medical Healthcom (Sram et al., 1997; Schutte et al., 1998; Svec, 2000). Since then, videokymography has spread as a clinical and research tool to clinics around the world, and kymographic display was adopted also for digital high-speed endoscopy.

Czech institutes have been involved in large European projects, such as the Eureka!, "artificial larynx" and "NewVoice" projects, devoted to development of implantable prosthetic devices for patients after laryngectomy (Sram, 2005).

Besides clinically oriented research, an interdisciplinary collaboration has been established between several clinical and technical institutes in the Czech Republic performing basic voice research. These efforts brought new information on spontaneous pitch jumps between chest and falsetto voice registers (Svec et al., 1999; Horáček et al., 2004), on resonance properties of the vocal folds (Svec et al., 2000), and led to the development of a new mathematical model for studying the effect of vocal-fold collisions (Horáček et al., 2005). Also, first finite-element models of the vocal tract were developed for Czech vowels (Dedoucet al., 2001; Dedoucet al., 2002) and used for quantifying the effect of cleft palate on voice quality (Vohradník et al., 2003; Vampola et al., 2005).

The Group for Study of Voice and Speech was established at the Palacky University in Olomouc, organizing seminars and performing research in voice physiology and stuttering (e.g., Pesák, 2002; Pešák & Jindra, 2005).

An increasing number of Czech participants were evident in the last five years at interdisciplinary events on voice, such as the Pan European Voice Conference (PEVOC), the Annual Voice Foundation’s Symposium “Care of the Professional Voice,” or the International Conference on Voice Physiology and Biomechanics.

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