# SNORS+ / Linguagraph

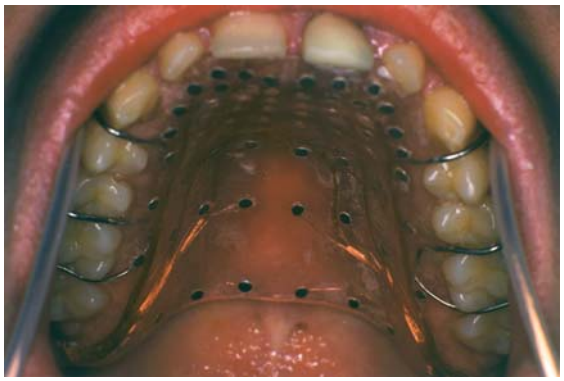
## Clinical Electropalatography (EPG) System

Linguagraph is the University of Kent's clinical electropalatography system. EPG:

- uses a special acrylic artificial palate to determine tongue-palate contact;
- a small electrical signal is fed to the patient;
- the signal passes, via the tongue and palate, to a computer;
- tongue/palate contact patterns are displayed on the computer.

The Kent *Linguagraph* is a user-friendly, *clinical* electropalatography system, which forms part of the SNORS+ multiparameter speech workstation**.** It comprises a small electronics unit, which connects between the patient's palate and the SNORS+ base unit – see below. A small microphone/audio unit, also connected to the base unit, provides an acoustic reference and allows audio playback of recorded tests. Basic acoustic analysis is also possible.


The palate used is that developed at the University of Reading, as this has become the *de facto* standard in the UK. The palate is custom-made and simply clips to the upper teeth.



The Linguagraph electronics unit has a single sensitivity control, which is adjusted so that firm, total tongue-palate contact just illuminates the entire display. Single or dual channel tongue-palate contact patterns can then be displayed on the computer screen, either in real-time or off-line, following an assessment test.

Linguagraph is part of the SNORS+ multiparameter speech workstation, which incorporates user-friendly software running under Windows 95/98®. As SNORS+ is modular, Linguagraph can be either a stand-alone system, or can be combined with other instruments to allow simultaneous, mutiparameter operation. This flexibility allows a system to be tailored to each individual user's requirements. Subsequent expansion, if required, is a simple matter of plugging in additional equipment.

Laryngograph

**Laryngograph Ltd.**
1 Foundry Mews, London, NW1 2PE
Tel: +44 (0)20 7387 7793 Fax: +44 (0)20 7383 2039
E-mail: lx@laryngograph.com
www.laryngograph.com

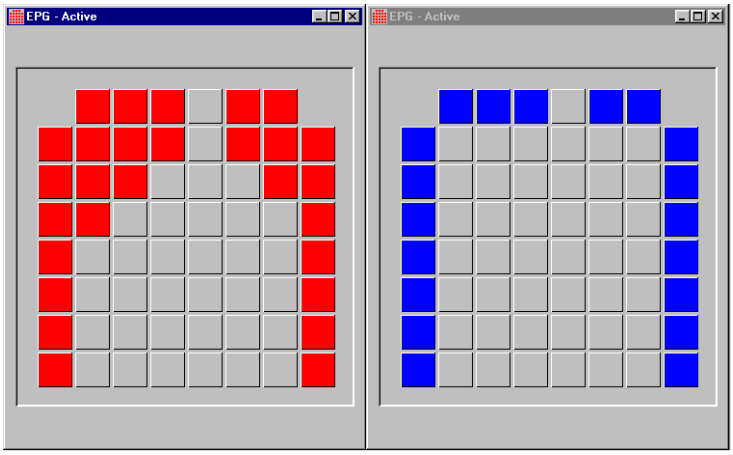
# CASE STUDY USING LINGUAGRAPH

By Alison Main[1], BA (Hons), Dip CCS, MSc, MRCSLT

This case study reports the use of Linguagraph on a single patient, as part of a clinical trial to investigate the use of electropalatography in the treatment of acquired dysarthria. All subjects on the trial were given both conventional speech and language therapy and electropalatography biofeedback therapy, using Linguagraph. Assessments were made at commencement, crossover and completion of therapy, using electropalatography and the Frenchay dysarthria assessment. Subjects own views on outcome were sought by means of an 'attitude to communication' questionnaire.

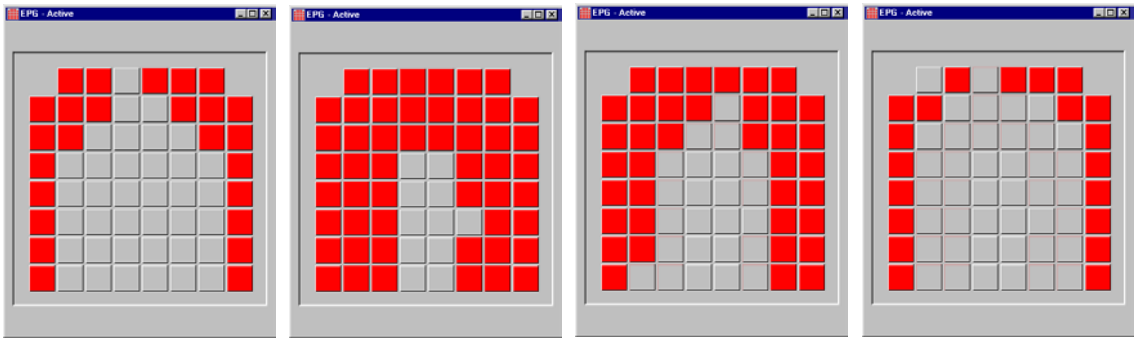
The patient, SH, was a 60-year-old lady with multiple sclerosis, living at home. She had a moderate flaccid dysarthria. SH started on conventional therapy, and had 12 sessions. Work focused on rate of speech, breath support and self-monitoring, in addition to tongue strength and mobility exercises. SH was extremely motivated as, despite her severe disabilities, she was a very sociable and outgoing person. Following this therapy period, the Frenchay assessment suggested that SH had deteriorated slightly in the production of single words. SH, and her husband, both felt there had been great improvements: she was more aware of the potential difficulties she had in speech, and what to do to improve matters, for example breathe more frequently, split up longer words. With friends and family, she found that she now rarely had to repeat herself. Assessment of electropalatography data confirmed that there was some improvement in articulatory patterns.

Electropalatography therapy worked on /t/ and /s/, which SH found extremely difficult to contrast. Poor fine motor control resulted in an inability to form the narrow groove, through which air is channelled, in the production of /s/, leading to a stopped /t/ sound. Accuracy improved progressively as we worked together, and by the final session, SH was triumphant in her use of the word "sausages", which had previously been impossible for her to make clearly!




The final assessment showed crisper, clearer tongue patterns for /t/ and /s/ sounds after this therapy. The Frenchay showed no change at word or sentence level, but an improvement in the intelligibility of conversational speech. The questionnaire suggested that confidence did not improve dramatically, but SH and her husband were delighted by the results of therapy.

Linguagraph snapshots for /s/




Therapist | SH – initial | SH – post conventional Therapy | SH – post EPG therapy

[1] The trial was domiciliary, but based at the Kent & Canterbury Hospital. Alison Main is now at the Western Infirmary, in Glasgow.