



Foreign Language Acquisition with the Instinct of a Child

(FLIC project)

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Language competence 1

The ability to deal with multiple languages in a competent manner is becoming more and more important in today's multi-national business society.

This is both true for one's mother tongue as well as for usage and acquisition of foreign languages.

Both the mother tongue and the second or third language require the same fundamental (brain) functions to be well developed and functioning.

However, this does not seem to work for L2 in just the same way as for L1...



Language competence 2

While children learn one or even more than one language at ease without even being aware of it while they are being raised through infancy and childhood, adults struggle to learn the basics of a new to be acquired language.

This perception led to the concept of the FLIC project which is explained hereafter...



Mother tongue & subconscious competence

Children learn their native language with no explicit learning effort (automatically)

For bilingual upbringing this has been proven to be true, for multiple languages also.

Youth and adults learn new languages explicitly with a significantly increased effort (consciously).

D. Querleu, Clinique Universitaire de Gynécologie et Obstétrique,
Université de Lille II, Roubaix



Hearing starts in the mother's womb

The fetus can actually hear during the last third of pregnancy.

- Starting at approx. the 28th week of pregnancy, the fetus starts to respond to external sound information.
- All information are muffled by about 30 dB, high frequencies even the more.

Therefore, only about 30 % of the phonetics can be understood.

BUT:

The voice melody can be perceived almost completely.

D. Querleu, Clinique Universitaire de Gynécologie et Obstétrique,
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The fetus can already distinguish vowels

research

Healthy early-born babies (week 30 to 35)

- heard a pattern of a repetitive vowel (A - A - A - A ...)
- out of which 15% had been replaced by another vowel (oddball principle (A - A - A - A - E - A - A - A - E - ...))

By means of Mismatch Negativity (MMN) it was proven:

- The deviant vowel produced a marked EEG-signal.
- The fetus in the womb can already distinguish vowels.

Cheour-Luhtanen-M; Alho-K; Sainio-K; Rinne-T; Department of Psychology, University of Helsinki, Finland, Psychophysiology. 1996 Jul; 33(4): 478-81



And this is how it continues...

- Two months** - Infant recognizes consonants
- Seven months** - Infant recognizes sentence structures.
- Eight months** - Infant distinguishes words from sentences.
- Eight months** - Infant remembers words from the past.

And with **two years** ...



2-year-olds show grammatic competence

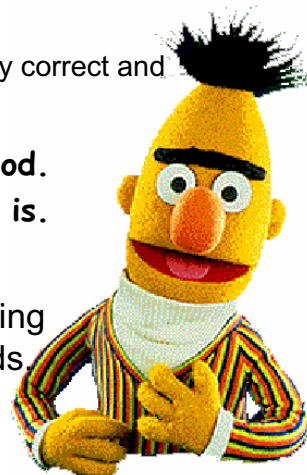
Research:

2-year-olds were asked to repeat grammatically correct and incorrect sentences:

**Ernie says that Bert is good.
Ernie says that Bert good is.**

Result:

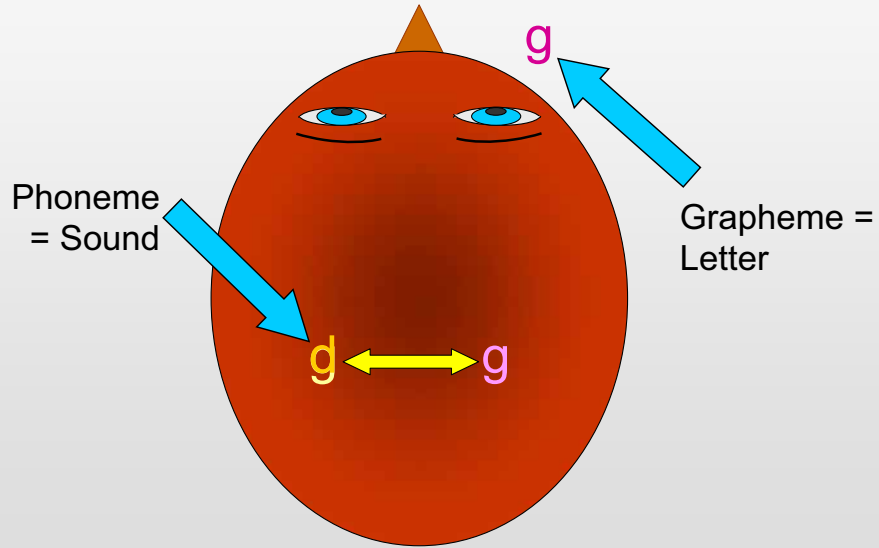
Clear *implicit* understanding
syntax rules by 2-year-olds



Weissenborn "Children's Sensitivity to Word-Order Violations in German: Evidence for Very Early Parameter Setting, Boston University Conference on Language Development, (1998)

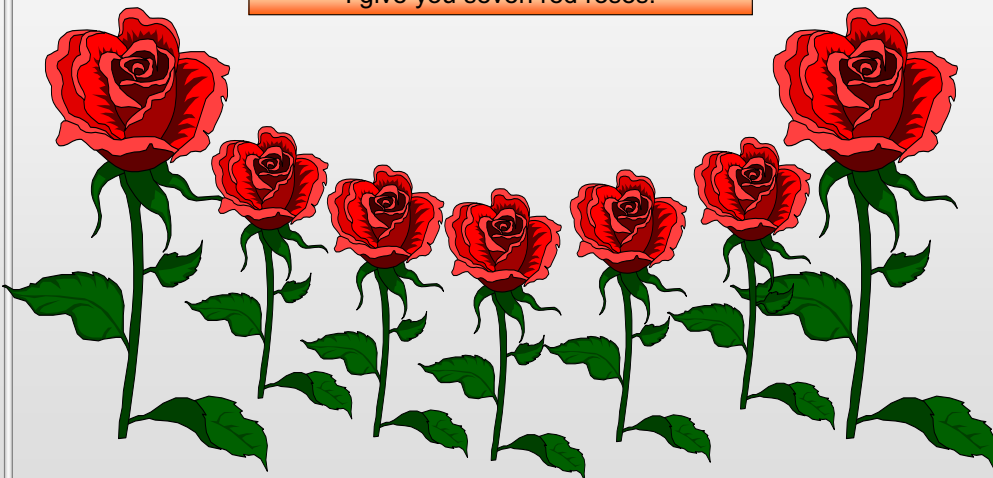


Inner phoneme representation = inner dictionary



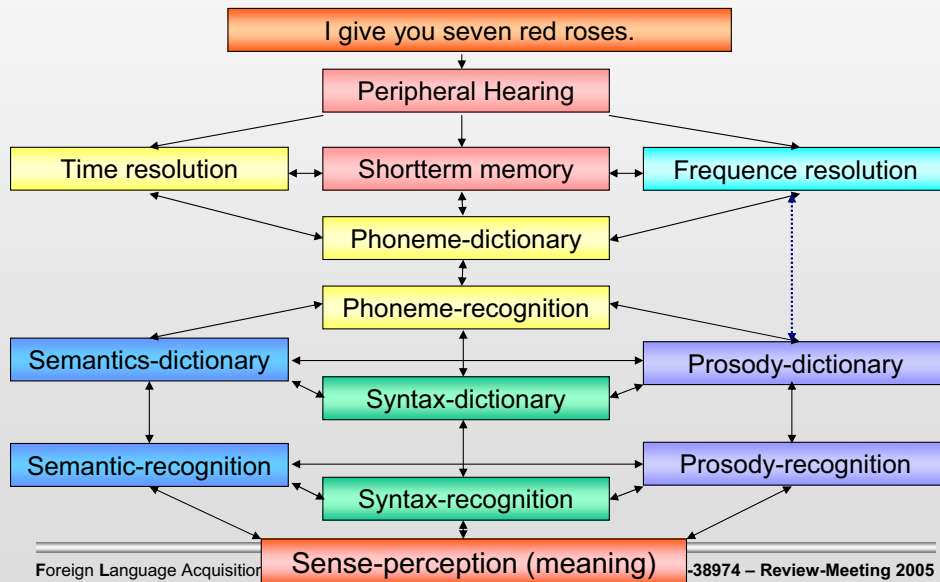
Model of automated central hearing perception of spoken language

I give you seven red roses.





Model of automated central hearing perception of spoken language



Preliminary Summary

Language processing in the human brain is based and developed upon

- ⇒ genetic resources and a
- ⇒ non impaired hearing and perception capabilities
- ⇒ a systematic build-up of precise inner representations of each phoneme and its corresponding visual character(s) (letter)



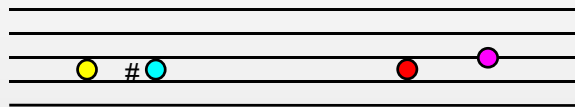
Language acquisition in process

In the first few year's of a child's life the fundamental function for language recognition and reproduction are established...

... while other capabilities which seem unnecessary to be maintained are deteriorating...



i.e. Pitch-discrimination



Pitch discrimination is an important element of prosody.

You have a nice tie.

You have a nice tie ?



i. e. Precise Phoneme discrimination

EBI - EDI - EFI - EGI - EKI - EPI - ETI - EWI

- Language perception on a phoneme basis = successful
- Language perception from the context = difficult at best
- **What this is needed for - listen yourself...**

The **d**rice of the **d**rees is in my **d**ook...

... says the christmas-tree salesman.



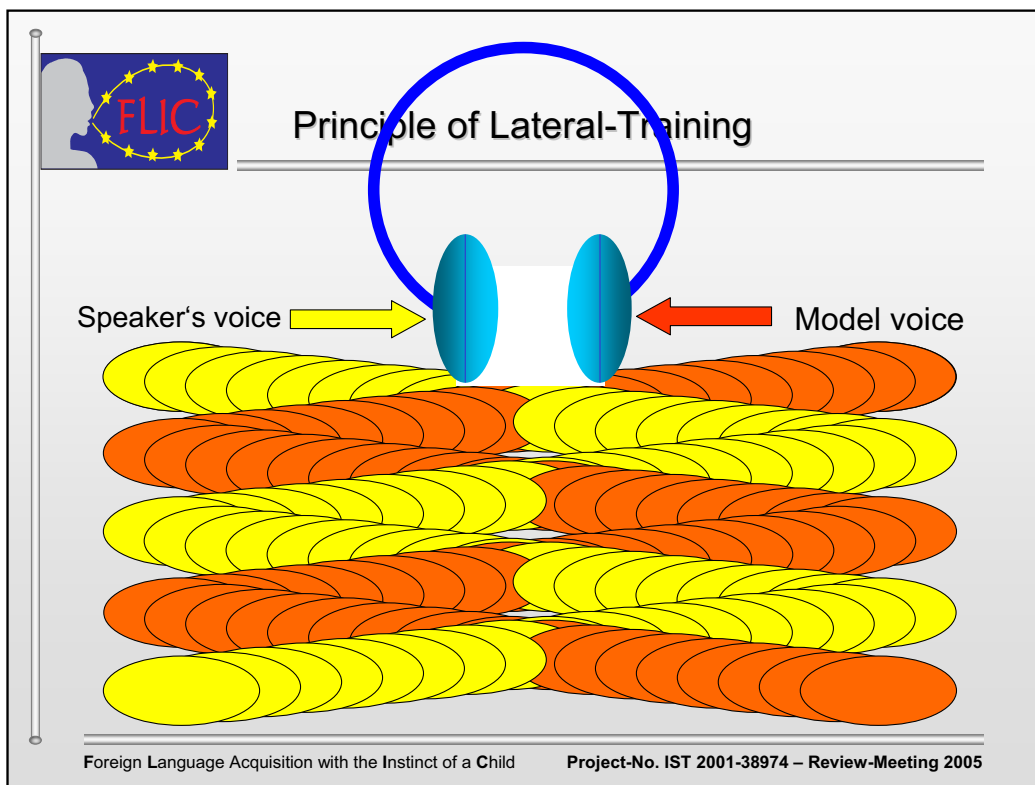
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 **Phases of FLIC Lateral-Training**

Phase 1:
Learner hears model voice from CD and reads along silently phoneme by phoneme hearing the model voice „wandering from side to side“

Phase 2:
Learner silently reads along with the model voice (mouthing the words), again perceiving it as „wandering from side to side“.

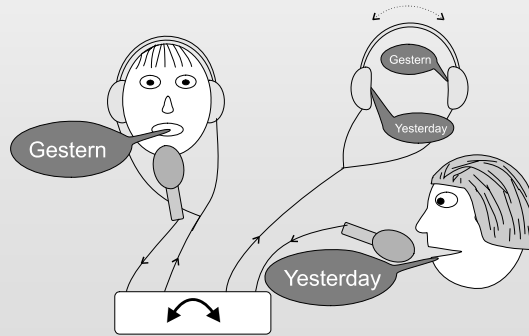
Phase 3:
Learner reads aloud in synchrony with the model voice, hearing his and the model voice on opposite ears and both „wandering from side to side.“

Foreign Language Acquisition with the Instinct of a Child Project-No. IST 2001-38974 – Review-Meeting 2005



Synchronized speaking bilingually

- One channel provides a high quality model voice (CD)
- The other channel simultaneously provides the voice of the Trainee
- Very efficient method for learning new vocabulary...



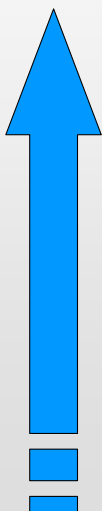
Consonant enhancement

Currently - Consonant-Enhancement

- Intelligent circuitry that enriches the auditory reproduction of certain selected high frequency bands for better discrimination of specific phonemes.
- To bring out the fine differences between phonemes
- Low frequencies remain part of the auditory function as an immanent part of language and music.

1948 - Highpitch-Training by A. Tomatis

- „Cutting out“ of frequency bands below a selected corner frequency.
- All frequencies above are increased at the same rate.





... the FLIC approach

- Lateralization
- Multi Channel Voice Fusion
- A new form of Consonant Enhancement
- Signal Alignment (in Pitch and Speaking rate)
- A sound and more implicit learning concept (integrational pedagogical method)



Technical Specifications

Technical Specifications

MedTECH Electronic GmbH

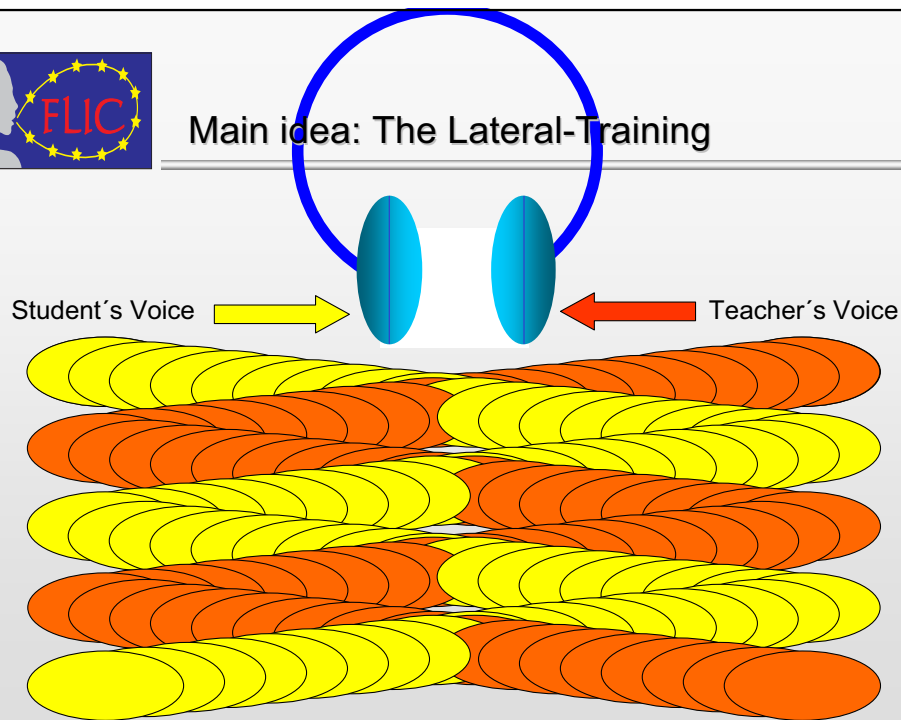


Overview: Technical Specifications

- **Technical Specifications**
- main idea : Lateral Training
- 2nd idea : Voice Processing
- 3rd idea : Consonant Enhancement
- 4th idea : Frequency Splitting
- 5th idea : Interlacing
- Probable Technical Solution

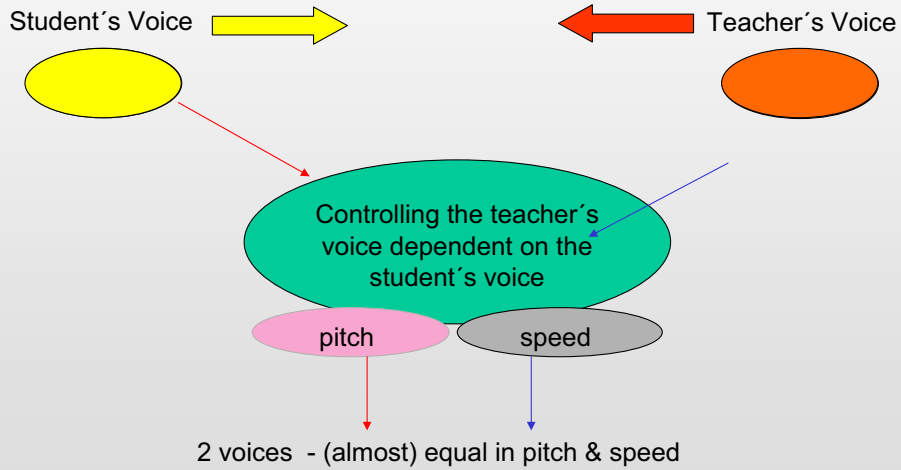


Main idea: The Lateral-Training

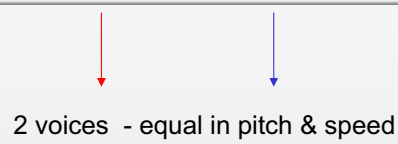




2nd idea: The Voice-Processing

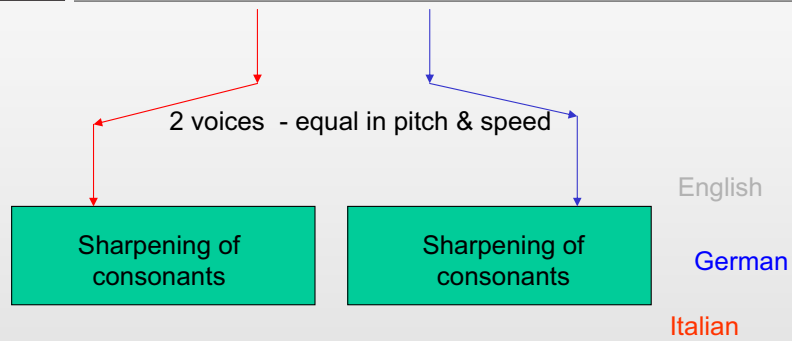


3rd idea: The Consonant Enhancement

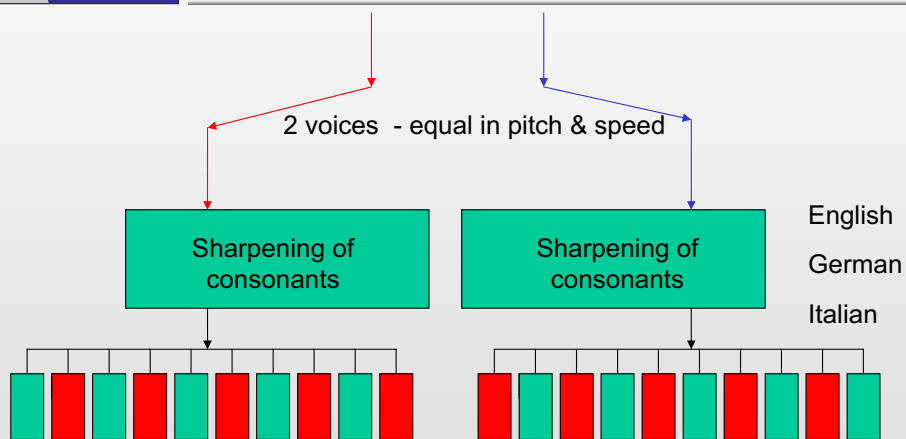




3rd idea: The Consonant Enhancement



4th idea: The Frequency-Splitting





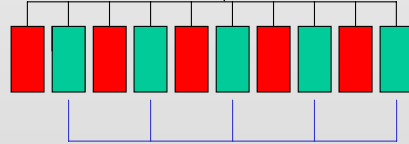
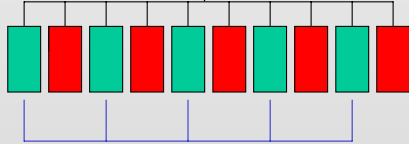
5th idea: The Interlacing of the different Bands

2 voices - equal in pitch & speed

Sharpening of consonants

Sharpening of consonants

English
German
Italian



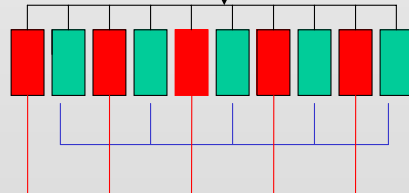
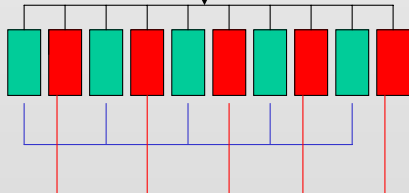
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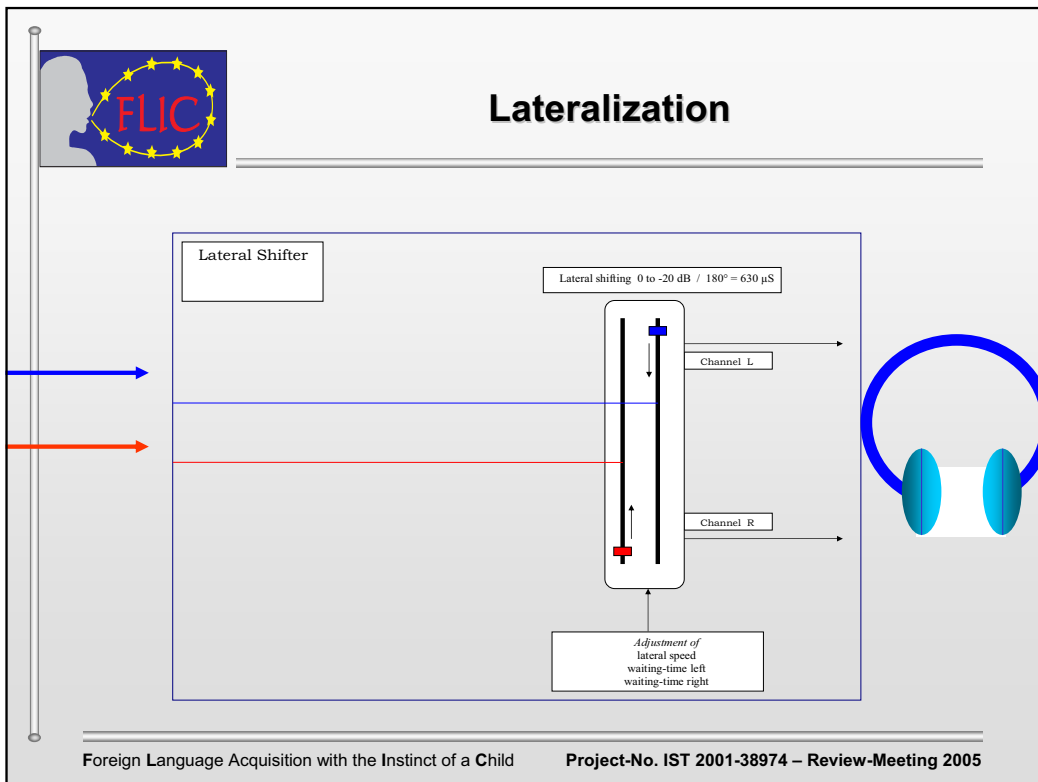
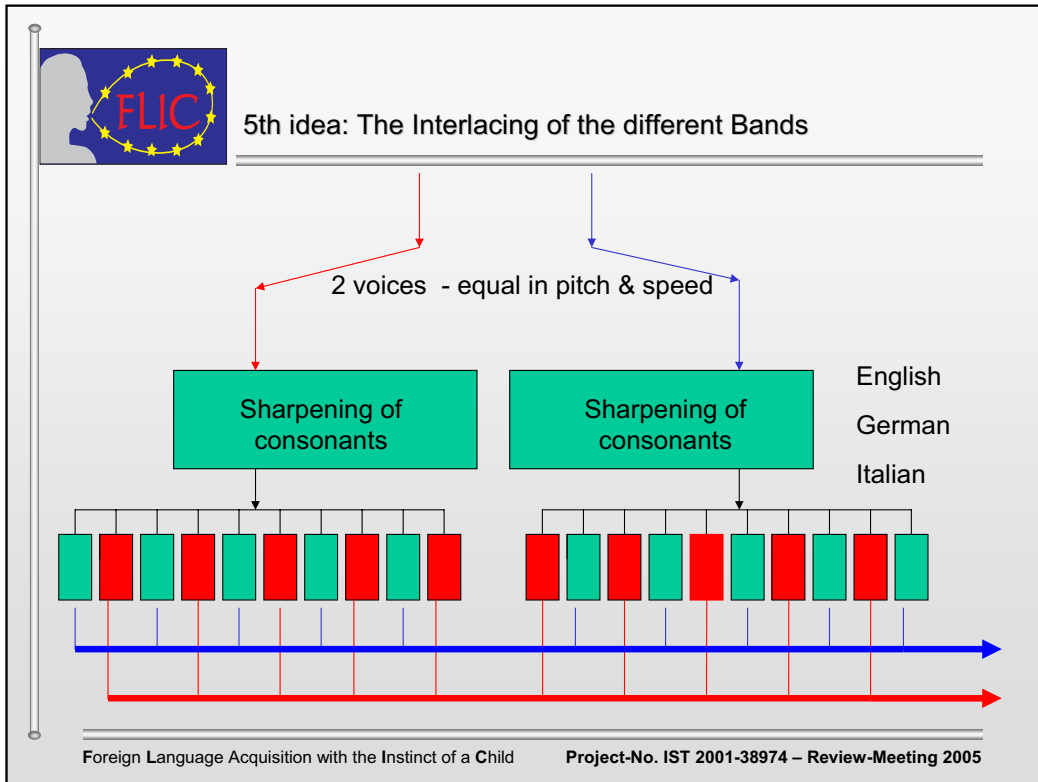
2 voices - equal in pitch & speed

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Sharpening of consonants

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Perspective / Evaluation

- The Flic method is being evaluated in a comparative multi-center study accompanied by the University of Sheffield
- Pretests indicate that particularly articulation, language perception and active language production are well increased by this method
- The findings from the evaluation phase will be published by mid 2006.