

Where does coding come from?

- ▶ Originally used to help children understand how the meaning of words are linked in sentences.
- ▶ This then helped them make correct sentences when talking.
- ▶ This meaning relationship between words dictates how the ideas are arranged in the sentence.

Where does coding come from?

- ▶ The **key** to this meaning relationship is the **verb/action** word.
- ▶ The 'grammar' of the sentence can then change [e.g. verb tense, pronouns] →
 BUT the overall core meaning content of the sentence does not change

Consider these two sentences

*The children **gave** sweets to the teacher*
*The children **have given** the teacher some sweets*

The grammar has changed but the meaning is the same. WHY?

- ▶ The **WHO**, **WHAT** and **WHO TO** of the sentence has not changed

Now consider these two sentences

The children gave sweets to the teacher
The teacher gave sweets to the children

The words and grammar are the same but the meaning is different. WHY?

- ▶ *The people doing the action has changed*
 i.e. the words that mean 'WHO' is doing the action

We do NOT code everything !

- ▶ Tool not a straightjacket !
- ▶ Be selective
- ▶ You are in control of what is coded
- ▶ Do not have to try and code what child says!
- ▶ Use it to scaffold what you need

We do NOT fully code everyone !

- ▶ Not all children need full coding support for all their sentences
- ▶ If the system is throughout the school, all children will pick up the basics, then you can choose who you use it with in more detail
- ▶ Can just do additional coding for the area that's relevant for that child / lesson
 eg. Using more cloud words [adjectives]

What happened in my NHS service?

We had 2 visual systems running

1. **Colourful Semantics** – Alison Bryan 1997
2. **Shape Coding** – Susan Ebbels [Moor House School] 2001

BUT both systems from same theoretical base

Integrating the 2 systems

- ▶ Started to integrate many years ago
- ▶ Initially using the non- argument structure shapes [clouds/diamonds] & verb tense arrows with the colour coding system
- ▶ Now have a fully integrated visual coding system in our service

Incorporating grammar shapes

- ▶ We have incorporated some shapes into Colourful Semantics to enable grammar to be coded when targeting these specifically

The  boy's  dog  is  hiding  in the  dark  forest

Theory !

- ▶ Bootstrapping
Chiat (2000)
- ▶ Functional [verb] argument structure
Garrett 1980, Black & Chiat (2003)
- |
- ▶ Non-argument structure
Pinker (1989), Black & Chiat (2003)

Bootstrapping – *CHIAT [2000]*

Syntactic Bootstrapping

- ▶ using argument (grammar) structure to work out a verb's focus

Semantic Bootstrapping

- ▶ using knowledge of verb meaning in an event to predict the structures it will or will not take

Phonological Bootstrapping

- ▶ using intonation/stress patterns to locate verbs/nouns

Argument structure

- ▶ All verbs have an argument structure
- ▶ Arguments are '*participants in the event*'
[*'who'* does '*what*' to '*whom*']
- ▶ Expressed as 'thematic roles'
- ▶ Obligatory [essential] or optional
- ▶ Non arguments

Garrett Model – updated 1990

- ▶ Created from normal ‘slips of the tongue’
i.e. on line processing errors
- ▶ Described 5 levels of representation
 1. Message level
 2. Functional level
 3. Positional level
 4. Phonetic level
 5. Motor level

Kids Slips Jeri J Jaeger 2005

- ▶ Looked at children with normally developing language
- ▶ Noted errors which were ‘slips of the tongue’ and not part of developing language skills → *‘Kids SOT’s are similar to adults in most ways’*
- ▶ An interactive version of the Garrett Model is appropriate to use when looking at children’s normal expressive language development

Functional Level of Representation

- ▶ Main Level addressed by Colourful Semantics
- ▶ Planning of **semantic–syntactic relationships** + **semantic content** via 3 processes

Processes [& potential problems]

- ▶ Lexical selection
- ▶ Creation of verb argument structure
- ▶ Assignment of the lexical items

“Who–does–what–to whom”

E.G. *“Ben put the apple in the bowl”*

- ▶ **Lexical items**
verb = *put* nouns = *apple, bowl*
- ▶ **Argument structure for ‘put’**
Verb: WHO, WHAT, WHERE
- ▶ **Assignment**
verb: WHO, WHAT, WHERE
[put]: [Ben] [apple] [bowl]

Errors

- Lexical selection error**
“I cut dinner my fork”
- Argument Structure error**
“Mum put table”
- Assignment error**
“Mouse chase cat”

The problem with verbs ! [Chiat 200]

- ▶ Rarely occur in isolation
- ▶ Less stressed than nouns in word stream
- ▶ Poor auditory processing affects **identification & storage of verb phonology**

The problem with verbs ! [Chiat 200]

- ▶ Events focusing on verb are brief/transient
- ▶ Poor event perception or joint attention affects **identification & storage of verb semantics**

Positional level

- ▶ Planning frame created + intonation
- ▶ **Word order** and **grammatical form** is planned & selected
- ▶ **Phonology** for lexical items and grammatical forms found and inserted

"Ben put the apple in the bowl"
"The apple was put there by Ben"
"He is going to put it in the bowl"

Selecting semantics for 'Non-argument' structures

- ▶ Non argument structures are those not directly related to the verb/verb semantics
- ▶ Still adds to semantic content of the sentence
e.g. adjectives/complements , adverbs of time & manner

"The boy is tall"
"Last week I went on holiday"

Scope of Colourful Semantics

- ▶ Supports understanding and creating verb argument structure
- ▶ Supports assigning the right words the right 'slots'
- ▶ Supports / develops use of 'syntactic bootstrapping' to get to meaning
- ▶ Supports poor 'phonological bootstrapping'

Scope of Colourful Semantics

Colourful Semantics supports normal language acquisition skills

Scope of Colourful Semantics

- ▶ Includes some 'non-argument' structure support
- ▶ Can add in other visual support systems for 'morphology' support :- verb tenses, plurals e.g. Shape Coding lines and arrows

Colour coding

- ▶ Is it new?
- ▶ Language through reading
- ▶ Grammatical structure [*surface structure*]
- ▼
- Semantic-syntactic relationships [*deep structure*]

Gordon is drawing a picture in his book
 ▼
 Gordon is drawing a picture in his book

QUESTION WORDS ARE THE KEY TO CODING

HOW DO WE CODE?

- By linking each argument/non argument with
- ▶ A **colour/shape**
 - ▶ A spoken & signed **question** word

For simple sentences →
 Associating a target sentence structure with the resulting colour sequence.

Colourful Semantics and Shape Coding :- argument structure

Question Word	Colour Coding	Shape Coding
(What) Doing ?	yellow	
Who ?	orange	
What ?	green	
Where ?	blue	
To Who(m) ?	pink	

But what about the rest of the sentence?

- ▶ Non- Argument Structure
- ▶ i.e. NOT related to the semantics of the verb

'Non- argument' question words

- ▶ **'What look like'** – gives descriptive information [e.g. conceptual language of size & colour]
- ▶ **'What feel like'** – gives descriptive information using conceptual language related to texture, solidity etc
- ▶ **'How feel'** – gives information about emotions