



How to Chat with an Ape An Introduction to the Yerkish Language

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Special section on Ernst von Glasersfeld
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Messages

- WHAT - An ape can communicate syntactically complex relations
- WITH - Yerkish, an artificial language, has enabled that
- HOW - The Yerkish structures – *correlations* - match the ape's conceptual abilities

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Resources

- Bettoni M. (2007). The Yerkish Language - From Operational Methodology to Chimpanzee Communication. Festschrift in honor of Ernst von Glasersfeld. Constructivist Foundations, Vol. 2, number 2, 32-38. <http://www.univie.ac.at/constructivism/journal>
- Burrud, B. (1977). "The Amazing Apes", TV program, Lana communicates with researcher Tim Gill. View the movie at <http://www.greatapetrust.org/research/general/lana.php#>
- von Glasersfeld, E. (1977) The Yerkish Language and Its Automatic Parser. In: Rumbaugh, D.M. ed. (1977) Language Learning by a Chimpanzee: THE LANA PROJECT. New York: Academic Press, pp. 91-129.

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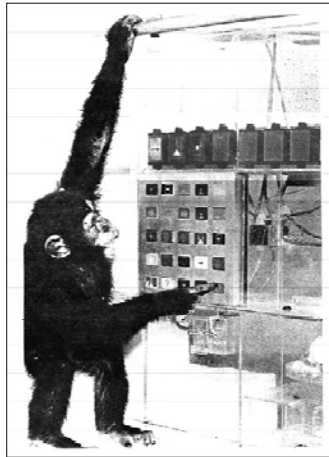
Agenda

1. Lana in action
 - Photos 1973 & 1974
 - Video 1977 (4 scenes)
2. Yerkish
 - Lexikon: Lexigrams
 - Grammar: Correlation
 - Correlators: binary functions
 - Correlation: binary tree
3. Operational Methodology:
 - Fundamental Principle: Attentional Operations
 - Attention: Essence of Correlation
 - Attention, Thought & Language – The Operational Approach

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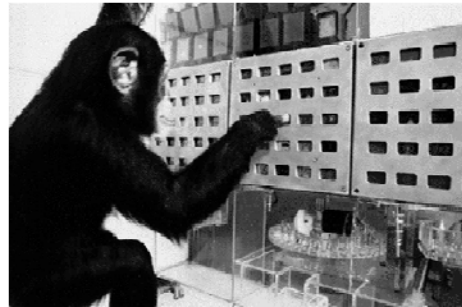


Lana in action 1973 & 1974 ...



... with a 25 keys lexigram board

... and with three 5x5 lexigram boards
Source: <http://www2.gsu.edu/~www/lrc>



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Lana in action 1977 ...





... with two 5 x 5 lexigram boards in 4 scenes from the TV program
"Amazing Apes" by Bill Burrud

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Lana in action 1977 – scene 1






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- The Yerkes Primate Research Center in Atlanta (Georgia, USA)
- Timothy Gill, researcher & Lana, 7 years old chimp
- Communication: electronic keyboard, master computer
- Lexigram board
- Computer monitors what Lana says, printed record

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Lana in action 1977 – scene 2




1



- The lexigram board can be operated even at night
- Lana can request drinks & snacks delivered by the machine
- Lana can select a movie or a piece of music

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4



Lana in action 1977 – scene 4



- A memorable occasion: Tim tries to trick Lana (June 11, 1975)
- Tim puts cabbage in the machine instead of chow
- Lana: “you put chow in machine?” – Tim: “Chow in machine”
- Lana: “Chow in machine?” – Tim: “Yes”
- Lana: “No chow in machine” – Tim: “What in machine?” 2
- Lana: “Cabbage in machine” – Tim: “Yes, cabbage in machine”
- Lana: “**You move cabbage out of machine?**” – Tim: “Yes”



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Lana in action 1977 – scene 5



- Tim and Lana share a deep bond of affection
- Lana types at the keyboard “Please Tim tickle Lana”
- Sentence appears at Tim’s terminal
- Tim tickles Lana and plays with her

2


4

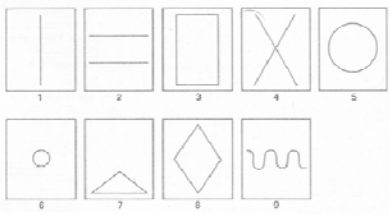


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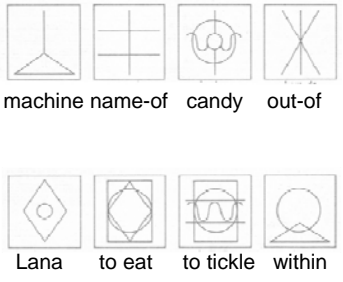


Lexicon of Yerkish: Lexigrams






9 DESIGN ELEMENTS

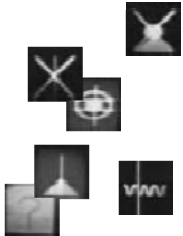


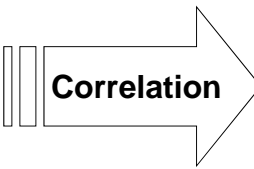
LEXIGRAMS


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Grammar of Yerkish: Correlation










? you move cabbage out of machine

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Correlators: binary functions (a)



Example: Correlator number 02 (von Glasersfeld, E., 1977, p. 106)


C 02



Autonomous agent (LH)




Transferring activity (RH)

C 02




<question> you move cabbage out of machine

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Correlators: binary functions (b)



Example: Correlator number 14 (von Glasersfeld, E., 1977, p. 108)



C 14



Transferring activity (LH)



Item that can change place (RH)

C 14





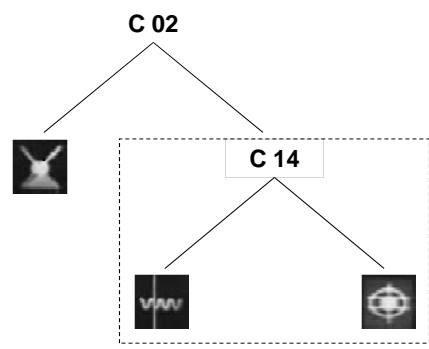
<question> you move cabbage out of machine


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Correlation: binary tree (A)


C 02





<question> you move cabbage out of machine

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Correlators: binary functions (c)


Example: Correlator number 22 (von Glasersfeld, E., 1977, p. 109)


C 22

Direction of movement (LH)


Target place (RH)


C 22





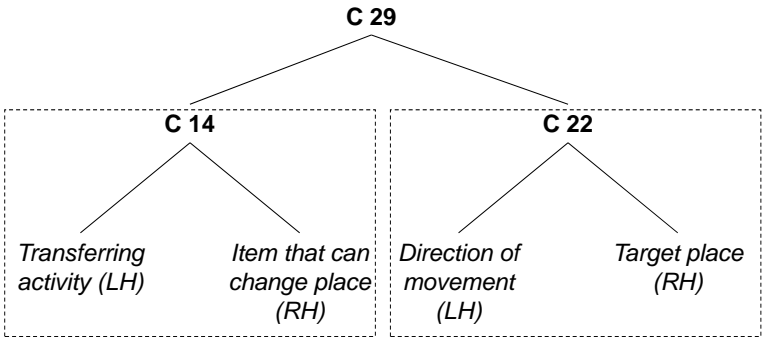
<question> you move cabbage out of machine

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Correlators: binary functions (d)

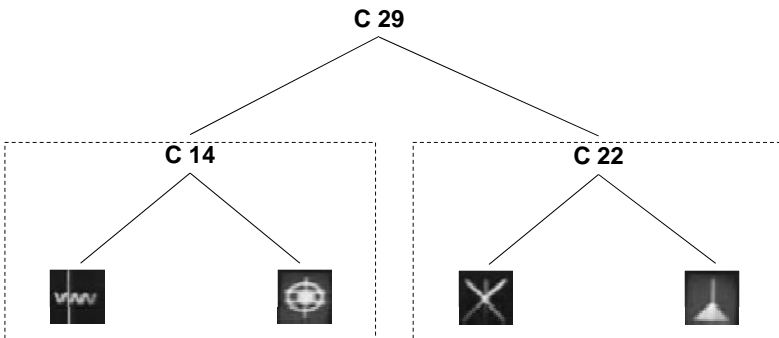
Example: Correlator number 29 (von Glasersfeld, E., 1977, p. 106)

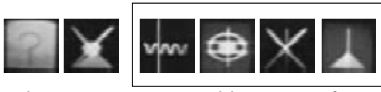


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Correlation: binary tree (B)



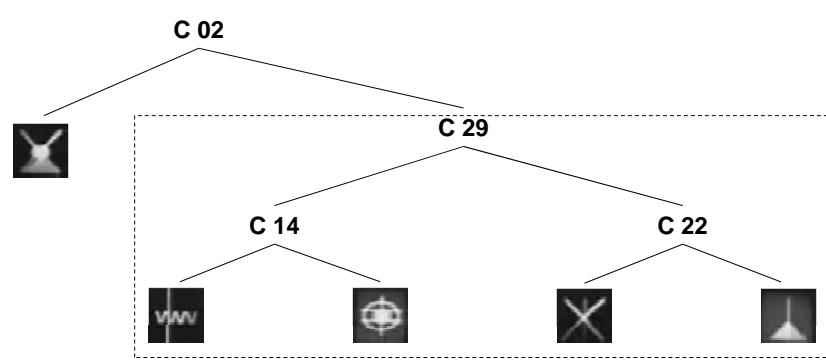


<question> you move cabbage out of machine

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Correlation: binary tree (C)





```

graph TD
    C02[C 02] --- I1[Icon 1]
    C02 --- C29[C 29]
    C29 --- C14[C 14]
    C29 --- C22[C 22]
    C14 --- I2[Icon 2]
    C14 --- I3[Icon 3]
    C22 --- I4[Icon 4]
    C22 --- I5[Icon 5]
    
```




<question> you move cabbage out of machine

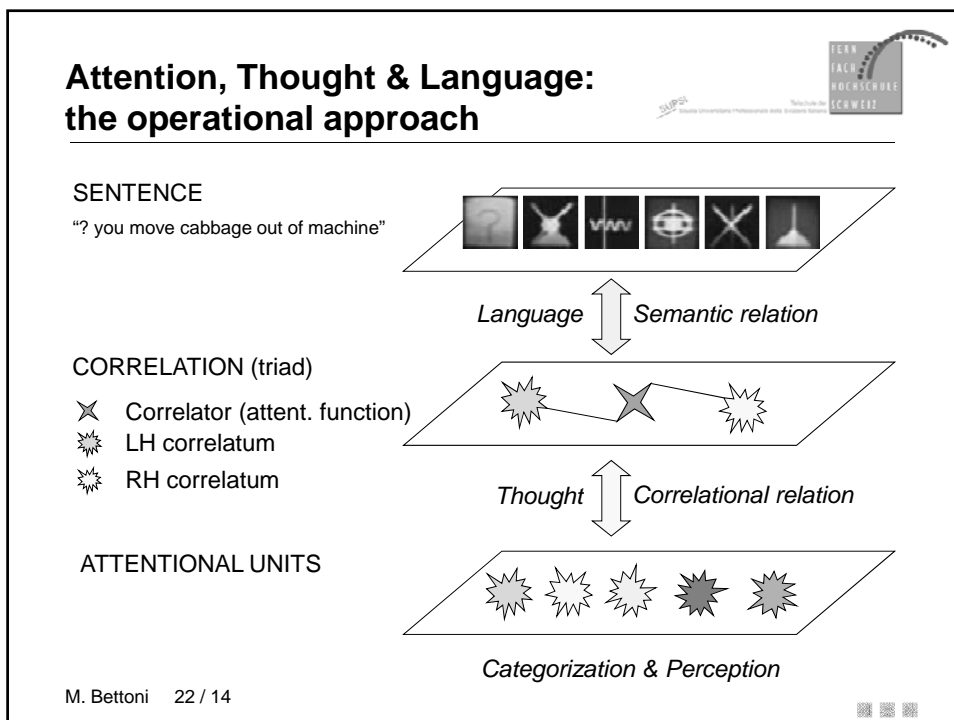
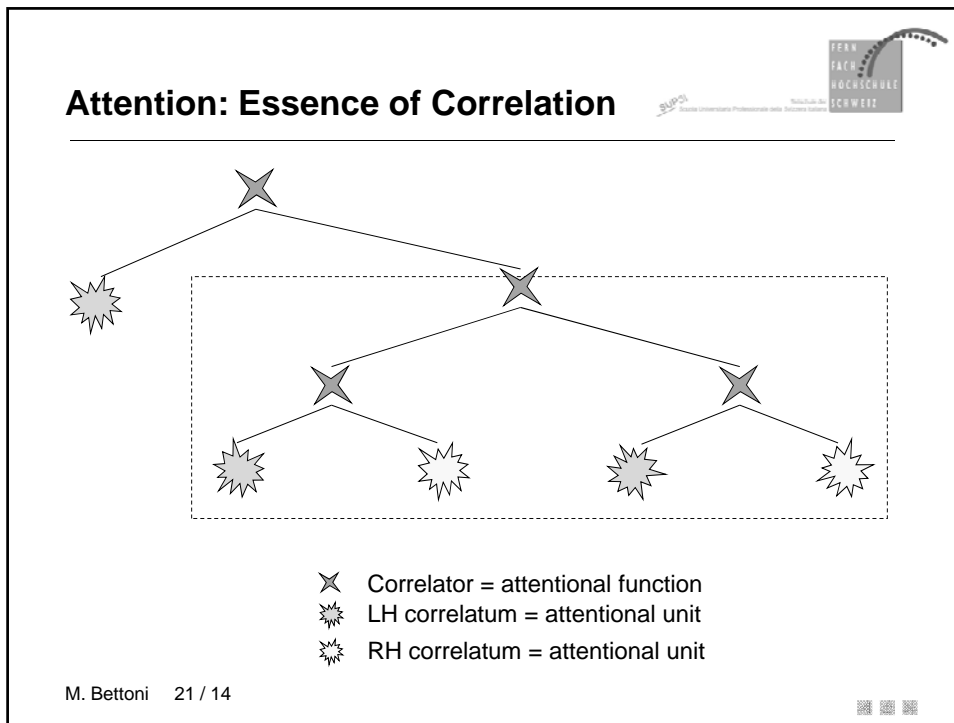
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Operational Methodology: Fundamental principle

Consider any mental content
 - Perceptions, Ideas, Concepts, Thoughts, Words, etc. -
 as a result of
attentional operations
(adapted from Silvio Ceccato)

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Findings & Implications

- Lana's success in language learning
- Success of Yerkish
- Foundation of Yerkish in Operational Methodology
- Correlation
 - constitutes thinking in a chimpanzee
- Attentional system
 - delivers units and functions of correlation
- LANA 2 research program
 - correlational structure of chimpanzee thinking
- Discontinuity between apes and human animals?

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Lana & Tim ...



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Final scene from the TV program "Amazing Apes" by Bill Burrud (1977) 4

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