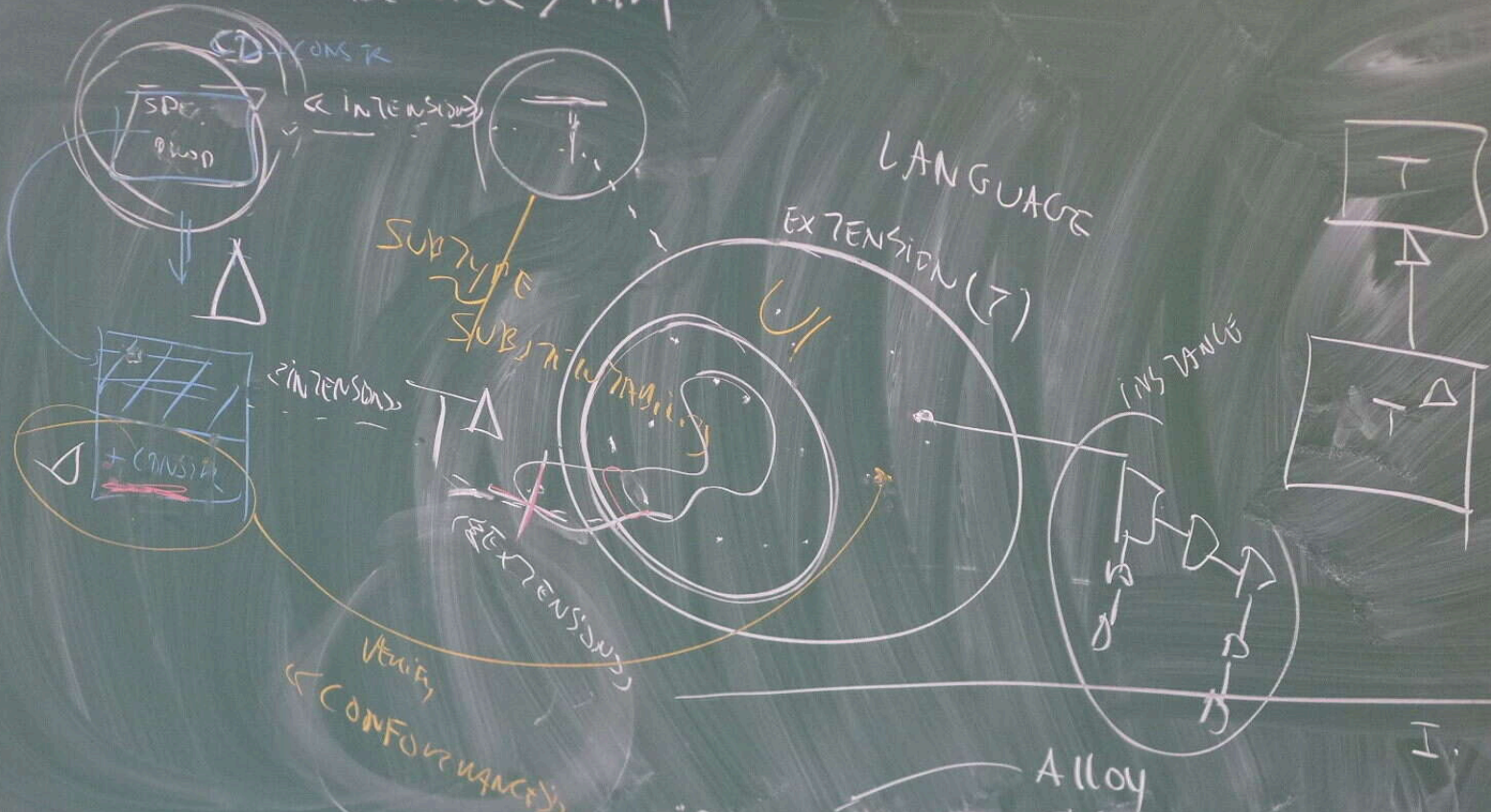


LANGUAGE SPEC / MM



(a|b)c*

REGEXP

← EXTENSIONS →

L

STRINGS

[a-zA-Z]*

ALPHANUM

REGEXP

← EXTENSIONS →

STR

← EXTENSIONS →

SUBTYPE
SUBSTRINGS

← EXTENSIONS →

{ "abc", "ab", ... }

"abc"

"abc"



ANCE CHECK

ENDATION

BOUNDED
EXPLANATION:



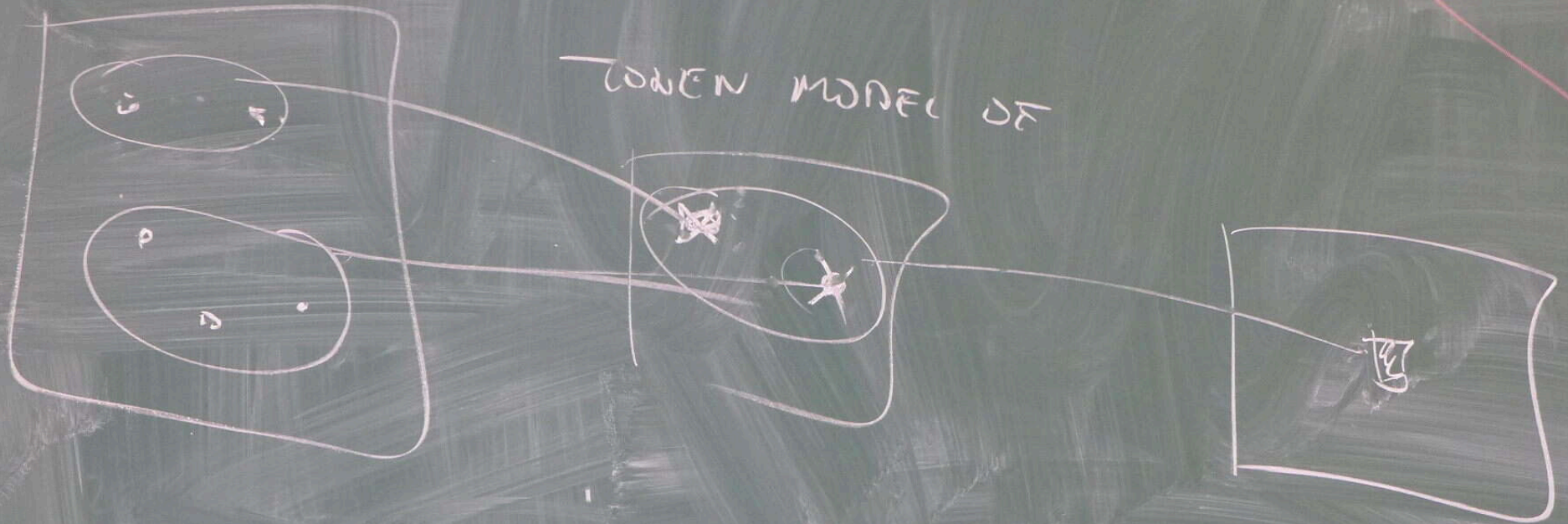
Alloy
CLACK FREE

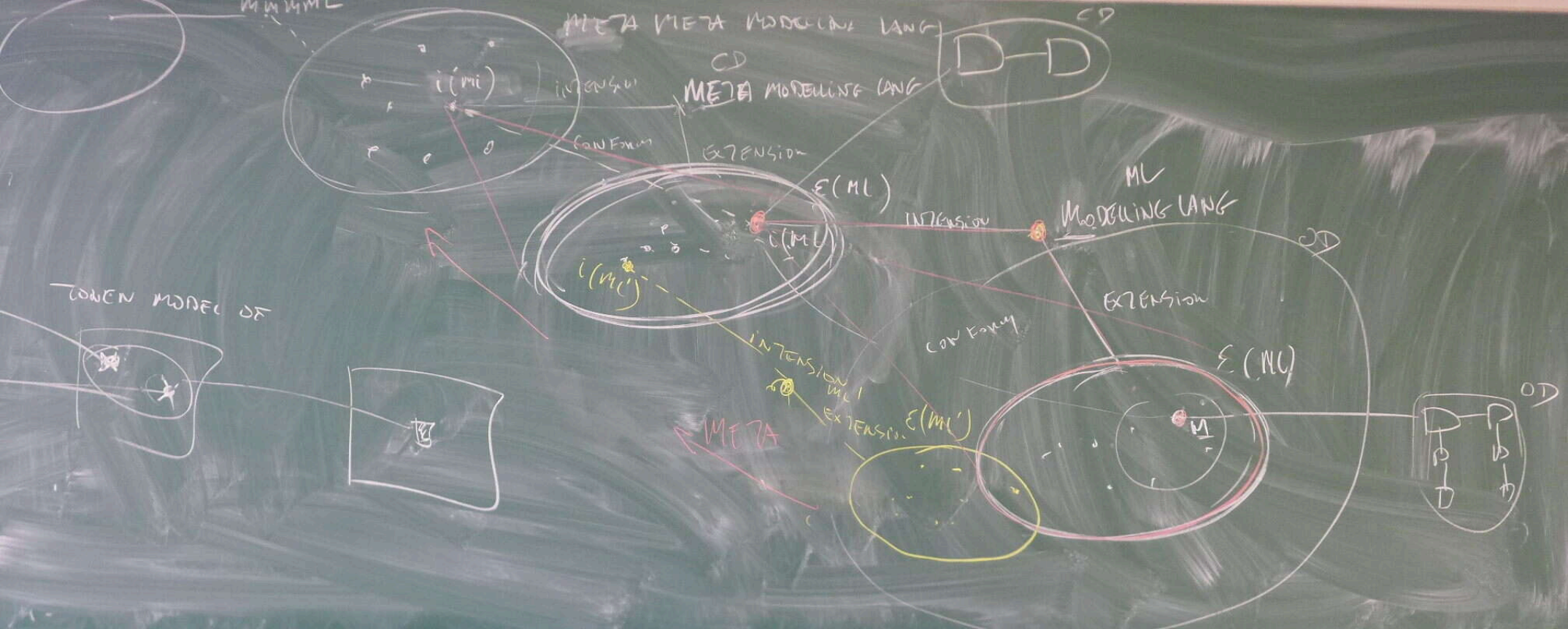
I.
II.

COMPLIANCE CHECK

MODEL GENERATION

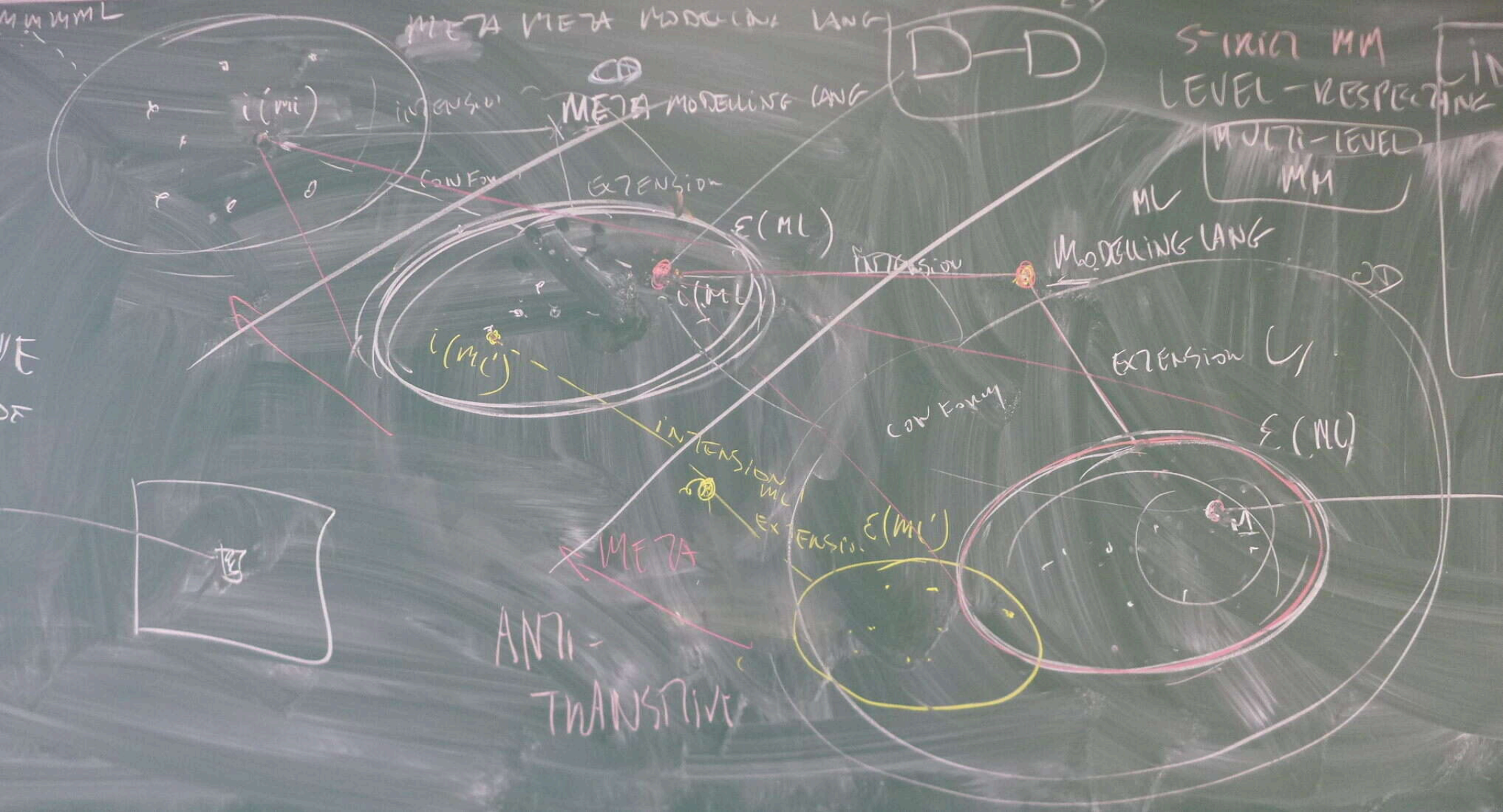
LOWEN MODEL OF





MCL

MEZA - CIRCULARIS



LINGUISTIC

think

MM



ONTOLOGICAL

MM

PROP

⊕ = FOR MM (NO METHODS)

MCL

MEZA - CIRCULAR LEVEL

PKR

imr

577

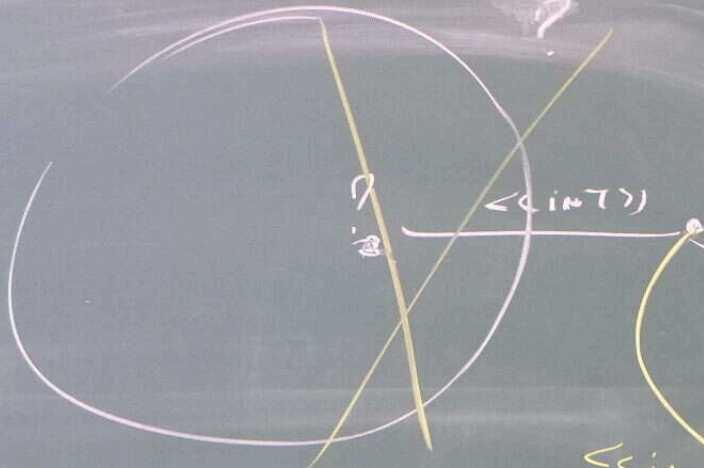
PKR

N

#7

PKR

PKR



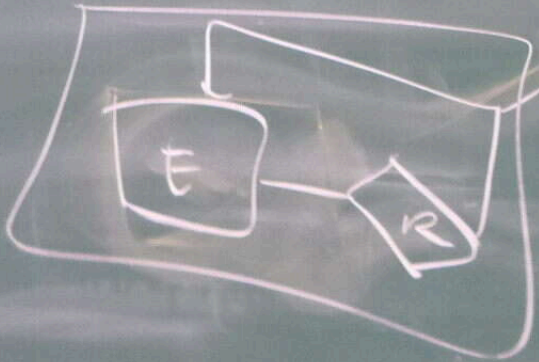
ERD

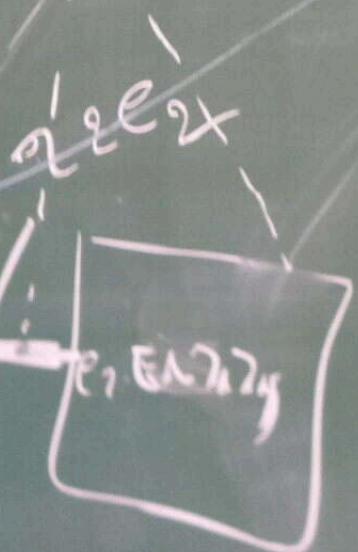
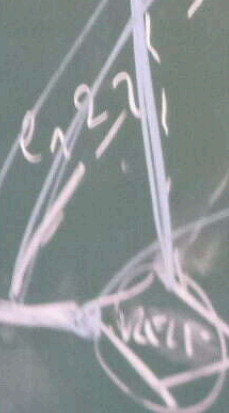
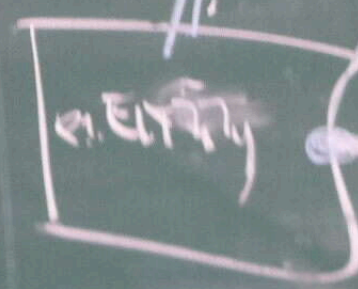
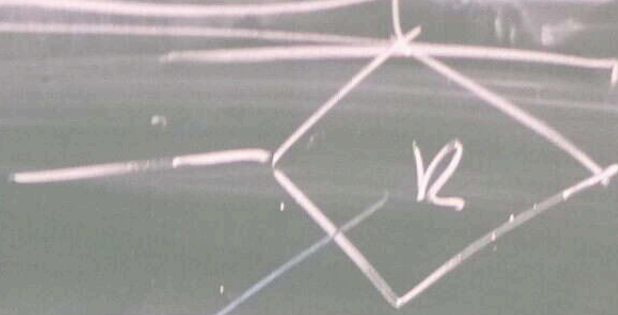
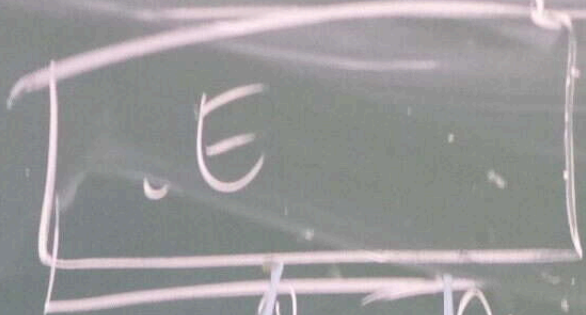
<int>

<EX 7>

<int>

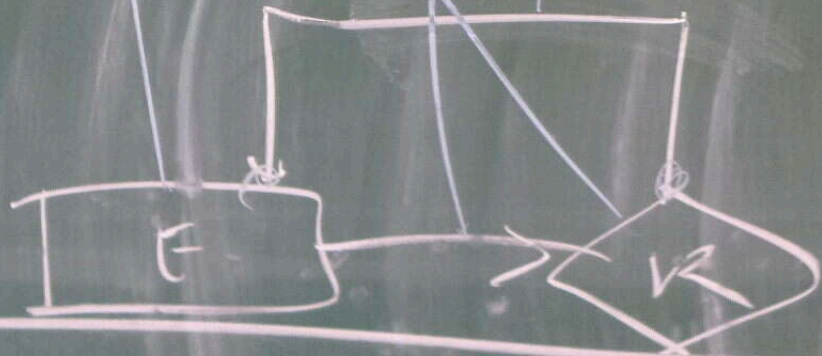
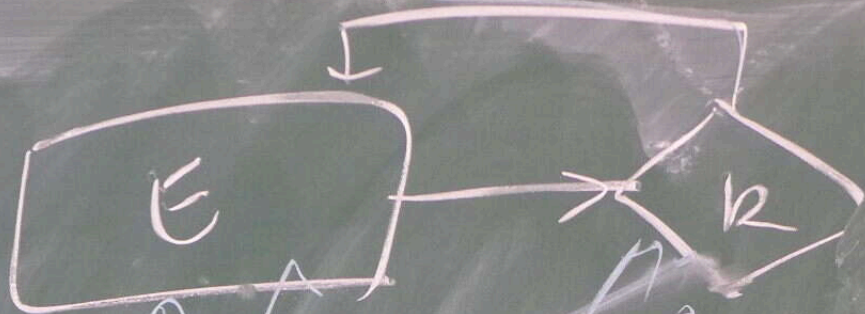
E(ERD)



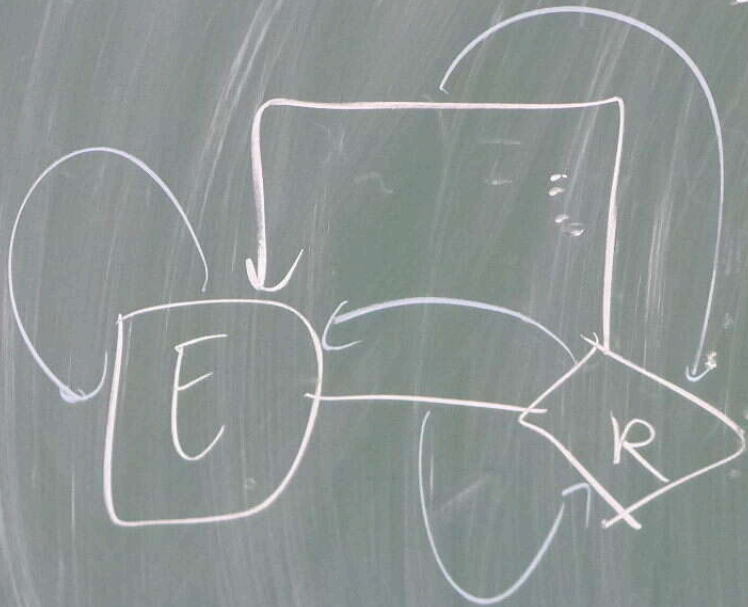


M

[



META - CIRCULARITY LEVEL



$[0, 10]$

~~$[9, 5]$~~

CO-VARIANT?

CO-VARIANT -
VARIANT?

A

$=$ B

~~$[3, 9]$~~

$[3, 4]$

$[-10, 100]$

~~$[1, 50]$~~

LINGUISTIC

THINK

MM



ONTOLOGICAL

MM

PROP

5-1000 MM

LEVEL - RESPECTING

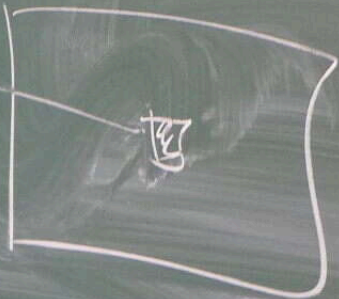
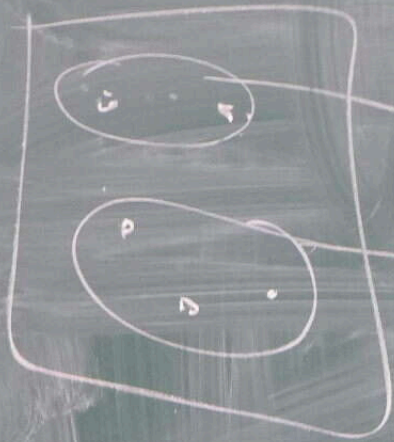
LINE

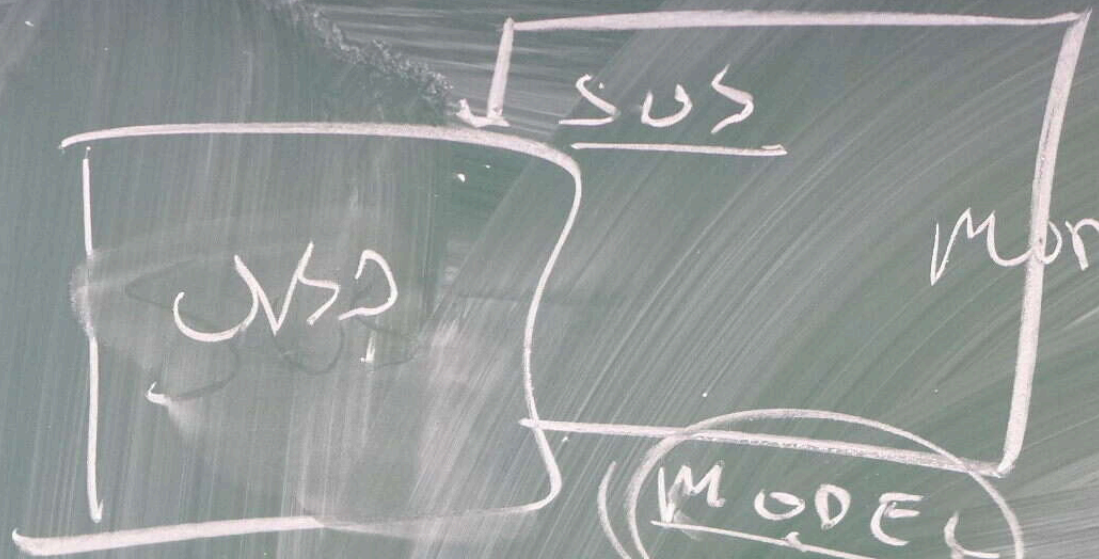
MULTI-LEVEL
MM

ML

TRANSITIVE

LOWEN MODEL OF



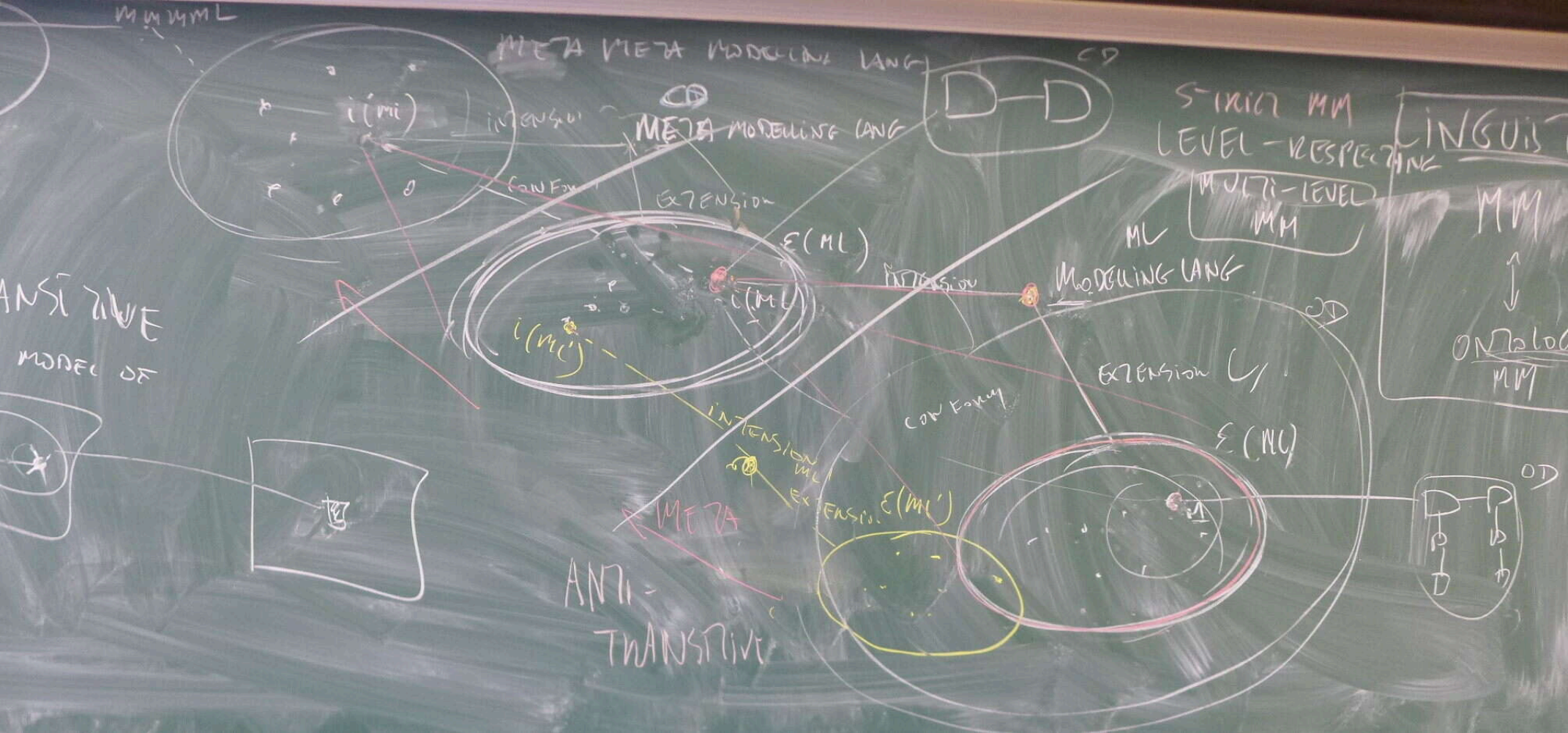


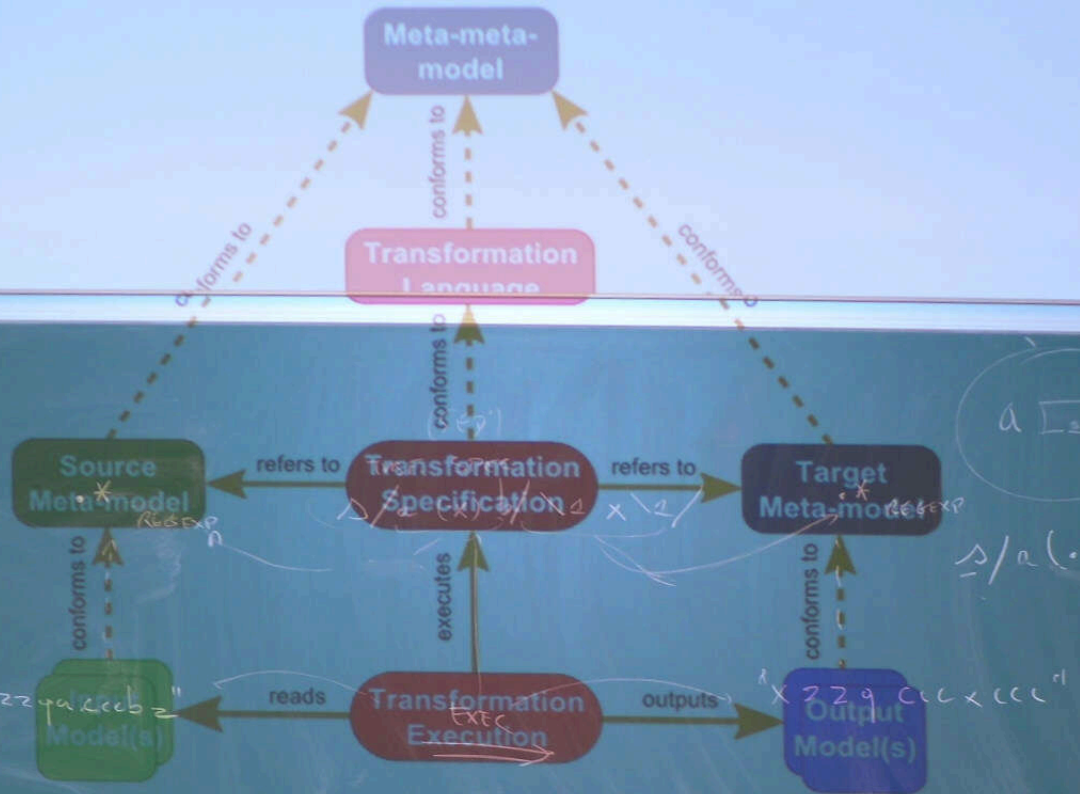
SUS

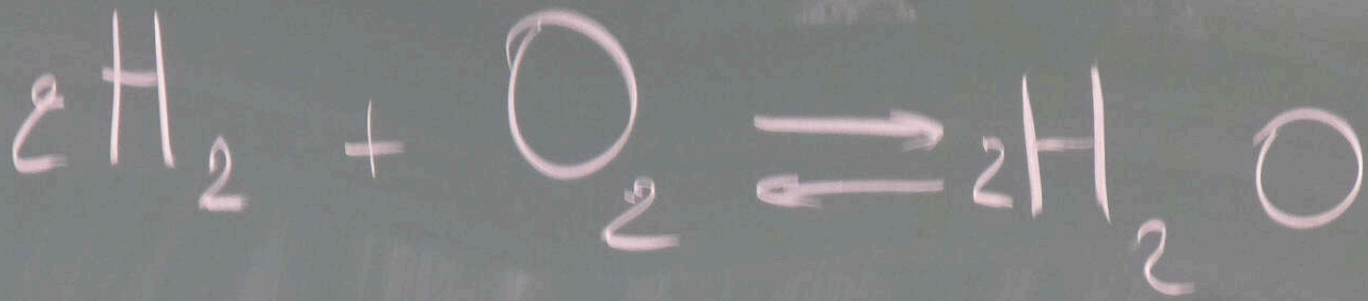
UFD

MODEL

MONOM...





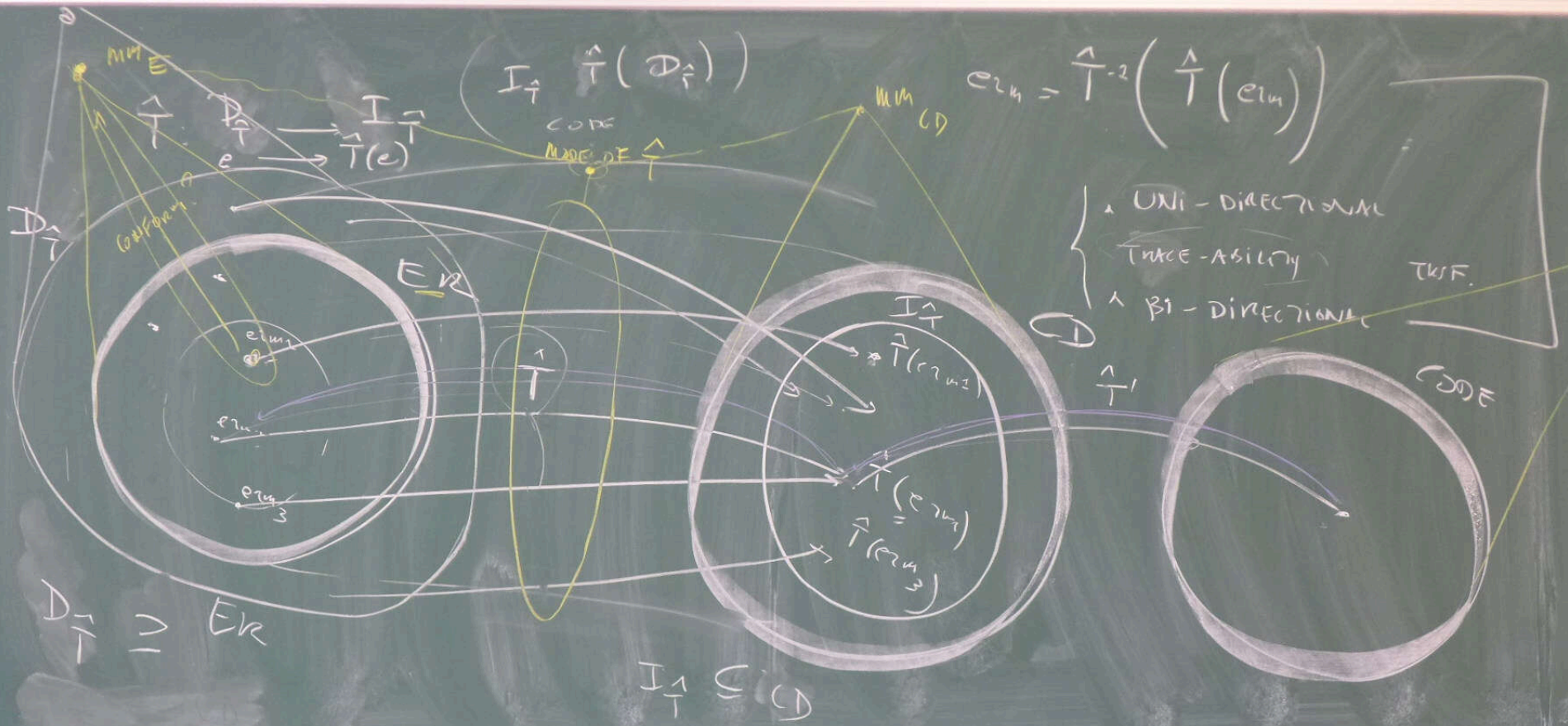


JEAN BÉZIVIN

(A I L)

"RIEN NE SE CRÉE,

TOUT SE TRANSFORME" LAVOISIER

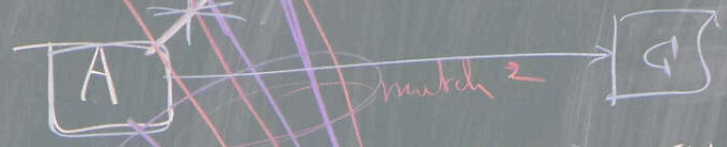


"HOST", "SOURCE", "INPUT" MODEL / GRAPH

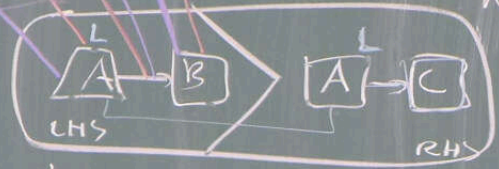


DANGLING EDGES

- KEEP CHANGE MM
- REMOVE



RULE



TRSF

MATCH PHASE

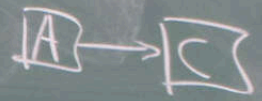
Match set = { match 1, match 2 }

REWRITE PHASE

match 1

KEEP A

AFTER TRSF



NON-DETERMINISM

- MULTIPLE MATCHES
→ CHOOSE

- MULTIPLE RULES
→ CHOOSE

→ PRIORITY?

→ SCHEDULE

abzzqax

ANCE MAP



(SEP)
 TASK SPEC
 $\Delta/a (.*) b / \backslash 2 x \backslash 2 /$

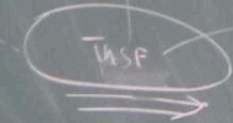
STRING UNO -



$\Delta/a (.*) b / \backslash 2 x \backslash 2 /$

TASK SPEC

STRING = `"abzzyczz"`



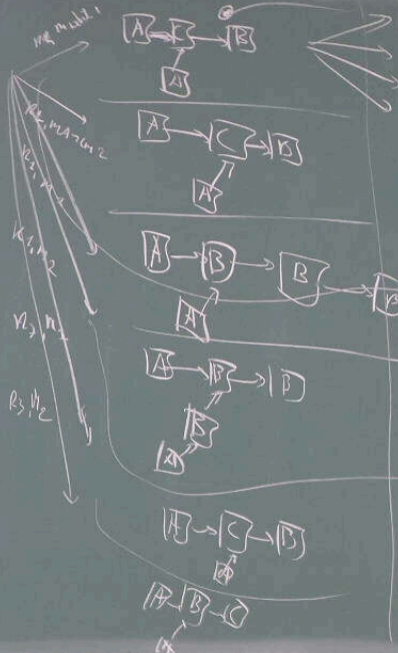
STRING = `"xzzyczz"`

STRING

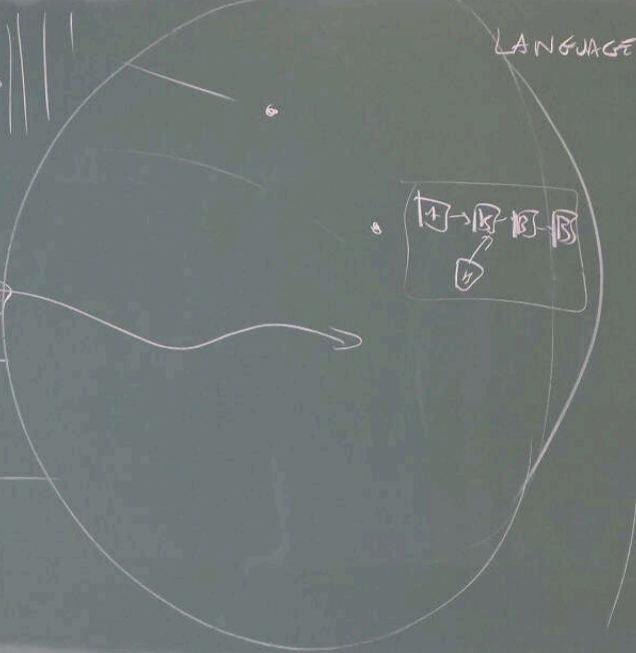




GRAPH
GRAMMAR

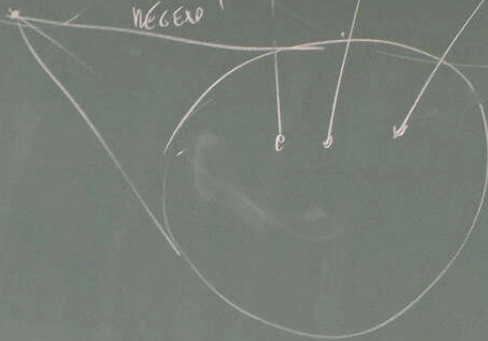


LANGUAGE



$\left[\left[\text{"a.xb"} \right] \right] = \left\{ \text{"ab"}, \text{"aab"}, \text{"axzb"}, \dots \right\}$

REGEXP



WORK

[]

MM

vs,

GRAPH GRAMMARS

GME

VANDERBILT

WEB GME

is it

GREAT

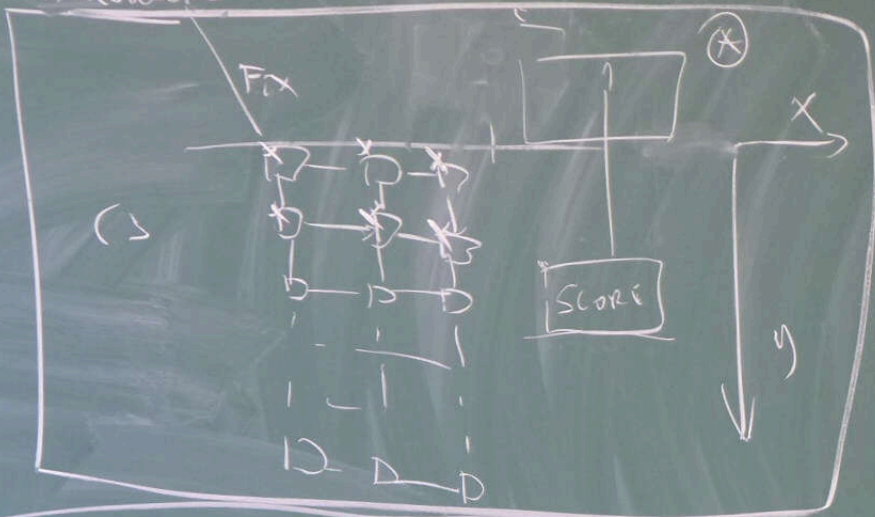
WORKFLOW

[YAWL]

WIL VAN DEN AARS?

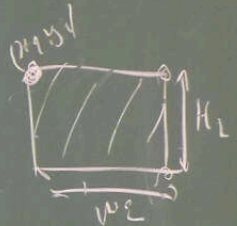
[BPMN]

BACKGROUND



QOCA

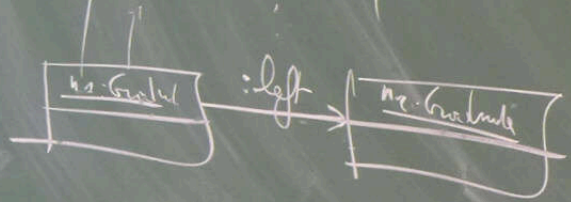
- DECLARATIVE + INTUITIVE
- NON DETERMINISTIC
- PERF SYMMETRY



$$x_1 + w_1 < x_2 + \epsilon$$

INCREMENTAL LAYOUT

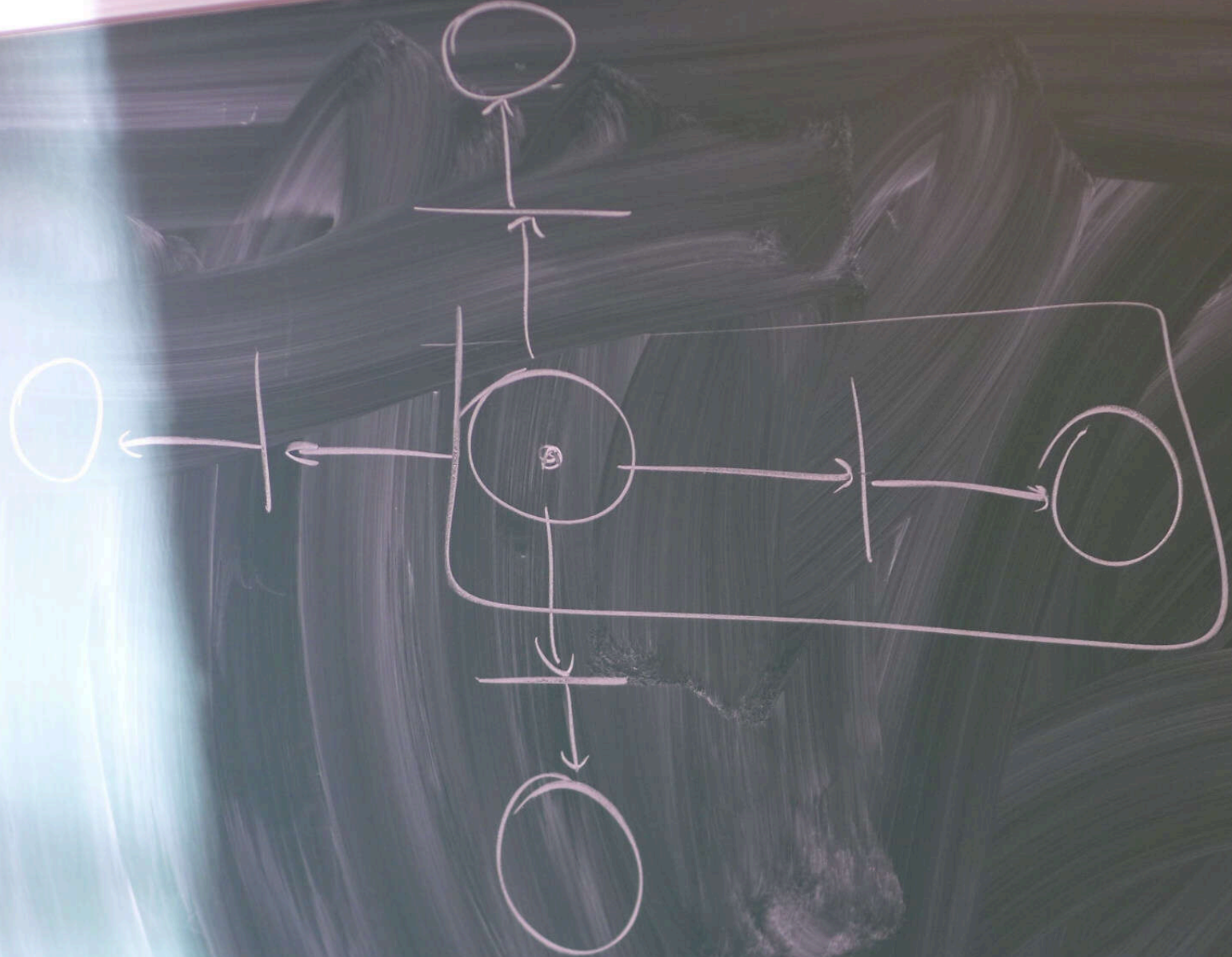
- COGNITIVE PERFORMANCE

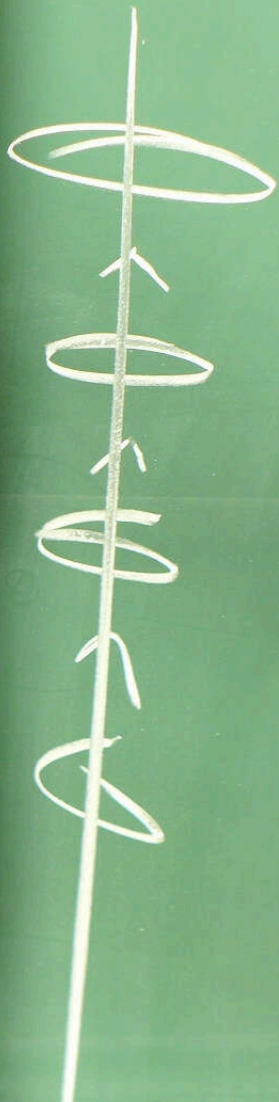
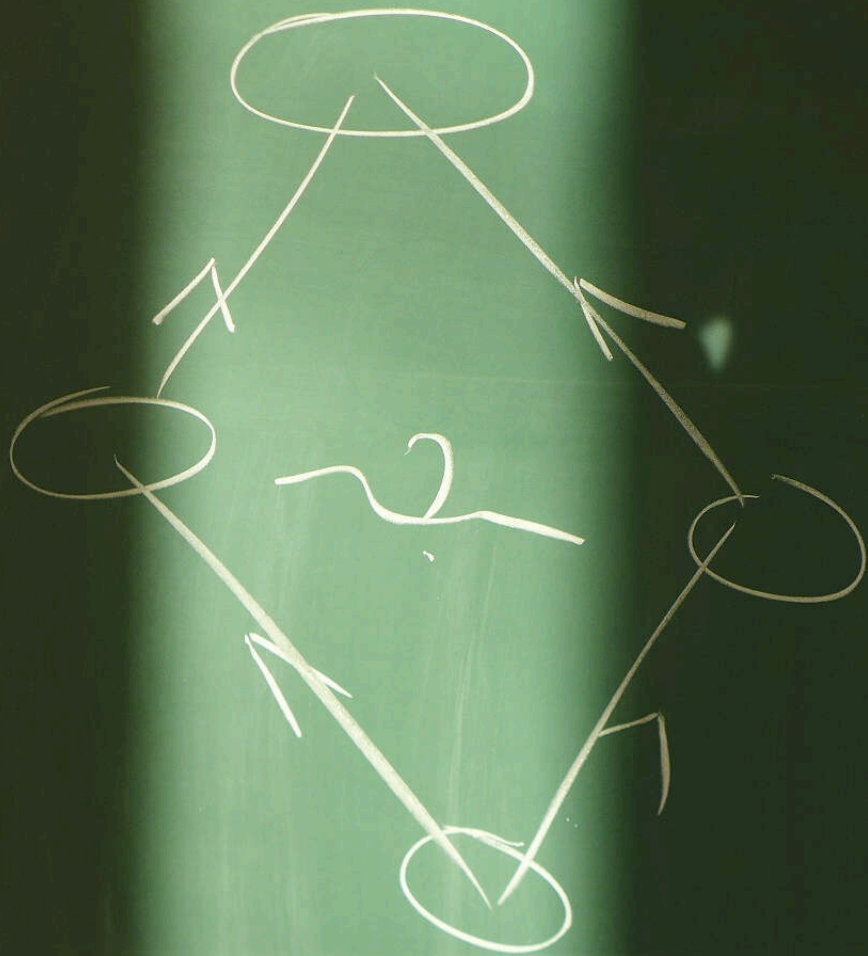


AS

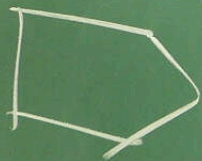
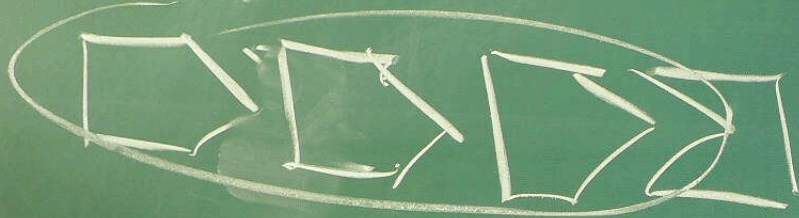
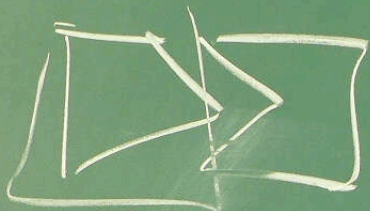
AS

CS



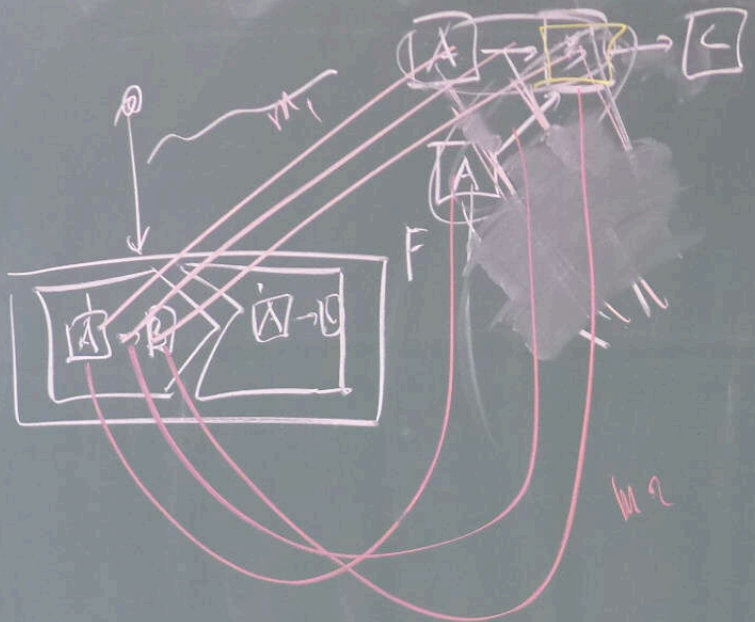


AMALGAMATED RULES



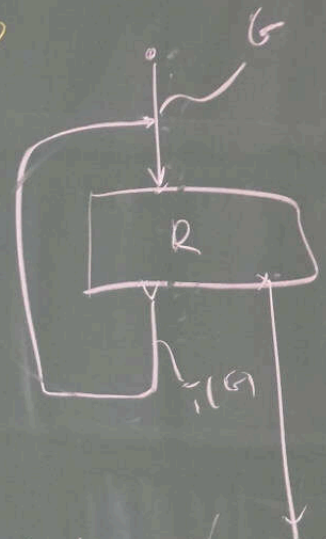
AREND KENSINK

"KEEPING THE GERANIUMS"



multiset = $\{m_1, m_2\}$

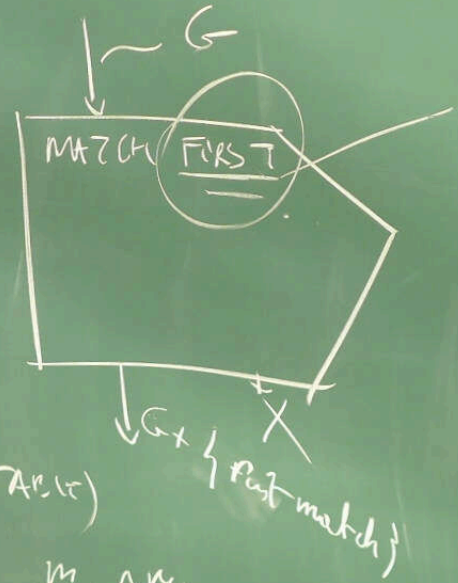
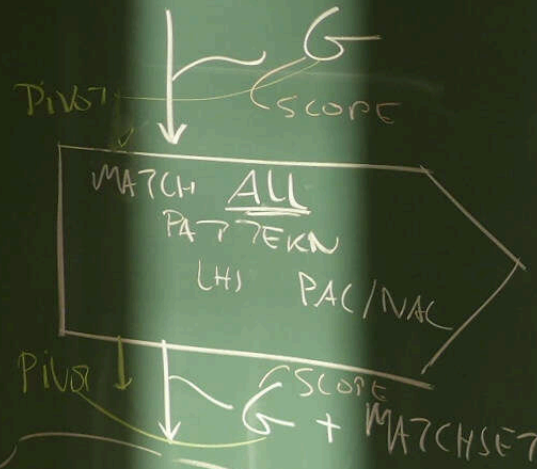
OVERLAP?



SCHEDULING LANG \rightarrow DATAFLOW

\rightarrow CODE. pyTbse

\leftrightarrow TRY ALL \rightarrow REACH GRAPH



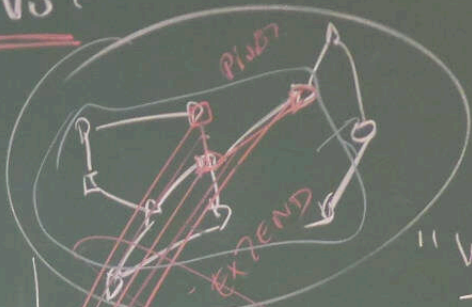
FAST

- IMPLEMENTATION INDEPENDENT
- x ALL
- + DATA STRUCT.

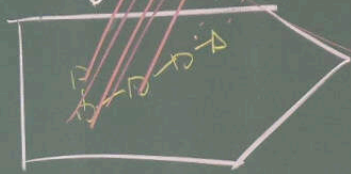
- SELECT ONE RANDOMLY (BUT REPEATABLE)
- TRY ALL IN //
- CHECK FOR OVERLAP BETWEEN m_i & m_j

PIVOT

PARTIAL BINDING



"WHERE TO START"



LOCALITY

SCOPE

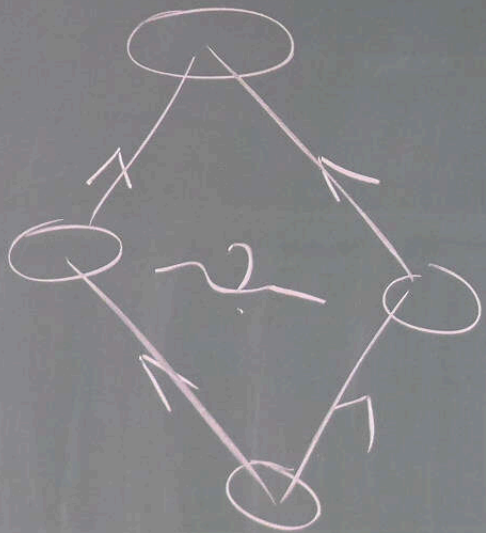
"WHERE TO STOP"

FUJABA

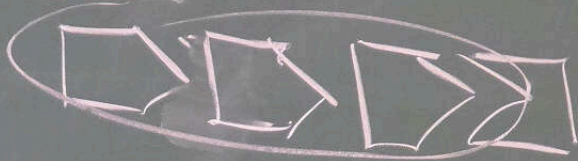
SCHEDULING LANG : ACTIVITY DIAGRAMS

IMPLEMENTATION
ENT
ILG
DATA STRUCT.



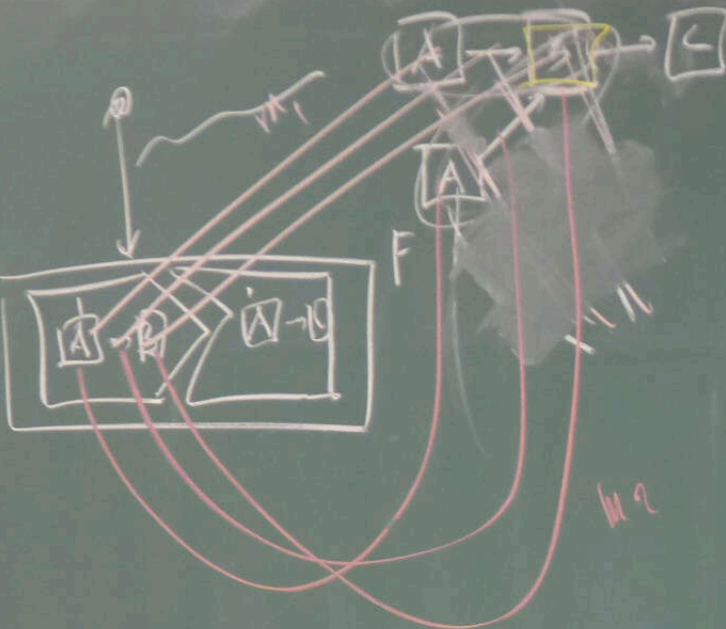


AMALGAMATED RULES



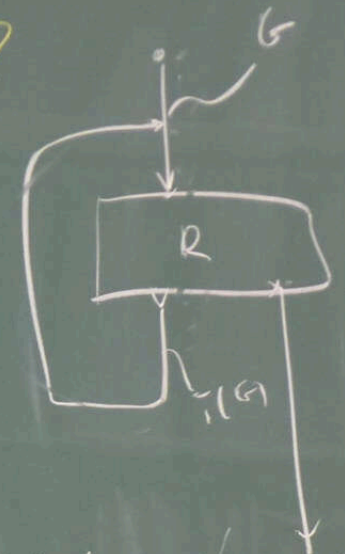
AREND KENSINK

"KEEPING THE GERANIUMS"



multiset = $\{m_1, m_2\}$

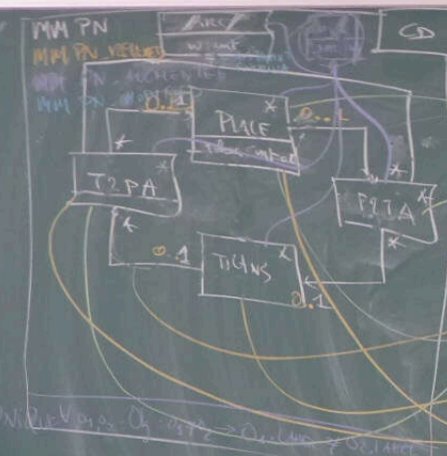
OVERLAP?



SCHEDULING LANG \rightarrow DATAFLOW

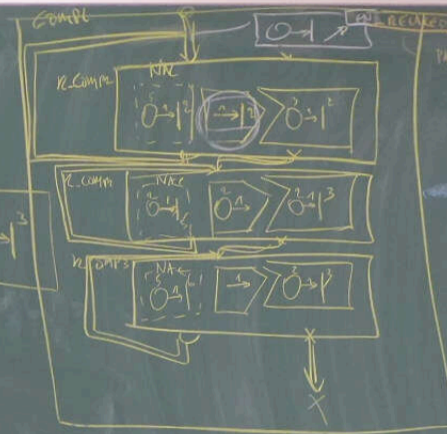
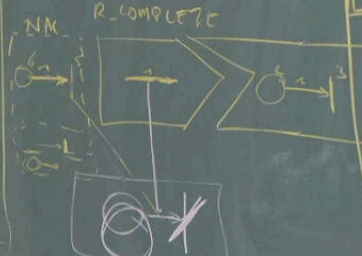
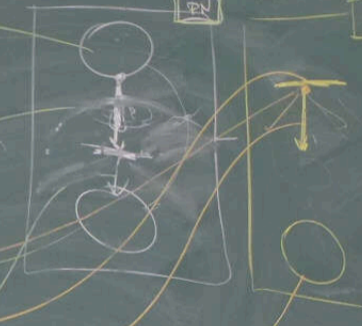
\rightarrow CODE. pyTone

\leftrightarrow TRY ALL \rightarrow REACHING GRAPH



TRAM. FICTION

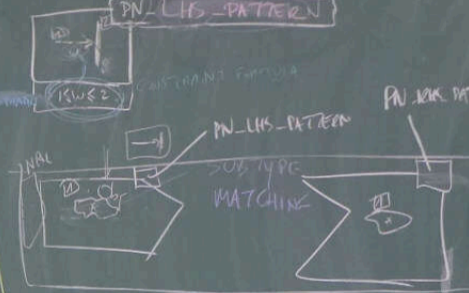
PN-RELAXED



PARTIAL

REAX AUGMENT MODIF-1

PN-LHS-PATTERN



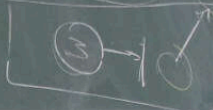
↑ SYNTAX
↓ SEMANTICS

UNIQUE VAR: $O_1, O_2, O_3, \dots, O_n$ USE $O_1, O_2, O_3, \dots, O_n$

$L \dots R$ $L \leq H \leq R$
 $\{L, H, R\}$

$0 \dots 1 = \{\emptyset, 1\}$
 $2 \dots * = \{1, 2, 3, \dots\}$

$0 \dots * = \{0, 1, \dots\}$
 $*$

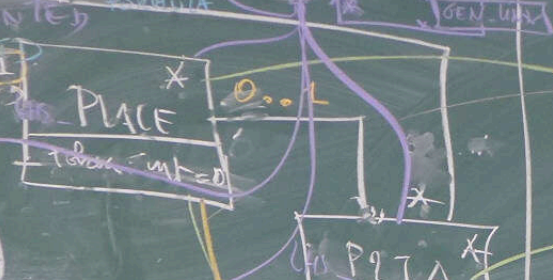
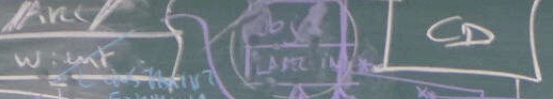


MM PN

MM PN_RELAXED

MM PN AUGMENTED

MM PN



RAMIFICATION

PN

PN_RELAXED

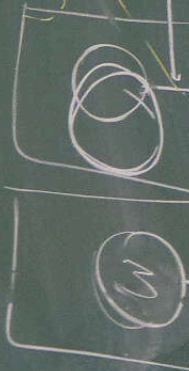


UNIQUE: $\forall o_1, o_2 \cdot o_1 + o_2 \rightarrow o_1 \cdot \text{label} \neq o_2 \cdot \text{label}$

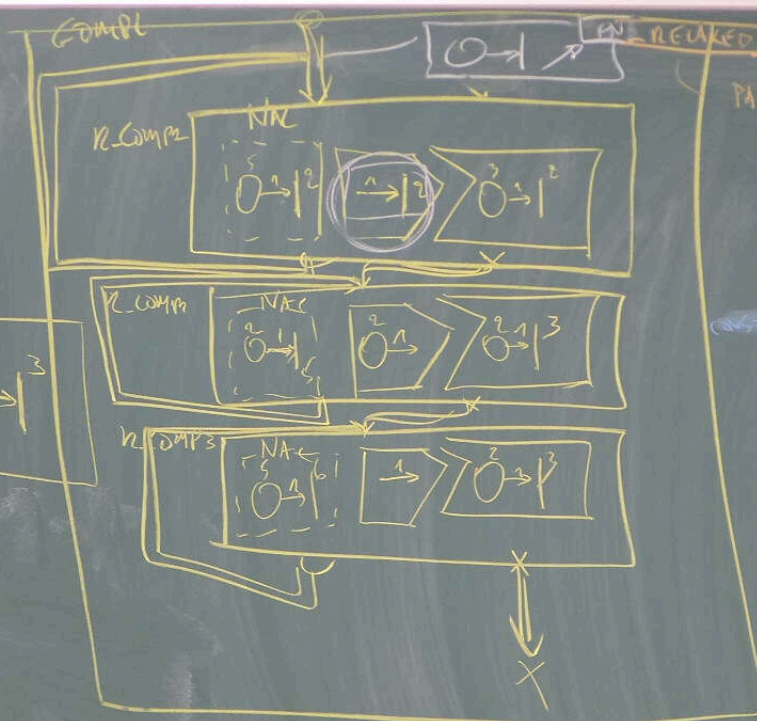
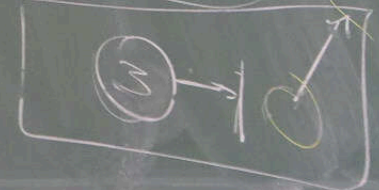
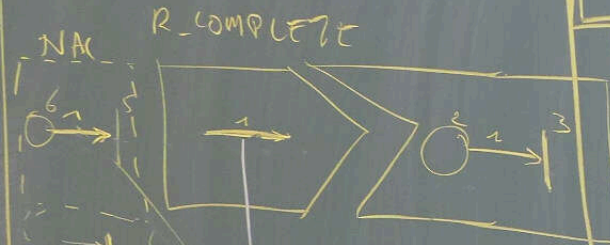
$L \dots R \quad L \leq \# \leq R$
 $\{L, L+1, \dots, R\}$

$0..1 = \{ \emptyset, 1 \}$
 $2..* = \{ 1, 2, 3, \dots \}$

$0..* = \{ 0, 1, \dots \}$
 $*$



N-RELAXED



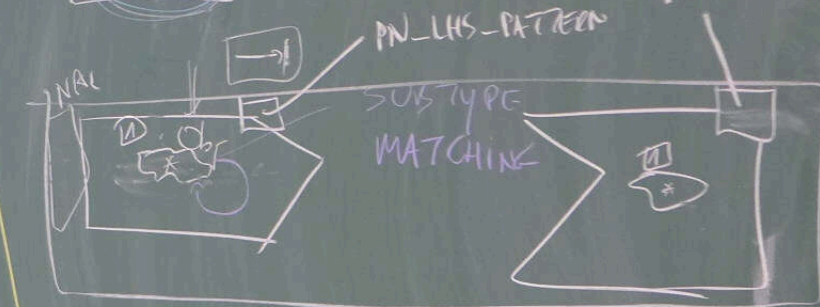
PARTIAL

RELAX
AUGMENT
MODIFY

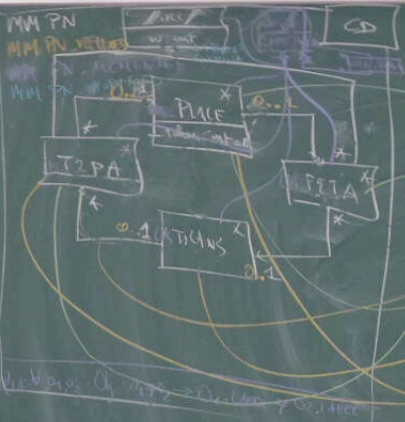
PN-LHS-PATTERN



CONSTRAINT FORMULA

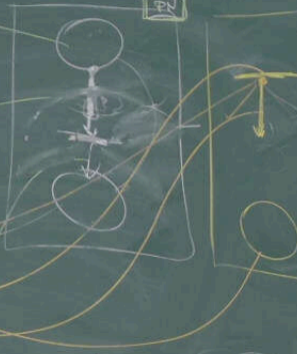


↑ SYNTAX
↓ SEMANTICS

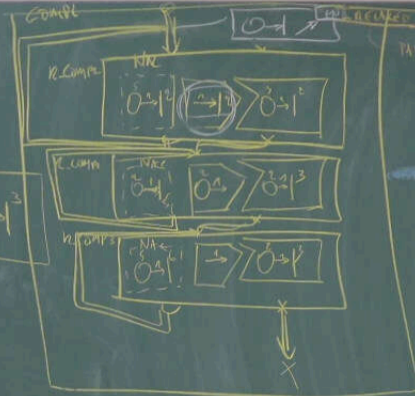
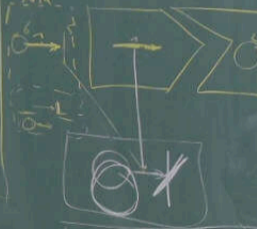


RAMIFICATION

PN-RELAXED



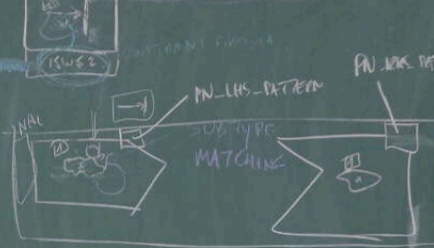
R_COMPLETE



PARTIAL

REMAX
AUGMENT
MODIFY

PN-LHS-PATTERN



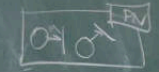
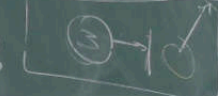
↑ SYNTAX
↓ SEMANTICS

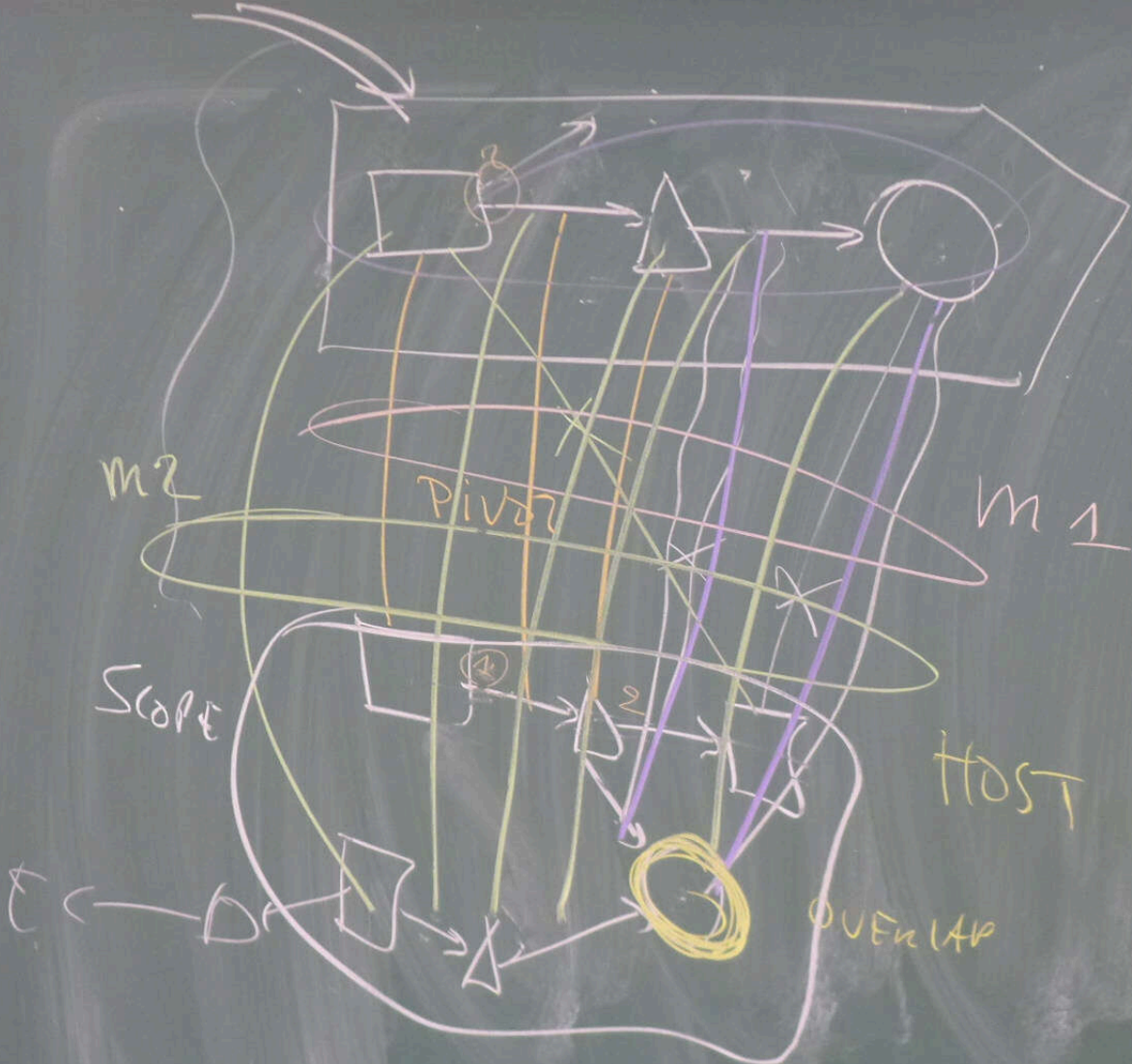
UNIQUE VALUES OF $0..1 \rightarrow 0..x$ & $0..x$

$L..R$ $L \leq H \leq R$
(L, H, R, K)

$0..1 = \{0, 1\}$
 $2..x = \{1, 2, 3, \dots\}$

$0..x = \{0, 1, \dots\}$
*





CARDINALITY
CONSTRAINTS
→ HEURISTIC