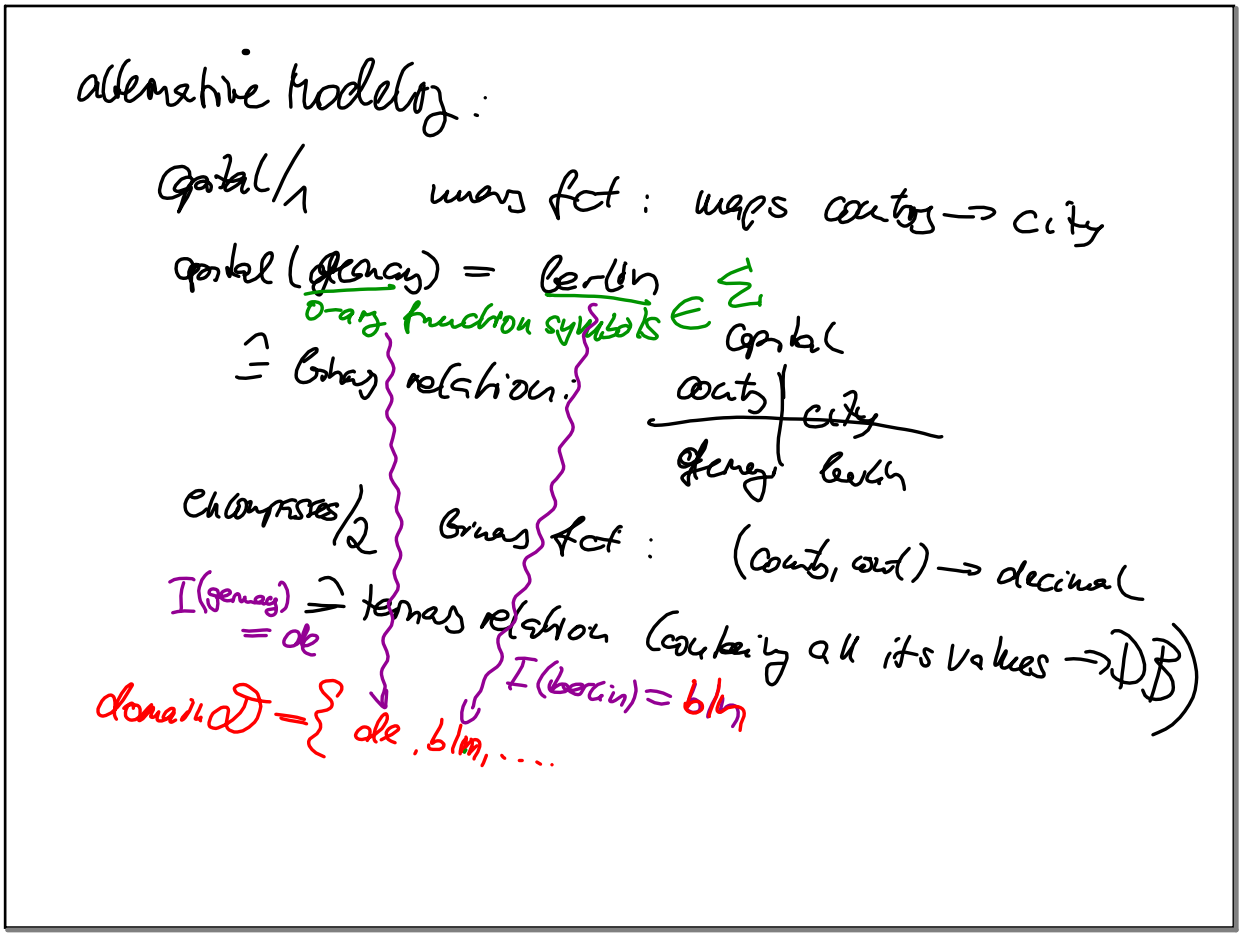
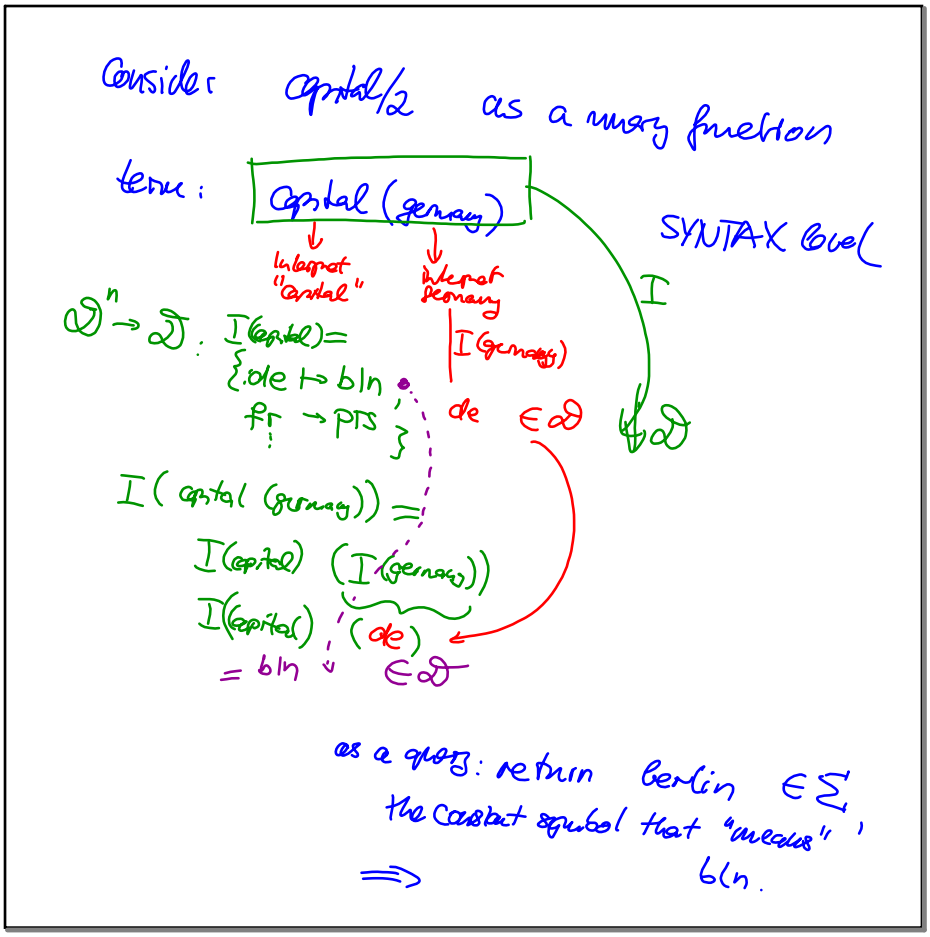

alternative modeling:
capital/1 unary fct: maps country → city
capital(germany) = berlin
unary function symbols ∈ Σ
≙ binary relation:
country | city
germany | berlin
citizenship/2 binary fct: (country, card) → decimal
I(germany) ≙ ternary relation containing all its values → DB
= de
I(berlin) = bln
domain ∂ = { de, bln, ... }


Consider capital/2 as a unary function
term: capital(germany)
SYNTAX level
I
interpret "capital"
interpret germany
∂ⁿ → ∂: I(capital) =
{ de ↦ bln
fr ↦ pts }
I(germany)
de ∈ ∂
I(capital(germany)) =
I(capital)(I(germany))
I(capital)(de)
= bln ∈ ∂
as a query: return berlin ∈ Σ,
the constant symbol that "means"
bln.
⟹

Formula:

φ = capital(germany) $\doteq$ berlin

equality on the syntax level

"built-in binary predicate"

is φ true or not?

$I(\varphi)$ = true/false?

$\hat{=}$ $\doteq$ (capital(germany), berlin) holds?

$\hat{=}$ (capital(germany), berlin) $\in I(\doteq)$

if

$I(\text{capital}(\text{germany})) = I(\text{berlin})$

same element of $\mathcal{O}$

previous slide

if

bln = bln

object same $\in \mathcal{O}$

which is true

free variables:

$I(\text{capital}(X))$

FOL: for evaluation: provide a variable binding for X

DD: give me the answers: all possible X.