

SE 670 (Farmer's puzzle)

- Planning problem  $\rightarrow$  states
- State space: - sequence of states  
- final state spec
- Problem - base situation  $\ell 2 - \ell 6$
- Spec of actions - transport (x)  $[\ell 7 - \ell 11]$   
- applicability  $[\ell 7-8]$  - every hour: farmer changes side  $[\ell 14 - \ell 15]$   
- effect  $[\ell 10, 11]$
- note:  $\ell 7-9$  together  
 $\ell 9$  constrains further the applicable alternatives from  $\ell 8$
- not allowed:  
 $\emptyset \{ \text{transport}(x, n) \} 1$  :- is(farmer, S1, N),  
is(x, S1, N)  
thing(n), x != farmer  
side(S1)  
state(N), not(husband(N))
- $\Rightarrow$  Frame axiom  
spec what is not influenced by two actions
- constraints  $[\ell 16 - \ell 17]$

SE 666: italian-english on hollogys

change line 4 into  $\emptyset \{ \dots \} 1$

$\Rightarrow$  2 stable models:  $\mathcal{I}_1$ : person(e) italian(e)  $\wedge$  bag(e)  
as before/expected  
 $\mathcal{I}_2$ : person(e) italian(e)  
as expected

both are stable models !?  $\uparrow$  "invariant" or "invariant"?

$T_{P_R}^w(\mathcal{I}) = \mathcal{I}$   
Negation as failure ?!  
 $\rightarrow$  quality of  $\mathcal{I}$ -expl.s as LP program P.R.

$\ell 4 \hat{=} 1 \{ \text{no-additional-qualifiers}^{\text{pr}}, \text{bag}^{\text{pr}}, \text{cat}^{\text{pr}}, \text{ever}^{\text{pr}} \} 1 :- \text{italian}^{\text{pr}}$   
intra-mediate

$\Rightarrow \mathcal{I}_e = \{ \text{italian}(e), \text{person}(e), \text{no-add-qual}(e) \}$

$\rightarrow$  XOR:

$\text{bag}(x) :- \text{it}(x), \neg \text{ell}(x), \neg \text{n.a.p}(x).$   
 $\text{ell}(x) :- \text{it}(x), \neg \text{bag}(x), \neg \text{n.a.p}(x).$   
 $\text{n.a.p}(x) :- \neg \text{it}(x), \neg \text{bag}(x), \neg \text{ell}(x).$

$\mathcal{I}_x = \left( \begin{array}{l} \{ \text{it}(e), \text{person}(e), \text{bag}(e) \} \\ \text{true} \end{array} \right) \left\{ \begin{array}{l} \text{ell}(e), \text{n.e.p}(e), \text{ever}(e) \\ \text{false} \end{array} \right\}$   
gabban(e), hoodlum(e)

$\rightarrow$  is stable

§ 672 .

shorter, but not allowed formulation of line 13

1 { {  $P(x, y, z) \mid \text{num}(z)$  } } 1 :- \omega(y), \text{row}(x).

"syntactical sugar"