Enhancing and Extending the Cardiff Model of SFL A Generation-Oriented View

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Handout: 1

Outline

1 Introduction

- **1.1** The Cardiff Grammar Generator (CGG)
- **1.2** CGG constitutive text samples: MicroE and MiniE
- **1.3** Location of the constitutive texts

2 Enhancements of CGG: Meaning onto form mappings

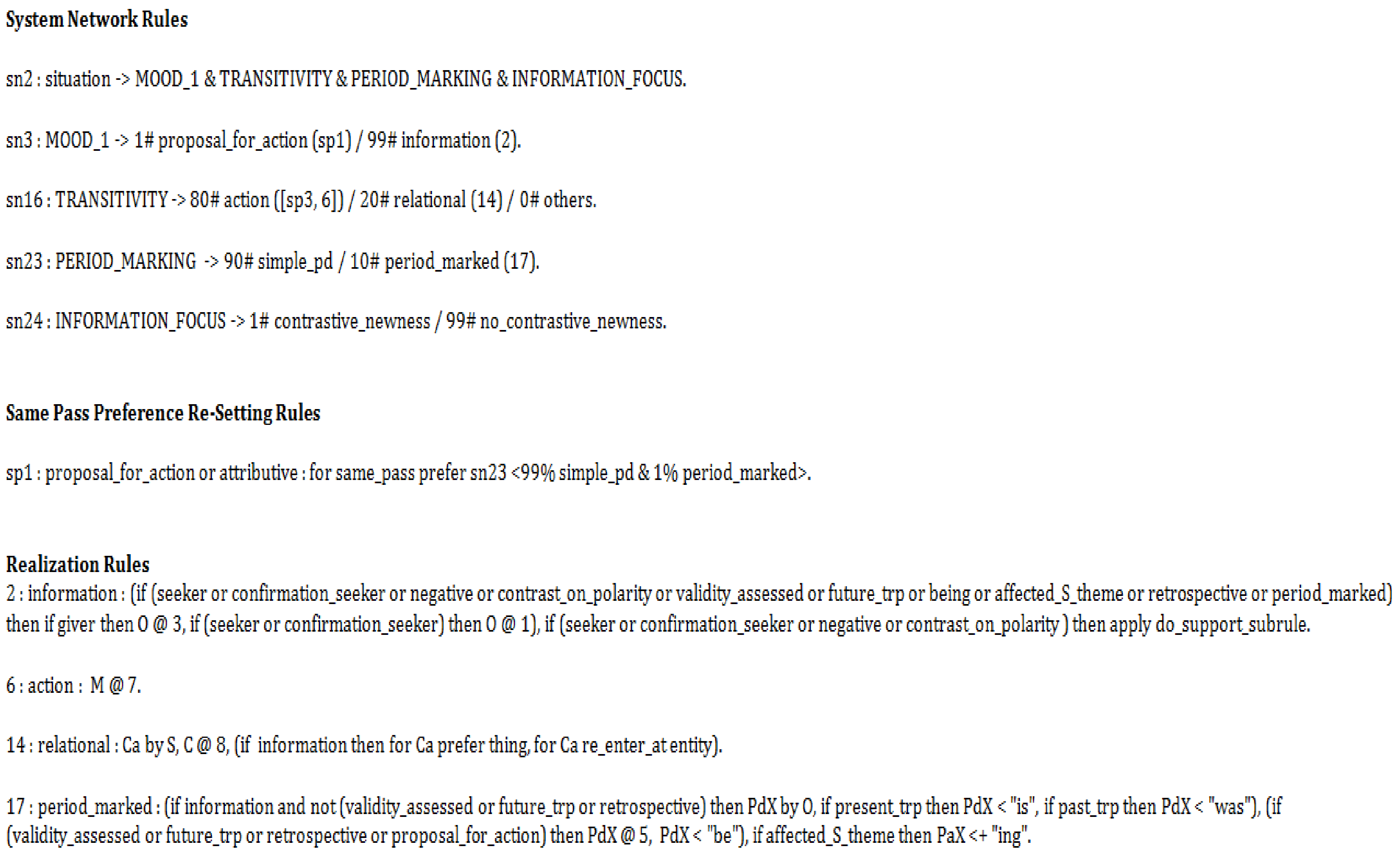
- **2.1** Representing output instances
- **2.2** A more delicate meaning-form interface for CGG output instances

3 Conclusions and future work on the enhancement of CGG

4 Extensions of CGG: Issues for the open and/or closing panel discussion

- **4.1** Towards a grammar of Spanish
  - Writing a Micro-Grammar of River Plate Spanish clitics
  - System networks as logical form planners
  - Realization rules as logical and linguistic forms builders
- **4.2** Grammar writing
  - Towards a grammar development environment for generation-oriented Cardiff grammars (GraDeR ©2014)
  - A generation-oriented grammar of grammars
  - Computer-aided grammar writing

Constitutive text sample of the Micro-Grammar of English (Fawcett 2004)



System Network Rules

sn2 : situation -> MOOD_1 & TRANSITIVITY & PERIOD_MARKING & INFORMATION_FOCUS.

sn3 : MOOD_1 -> 1# proposal_for_action (sp1) / 99# information (2).

sn16 : TRANSITIVITY -> 80# action ([sp3, 6]) / 20# relational (14) / 0# others.

sn23 : PERIOD_MARKING -> 90# simple_pd / 10# period_marked (17).

sn24 : INFORMATION_FOCUS -> 1# contrastive_newness / 99# no_contrastive_newness.

Same Pass Preference Re-Setting Rules

sp1 : proposal_for_action or attributive : for same_pass prefer sn23 <99% simple_pd & 1% period_marked>.

Realization Rules

2 : information : (if (seeker or confirmation_seeker or negative or contrast_on_polarity or validity_assessed or future_trp or being or affected_S_theme or retrospective or period_marked) then if giver then O @ 3, if (seeker or confirmation_seeker) then O @ 1), if (seeker or confirmation_seeker or negative or contrast_on_polarity) then apply do_support_subrule.

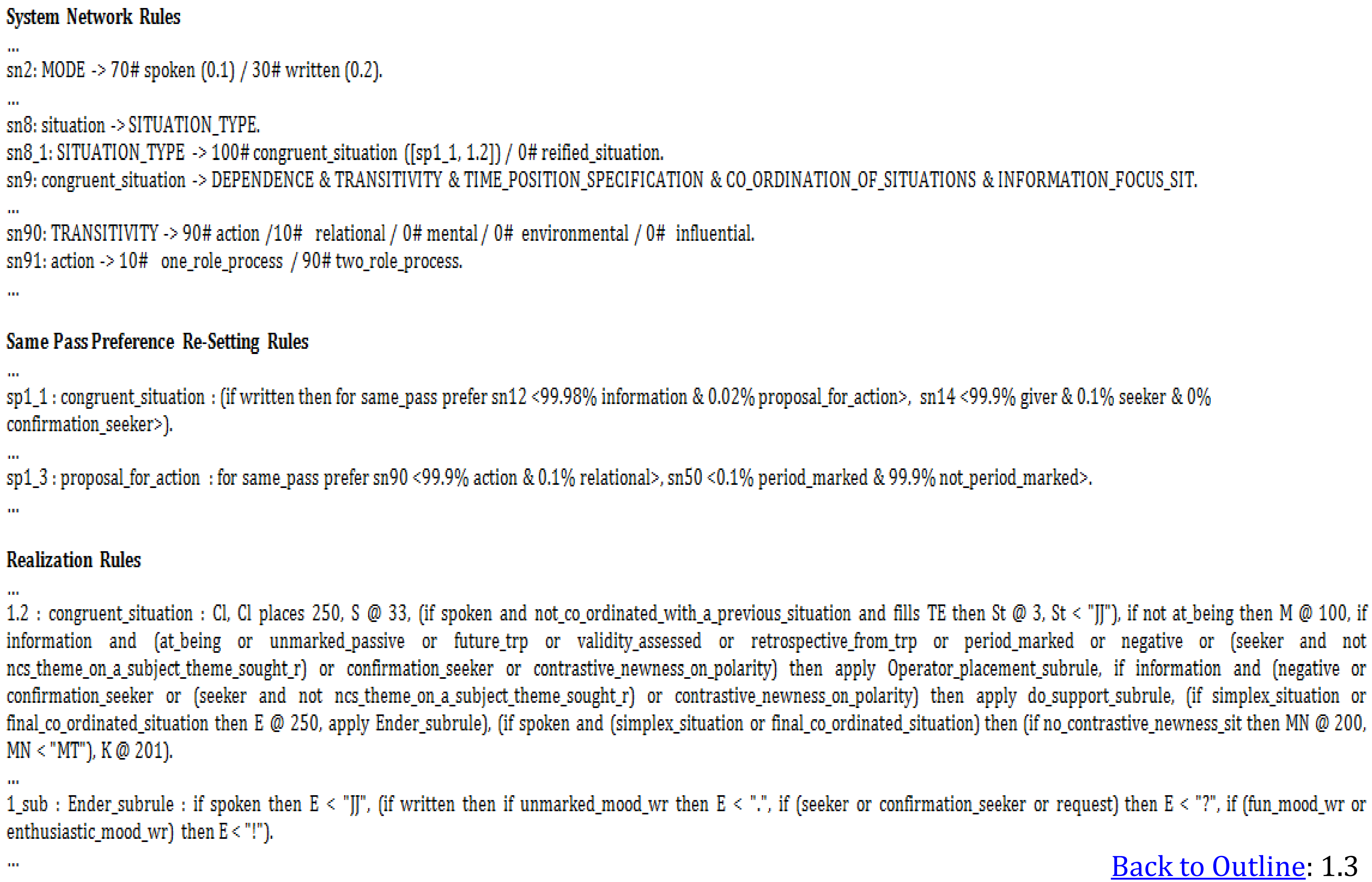
6 : action : M @ 7.

14 : relational : Ca by S, C @ 8, (if information then for Ca prefer thing, for Ca re_enter_at entity).

17 : period_marked : (if information and not (validity_assessed or future_trp or retrospective) then PdX by O, if present_trp then PdX < "is", if past_trp then PdX < "was"), (if (validity_assessed or future_trp or retrospective or proposal_for_action) then PdX @ 5, PdX < "be"), if affected_S_theme then PaX <+ "ing".

Back to Outline: MiniE

Constitutive text sample of the Mini-Grammar of English (Fawcett 2004)



System Network Rules

...

sn2: MODE -> 70# spoken (0.1) / 30# written (0.2).

...

sn8: situation -> SITUATION_TYPE.
sn8_1: SITUATION_TYPE -> 100# congruent_situation ([sp1_1, 1.2]) / 0# reified_situation.
sn9: congruent_situation -> DEPENDENCE & TRANSITIVITY & TIME_POSITION_SPECIFICATION & CO_ORDINATION_OF_SITUATIONS & INFORMATION_FOCUS_SIT.

...

sn90: TRANSITIVITY -> 90# action /10# relational / 0# mental / 0# environmental / 0# influential.
sn91: action -> 10# one_role_process / 90# two_role_process.

...

Same Pass Preference Re-Setting Rules

...

sp1_1 : congruent_situation : (if written then for same_pass prefer sn12 <99.98% information & 0.02% proposal_for_action>, sn14 <99.9% giver & 0.1% seeker & 0% confirmation_seeker>).

...

sp1_3 : proposal_for_action : for same_pass prefer sn90 <99.9% action & 0.1% relational>, sn50 <0.1% period_marked & 99.9% not_period_marked>.

...

Realization Rules

...

1.2 : congruent_situation : Cl, Cl places 250, S @ 33, (if spoken and not_co_ordinated_with_a_previous_situation and fills TE then St @ 3, St < "JJ"), if not at_being then M @ 100, if information and (at_being or unmarked_passive or future_trp or validity_assessed or retrospective_from_trp or period_marked or negative or (seeker and not ncs_theme_on_a_subject_theme_sought_r) or confirmation_seeker or contrastive_newness_on_polarity) then apply Operator_placement_subrule, if information and (negative or confirmation_seeker or (seeker and not ncs_theme_on_a_subject_theme_sought_r) or contrastive_newness_on_polarity) then apply do_support_subrule, (if simplex_situation or final_co_ordinated_situation then E @ 250, apply Ender_subrule), (if spoken and (simplex_situation or final_co_ordinated_situation) then (if no_contrastive_newness_sit then MN @ 200, MN < "MT"), K @ 201).

...

1_sub : Ender_subrule : if spoken then E < "JJ", (if written then if unmarked_mood_wr then E < ".", if (seeker or confirmation_seeker or request) then E < "?", if (fun_mood_wr or enthusiastic_mood_wr) then E < "!").

...

Back to Outline: 1.3

Architecture of the Cardiff Lexico-Grammar, and the enhancement of output instance representations

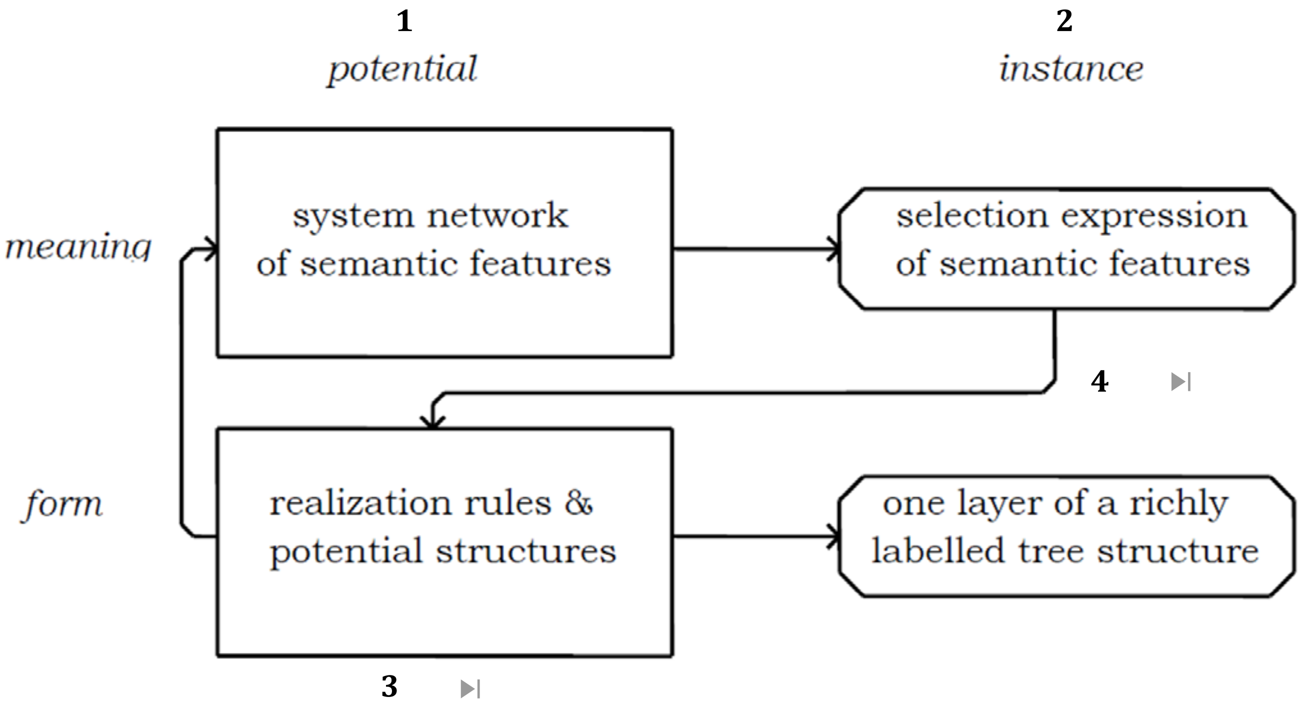


Figure 2-3: The components and their outputs in a systemic functional grammar (Fawcett 2008).

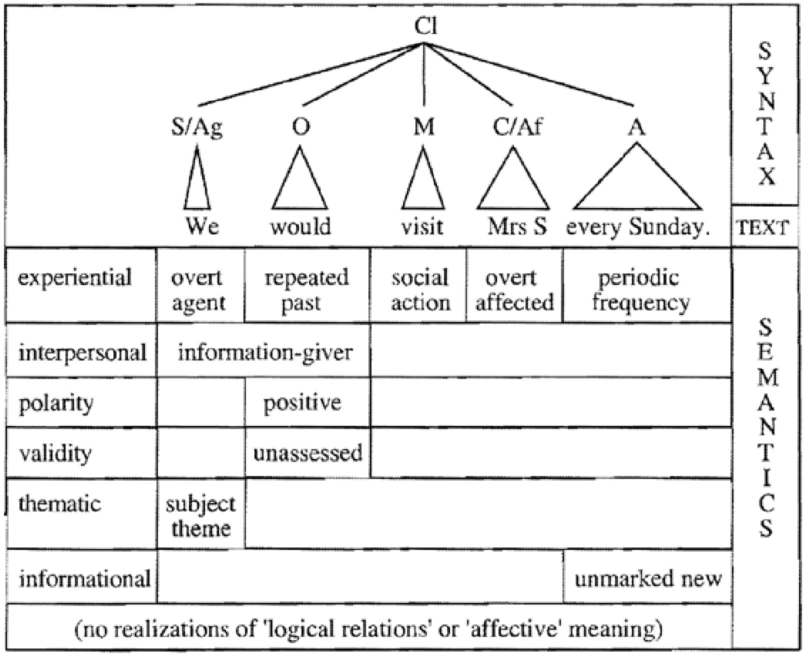
(1a) $p \rightarrow q$,

(1b) if *p*, then *q*,

(1c) if *p* is true, then *q* is true of the structure being built

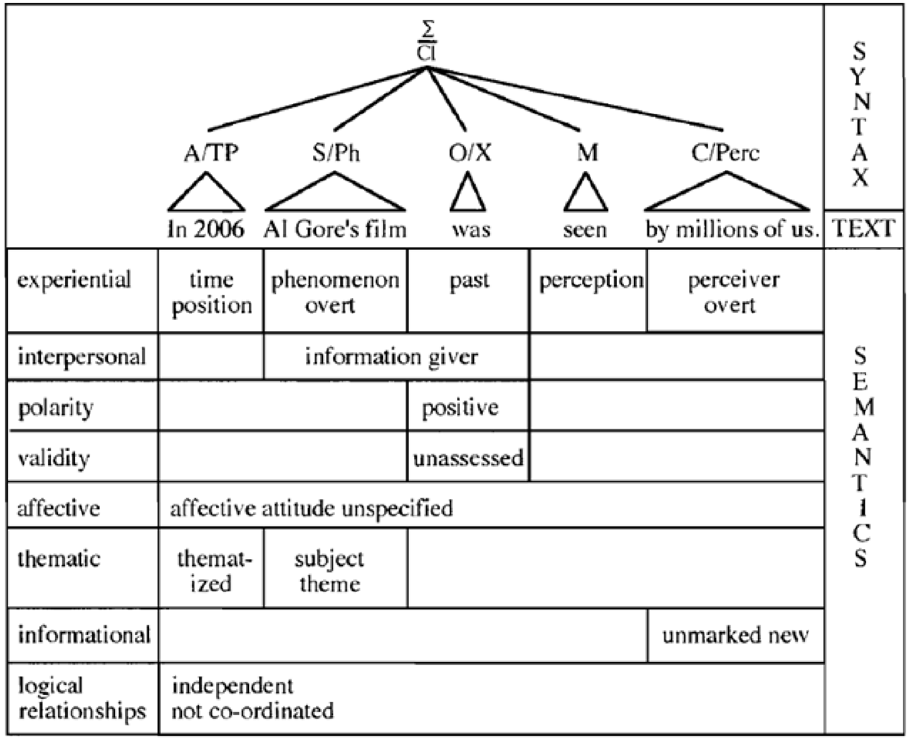
Back to Outline: 2.1

The two existing handmade representations of the full semantic and syntactic analyses of simple clauses



TEXT	We	would	visit	Mrs S	every Sunday.
experiential	overt agent	repeated past	social action	overt affected	periodic frequency
interpersonal	information-giver				
polarity		positive			
validity		unassessed			
thematic	subject theme				
informational					unmarked new
(no realizations of 'logical relations' or 'affective' meaning)					

Figure 10 from Fawcett (2000, *Syntax…*)



TEXT	In 2006	Al Gore's film	was	seen	by millions of us.
experiential	time position	phenomenon overt	past	perception	perceiver overt
interpersonal		information giver			
polarity			positive		
validity			unassessed		
affective	affective attitude unspecified				
thematic	themat-ized	subject theme			
informational					unmarked new
logical relationships	independent not co-ordinated				

Figure 17-2 from Fawcett (2008, ***Invitation…***)

Key

Σ = Text-Sentence; — = Filled With; Cl = Clause; | = Composed Of; / = Conflates With; S = Subject; Ag = Agent; Ph = Phenomenon; Δ = Expounded By; O = Operator; X = Auxiliary; M = Main Verb; C = Complement; Af = Affected; Perc = Perceiver; A = Adjunct; TP = Time Position

Back to Outline: 2.2

The function *Triggering* form functions

At an abstract level, realization rules are implications that can be represented, read, and interpreted as in (1i), (1ii) y (1iii), respectively:

(1i) $p \rightarrow q$,

(1ii) if *p*, then *q*,

(1iii) if *p* is true, then *q* is true of the **form structure** being built,

where *p* and *q* are variables ranging over conditions and consequences, respectively. Condition *p* can be a single semantic feature, a disjunction of semantic features, or a conjunction of semantic features. Consequence *q* can be a (conjunction of) form functions(s), and/or a(n) (conjunction of) implication(s) like (1i).

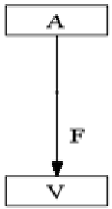


Figure 1: Function *F* maps argument *A* onto value *V*. If *F* is a form function, then *A* and *V* are categories of form. If *F* is the function ***Triggers***, then *A* is a configuration of semantic features, and *V* is a form function.

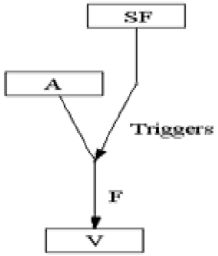


Figure 4: The distinguished function ***Triggers*** maps ***SF*** onto the form function ***F*** which, in turn, maps the argument ***A*** onto the value ***V***, where ***SF*** is a (configuration of) semantic feature(s), and ***A*** and ***V*** are form categories.

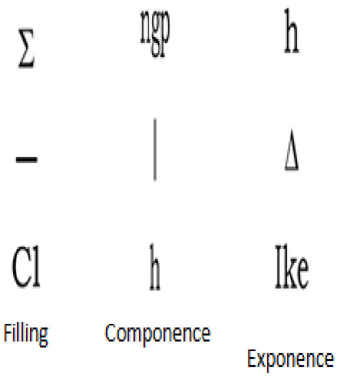


Figure 2: Examples of Form onto Form Mappings: Standard Notation

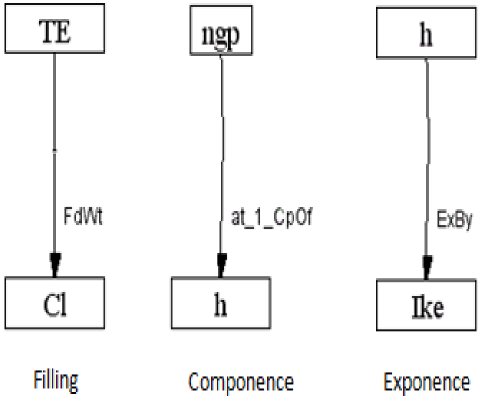


Figure 3: Examples of Form onto Form Mappings: Graph Notation

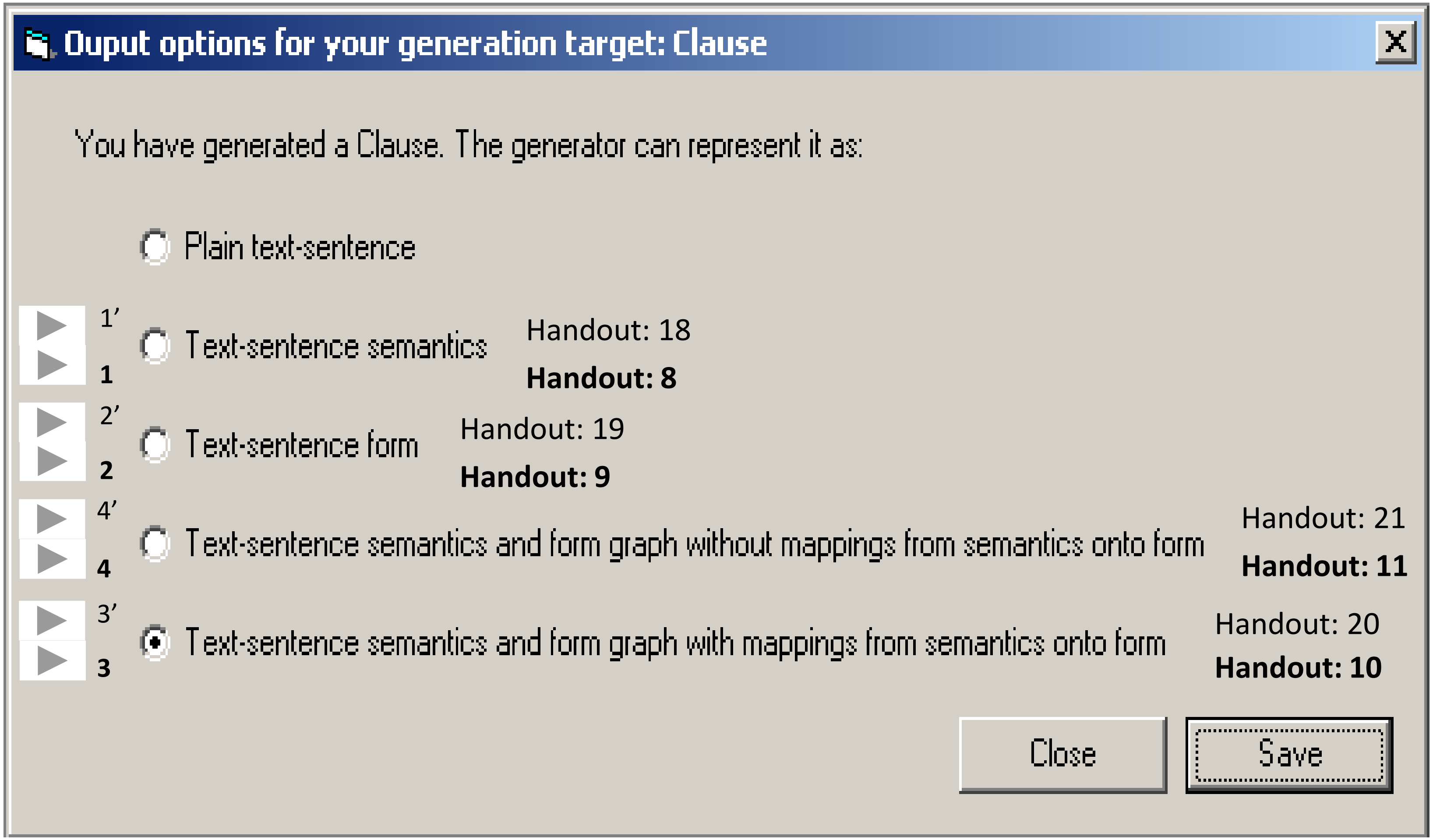
Examples of Meaning onto Form Mappings, i.e.
Mappings of ***SF*** onto *Filling*, *Componence*, *Exponence*, and *Conflation*:
The rest of the presentation addresses these examples.

Back to CG Architecture: 4

Start visualization of output instances

Representation options for output instances

Sample text-sentences: *The dog rested.* and *Ike is kicking Victoria.*



Ouput options for your generation target: Clause

You have generated a Clause. The generator can represent it as:

○ Plain text-sentence

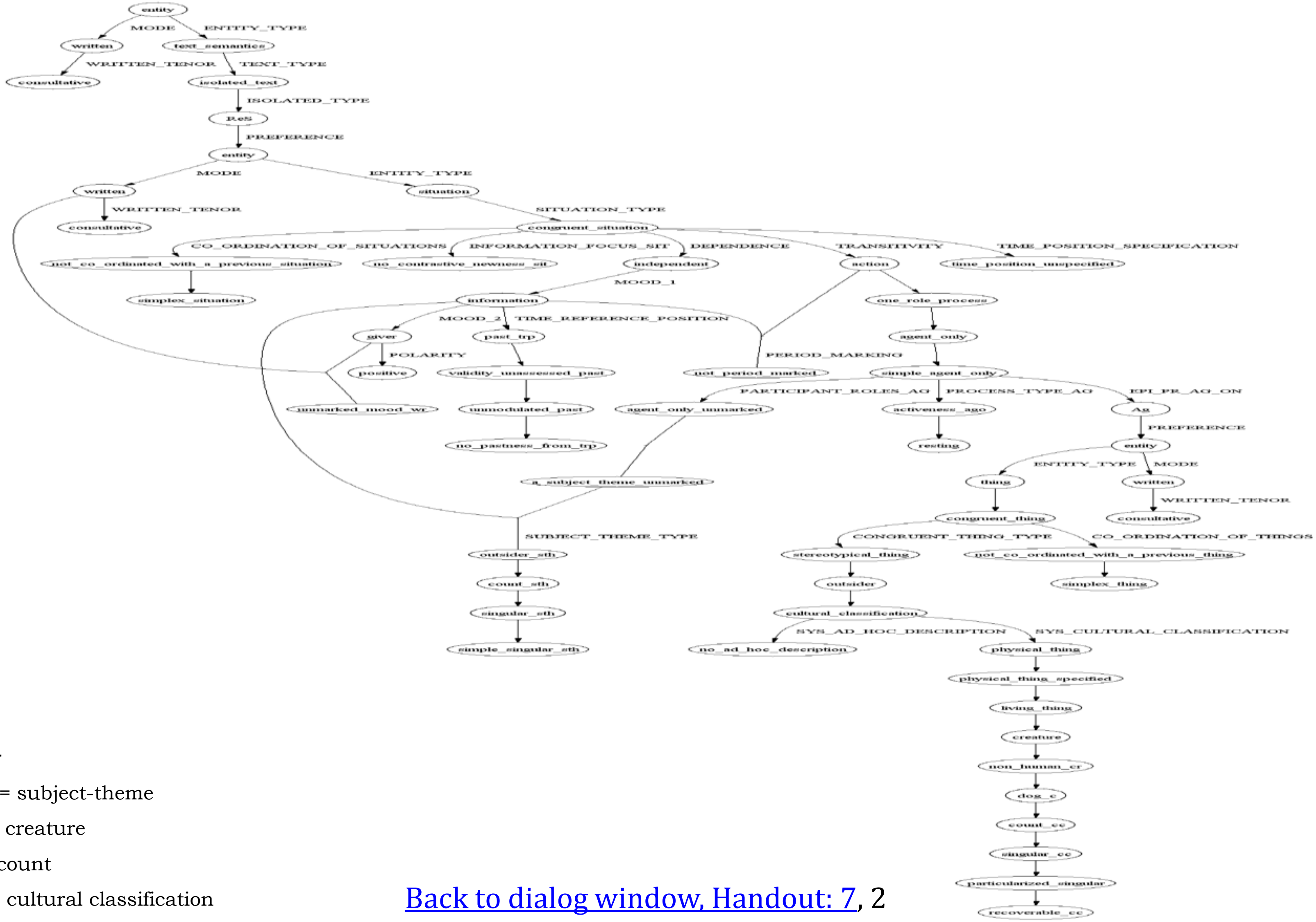
1′ 1 ○ Text-sentence semantics — Handout: 18 **Handout: 8**

2′ 2 ○ Text-sentence form — Handout: 19 **Handout: 9**

4′ 4 ○ Text-sentence semantics and form graph without mappings from semantics onto form — Handout: 21 **Handout: 11**

3′ 3 ● Text-sentence semantics and form graph with mappings from semantics onto form — Handout: 20 **Handout: 10**

Representing the selection expression structure underlying the text-sentence *The dog rested.*



Key

sth = subject-theme

cr = creature

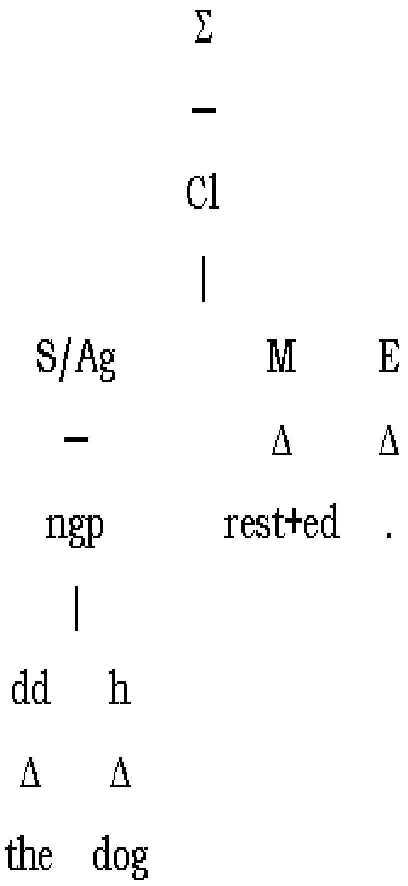
c = count

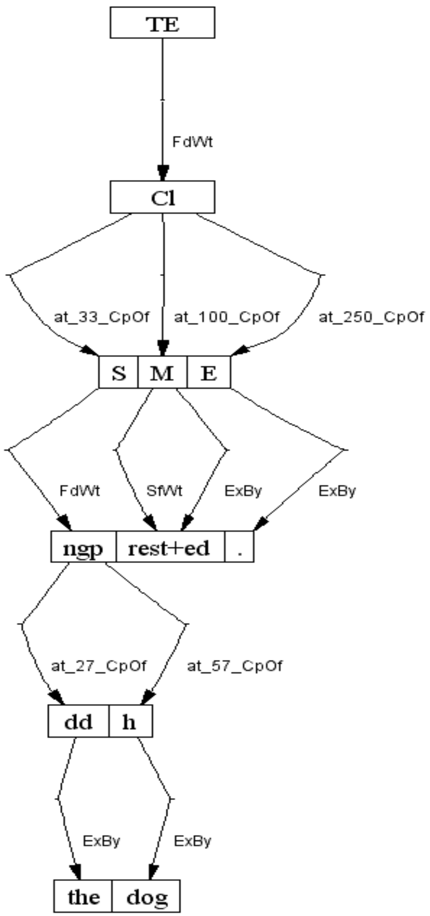
cc = cultural classification

Back to dialog window, Handout: 7, 2

Representing the form structure of the text-sentence *The dog rested.*

A handmade standard tree diagram *vis à vis* an automatically generated graph





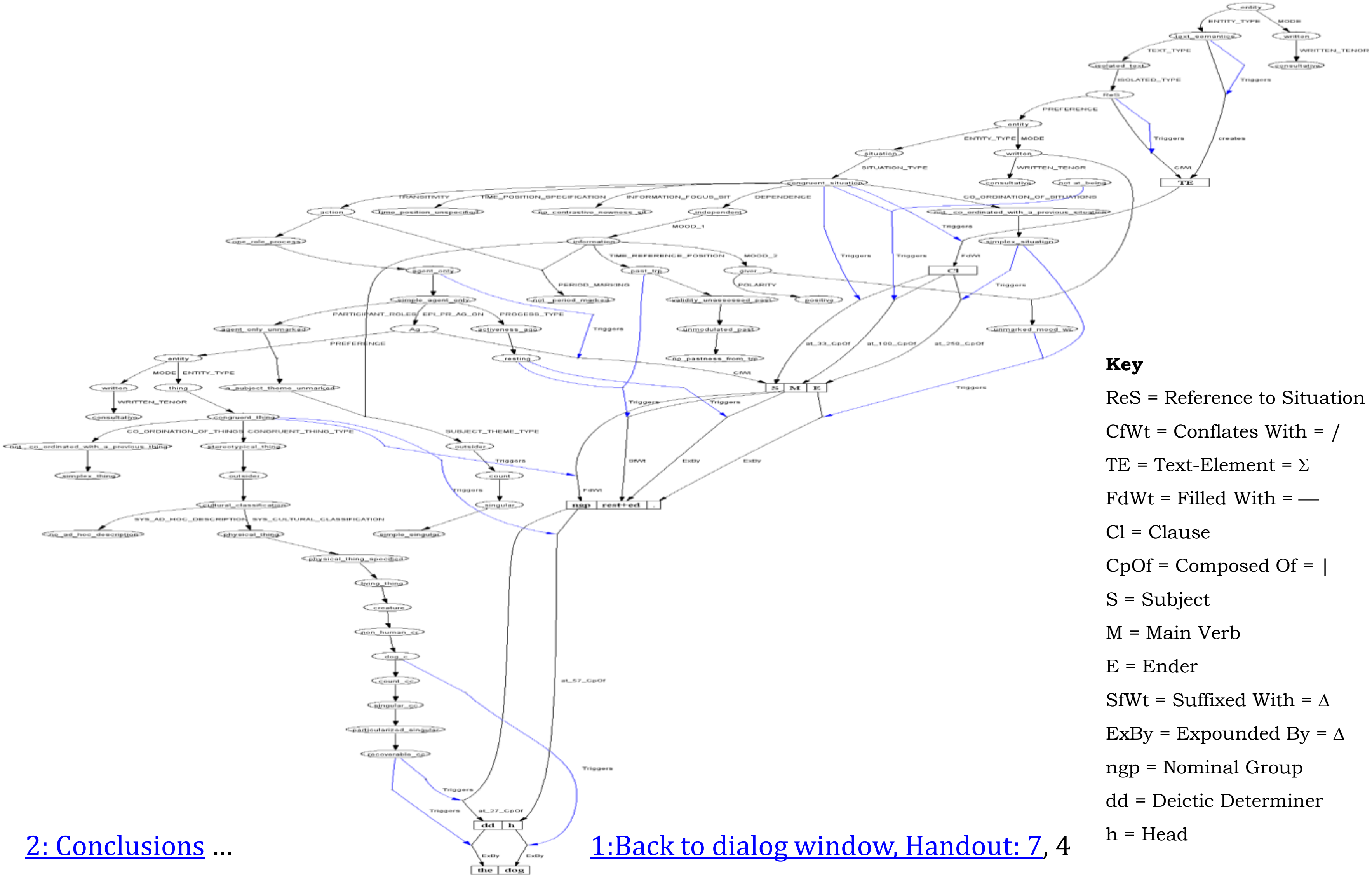
Key

Σ = TE = Text-Element ; — = FdWt = Filled With ; Cl = Clause; | = CpOf = Composed Of ; S = Subject; / = CfWt = Conflates With;
Ag = Agent; O = Operator ; PdX = Period Auxiliary; M = Main Verb; C = Complement ; Af = Affected ; E = Ender; Δ = SfWt = Suffixed With;
Δ = ExBy = Expounded By; E = Ender; ngp = Nominal Group; dd = Deictic Determiner; h = head

Back to dialog window, Handout: 7, 3

Handout: 10

Representing the full mapping of meaning structures onto form structures underlying the text-sentence *The dog rested.*



Key

ReS = Reference to Situation

CfWt = Conflates With = /

TE = Text-Element = Σ

FdWt = Filled With = —

Cl = Clause

CpOf = Composed Of = |

S = Subject

M = Main Verb

E = Ender

SfWt = Suffixed With = Δ

ExBy = Expounded By = Δ

ngp = Nominal Group

dd = Deictic Determiner

h = Head

2: Conclusions …

1:Back to dialog window, Handout: 7, 4

Using interface pointers to understand the Triggering function

in the generation of *The dog rested.*

0: See underlying RRs - **H:12**

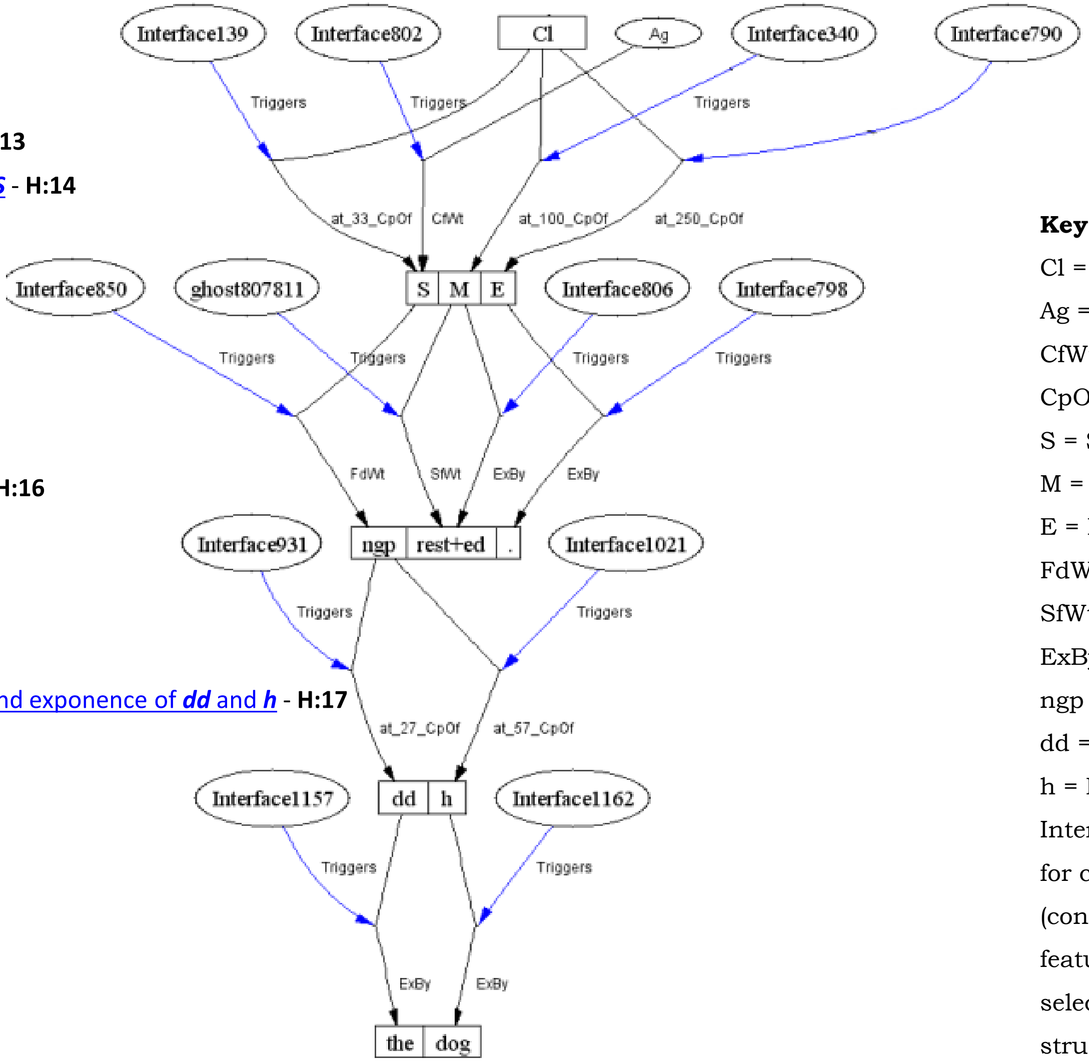
1:Triggering componence of ***Cl*** - **H:13**

2:Triggering conflation of ***Ag*** with ***S*** - **H:14**

3:Triggering exponence of ***E*** - **H:15**

4: Triggering filling of ***S*** with ***ngp*** - **H:16**

5: Triggering componence of ***ngp*** and exponence of ***dd*** and ***h*** - **H:17**



Key

Cl = Clause

Ag = Agent

CfWt = Conflates With = /

CpOf = Composed Of = |

S = Subject

M = Main Verb

E = Ender

FdWt = Filled With = —

SfWt = Suffixed With = Δ

ExBy = Expounded By = Δ

ngp = Nominal Group

dd = Deictic Determiner

h = Head

Interface# = Node waiting for connection with a (configuration of) semantic feature(s) of the current selection expression structure.

Constitutive text of the realization rules underlying the generation of *The dog rested*. Mini-Grammar of English (Fawcett 2004)

All passes

0.2 : written : for any_re_entry prefer written.

0.33 : consultative : for any_re_entry prefer consultative.

1st Pass: Creation of the element TE

1.1 : text_semantics : creates TE, [if ReS then ReS by TE, for ReS prefer situation, for ReS re_enter_at entity], [if ReT then ReT by TE, for ReT prefer thing, for ReT re_enter_at entity], [if ReMT then ReMT by TE, for ReMT prefer minor_relationship_with_thing, for ReMT re_enter_at entity].

2nd Pass: Called by ReS

1.2 : congruent_situation : Cl, Cl places 250, S @ 33, (if spoken and not_co_ordinated_with_a_previous_situation and fills TE then St @ 3, St < "JJ"), if not at_being then M @ 100, if information and (at_being or unmarked_passive or future_trp or validity_assessed or retrospective_from_trp or period_marked or negative or (seeker and not ncs_theme_on_a_subject_theme_sought_r) or confirmation_seeker or contrastive_newness_on_polarity) then apply Operator_placement_subrule, if information and (negative or confirmation_seeker or (seeker and not ncs_theme_on_a_subject_theme_sought_r) or contrastive_newness_on_polarity) then apply do_support_subrule, (if simplex_situation or final_co_ordinated_situation then E @ 250, apply Ender_subrule), (if spoken and (simplex_situation or final_co_ordinated_situation) then (if no_contrastive_newness_sit then MN @ 200, MN < "MT"), K @ 201).

Operator_placement_subrule : if giver or (seeker and ncs_theme_on_a_subject_theme_sought_r) then O @ 35, if (seeker and not ncs_theme_on_a_subject_theme_sought_r) or confirmation_seeker then O @ 31.

do_support_subrule : if not (future_trp or validity_assessed or retrospective_from_trp or past_from_trp or period_marked or unmarked_passive or at_being) then apply finite_do_forms.

finite_do_forms : if present_trp and (simple_singular_sth or most_selected_thing_is_singular_sth or simple_mass_sth or most_selected_thing_is_mass_sth) then O < "does", if present_trp and (singular_performer_sth or singular_addressee_sth or simple_plural_interactant_sth or simple_plural_sth or most_selected_thing_is_plural_sth) then O < "do", if past_trp then O < "did".

Ender_subrule : if spoken then E < "JJ", (if written then if unmarked_mood_wr then E < ".", if (seeker or confirmation_seeker or request) then E < "?", if (fun_mood_wr or enthusiastic_mood_wr) then E < "!").

6.1 : agent_only : Ag by S, [if not proposal_for_action then if agent_only_unmarked then apply Ag_preferences_subrule, if agent_only_sought then apply Ag_sought_preferences_subrule, for Ag re_enter_at entity].

Ag_preferences_subrule : [if agent_subject_theme or agent_only_unmarked or (agent_unmarked and affected_covert) then apply subject_theme_subrule_Ag, else apply non_subject_theme_subrule_Ag].

subject_theme_subrule_Ag : [if interactant_sth then apply interactant_sth_subrule_Ag], [if not interactant_sth then apply outsider_sth_subrule_Ag].

outsider_sth_subrule_Ag : if count_sth then apply count_sth_subrule_Ag, if mass_sth then apply mass_sth_subrule_Ag.

count_sth_subrule_Ag : for Ag prefer thing & BASIC_TYPICALLY_HUMAN_PREF_BLOCK & outsider & TYPICALLY_HUMAN_CC_PREF_BLOCK & sn159 <95% particularized_singular & 5% unparticularized_singular> & sn163 <95% particularized_plural & 5% unparticularized_plural>, if simple_singular_sth then for Ag prefer BASIC_SING_OUTSIDER_PREF_BLOCK, if simple_plural_sth then for Ag prefer BASIC_PL_OUTSIDER_PREF_BLOCK, if (singular_unselected_from_sth or plural_unselected_from_sth) then for Ag prefer NOT_SELECTED_FROM_PREF_BLOCK, if singular_selected_from_sth then apply singular_selected_from_sth_subrule_Ag, if plural_selected_from_sth then apply plural_selected_from_sth_subrule_Ag.

3rd Pass: Called by Ag

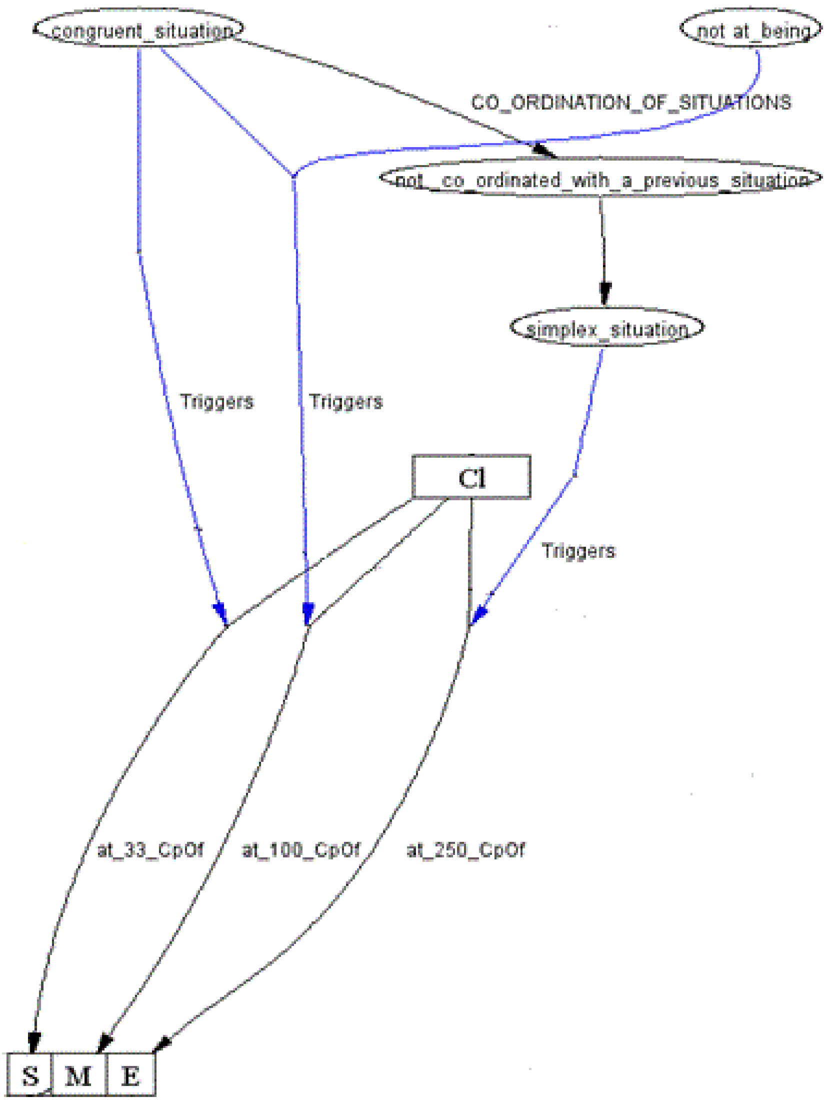
60 : congruent_thing : ngp, ngp places 100, h @ 57.

65 : recoverable_cc : dd @ 27, dd < "the".

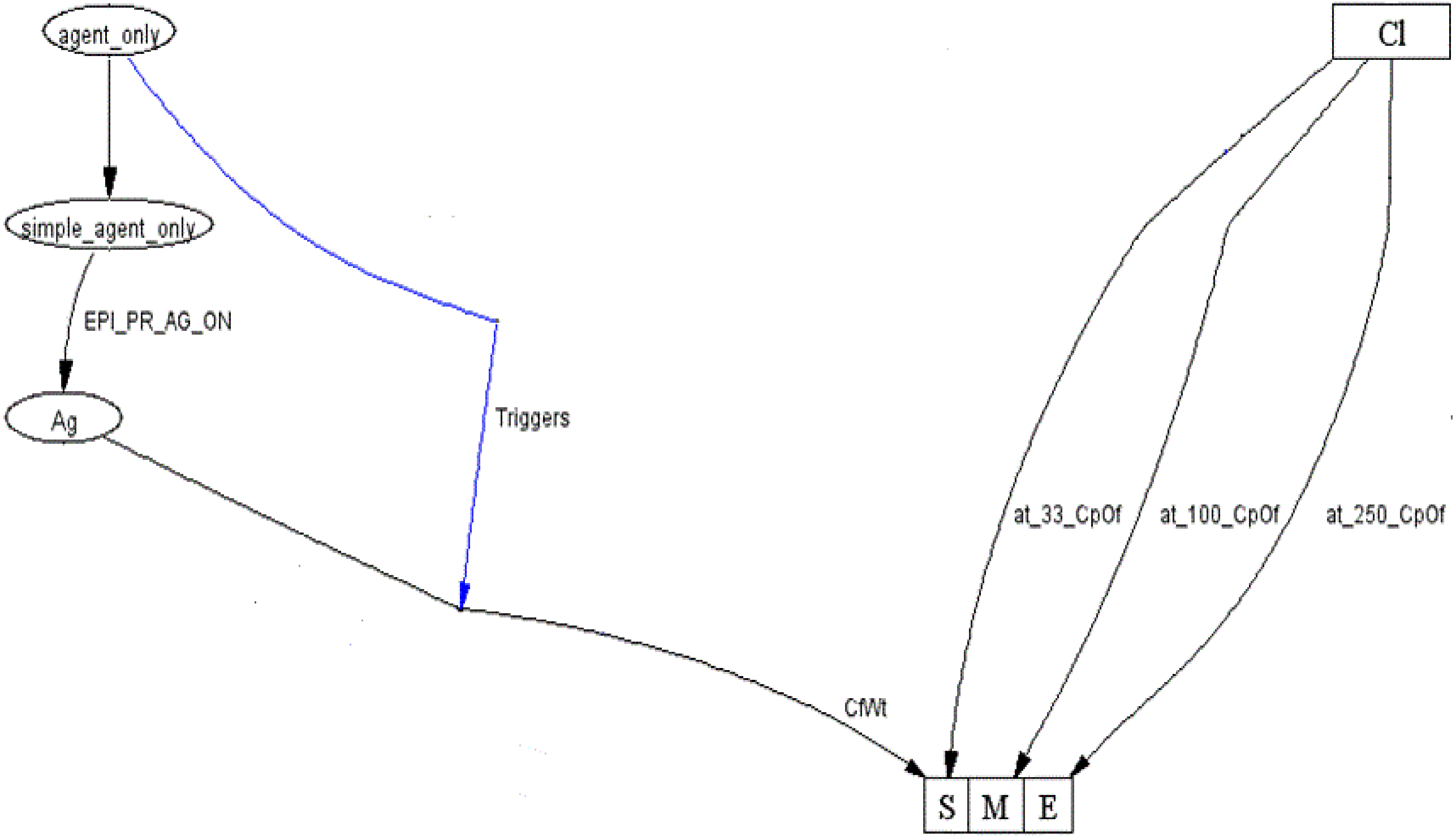
73.33 : dog_c : h < "dog".

Back to interface pointers, Handout: 11, 1

RR#1.2: Triggering componence operations *S @ 33, M @ 100, E @ 250*



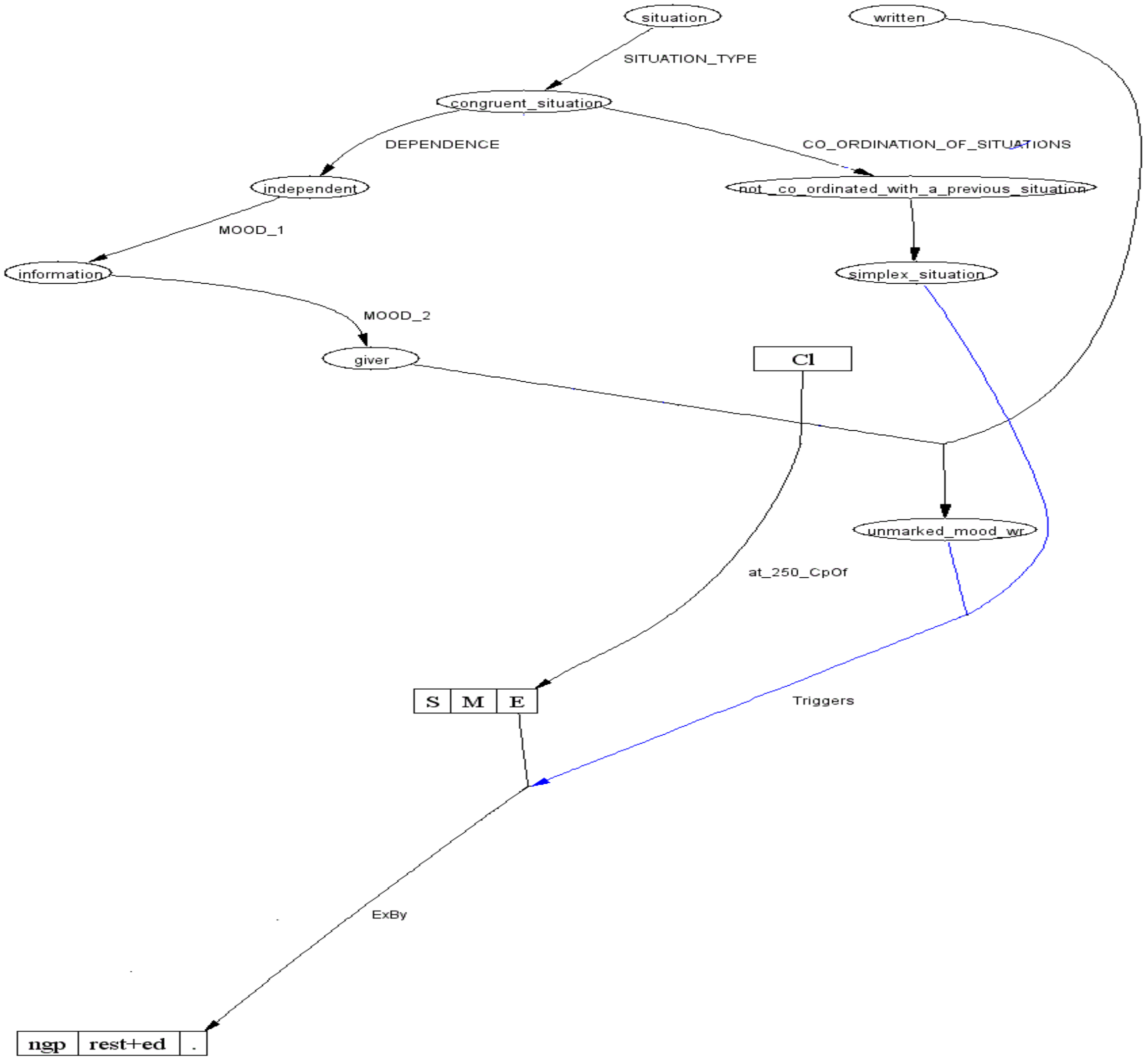
RR#6.1: Triggering conflation operation *Ag* by S



RR#6.1 details, Handout: 12

Back to interface pointers, Handout: 11, 3

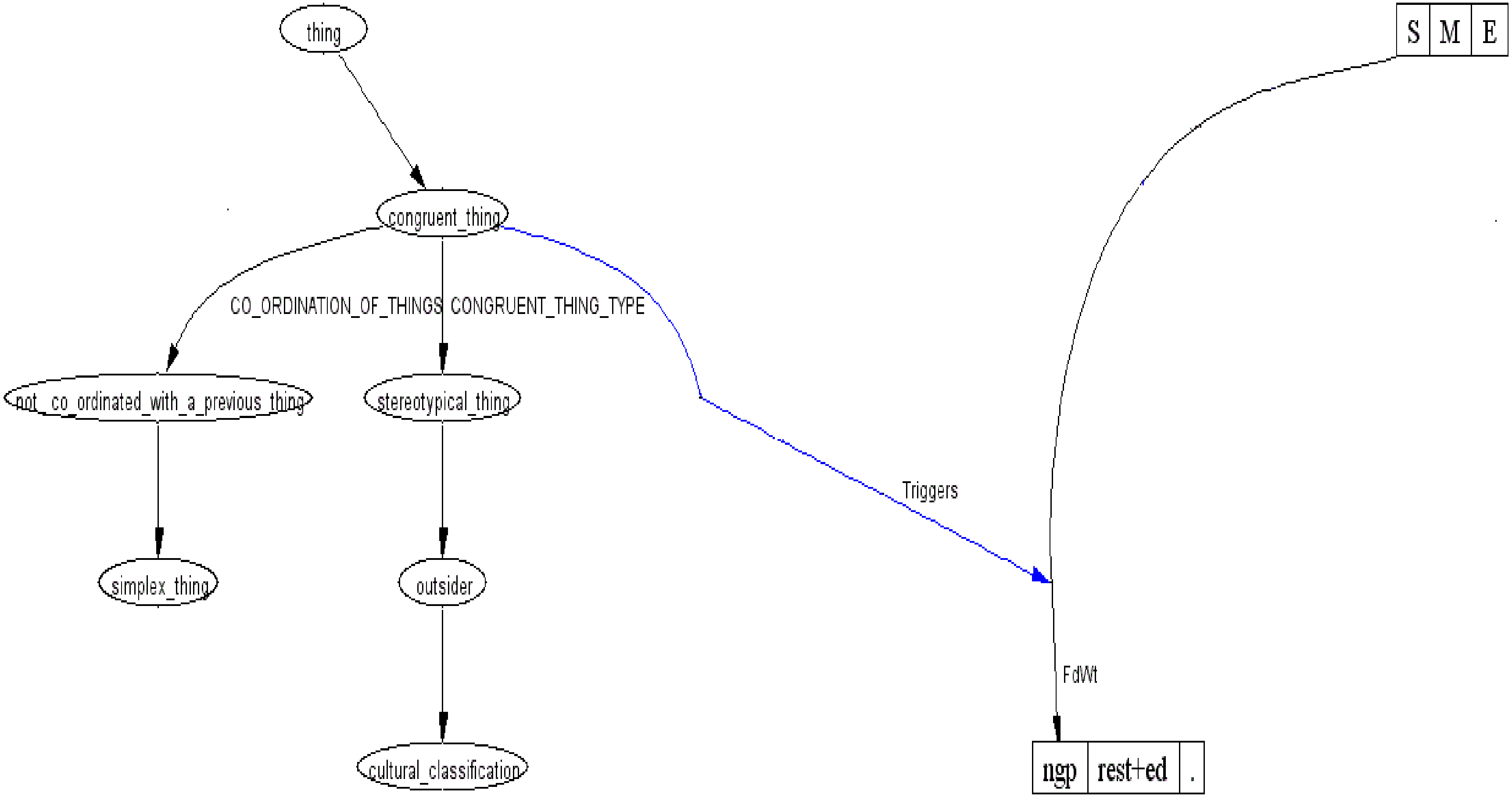
Ender subrule: Triggering exponence operation *E* < “.”



Ender subrule details, Handout: 12

Back to interface pointers, Handout: 11, 4

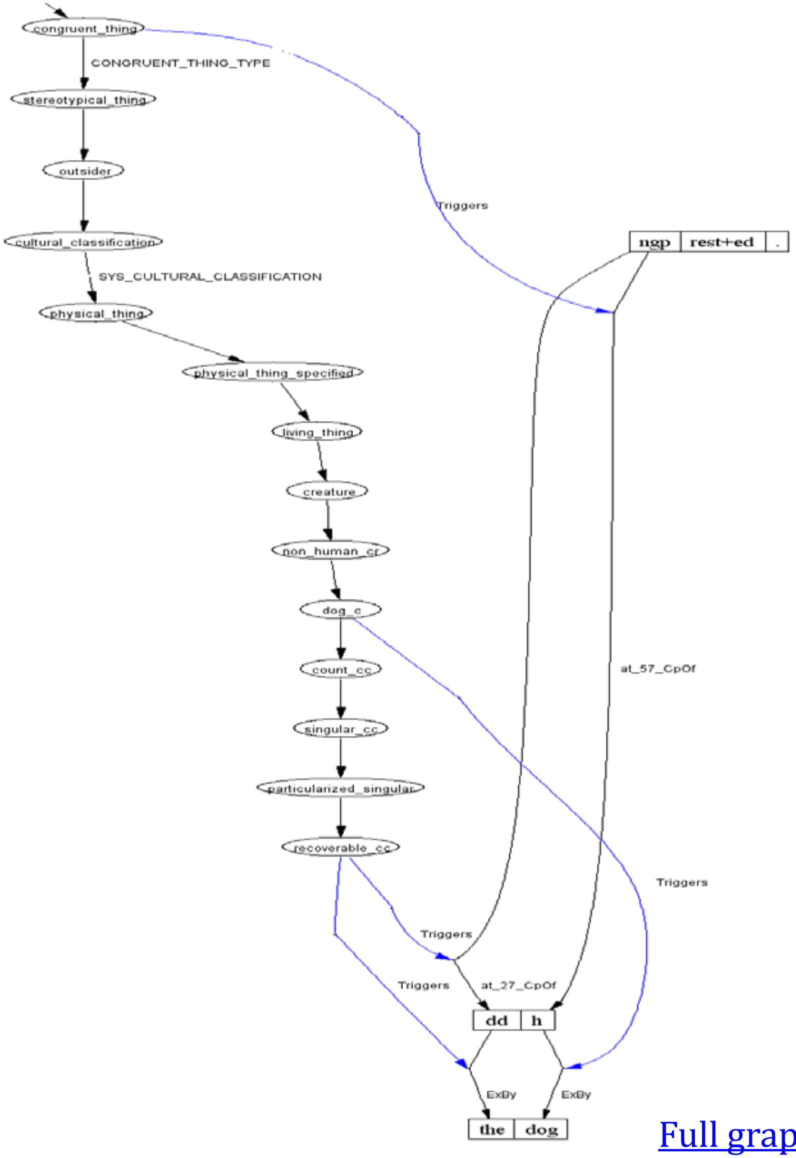
RR#60: Triggering filling operation *ngp*



RRs#60 details, Handout: 12

Back to interface pointers, Handout: 11, 5

RRs#60, 65, and 73.33: Triggering componence operations *dd @ 27 and h @ 57,* and exponence operations *dd < "the" and h < "dog"*



RR##60, 65, 73.33 details, Handout: 12

Full graph: Handout: 10, 2

Conclusions and future work on the enhancement of CGG

1 Formalization of the Triggering function to capture the explicit descriptive delicacy of the form potential

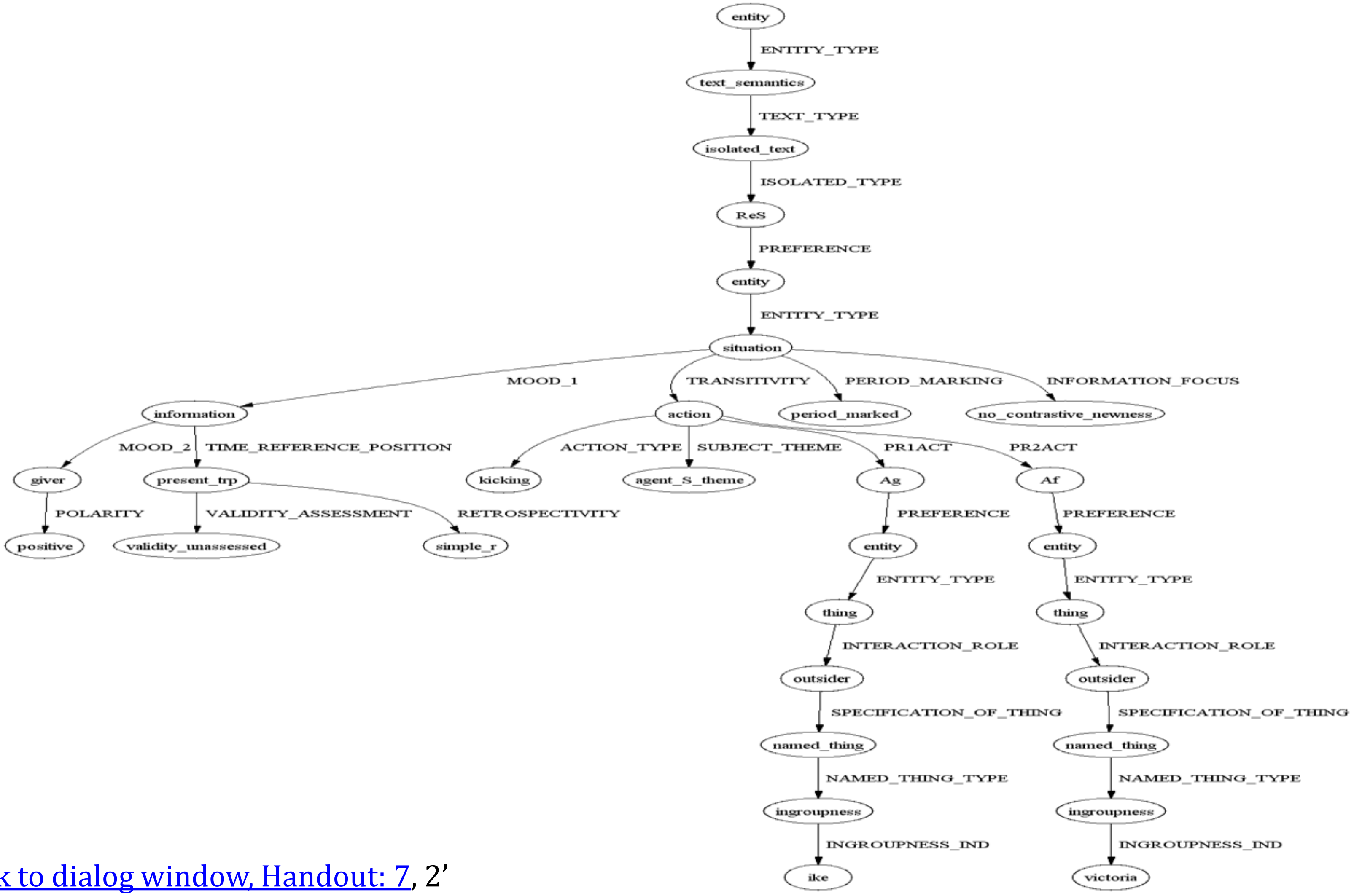
2 Implementation of the Triggering function so that output instances reflect the explicit descriptive delicacy of the form potential

3 No output instances yet reflecting the explicit delicacy of the lower pass preference potential

Back to Outline: 4

THANK YOU FOR YOUR PATIENCE!

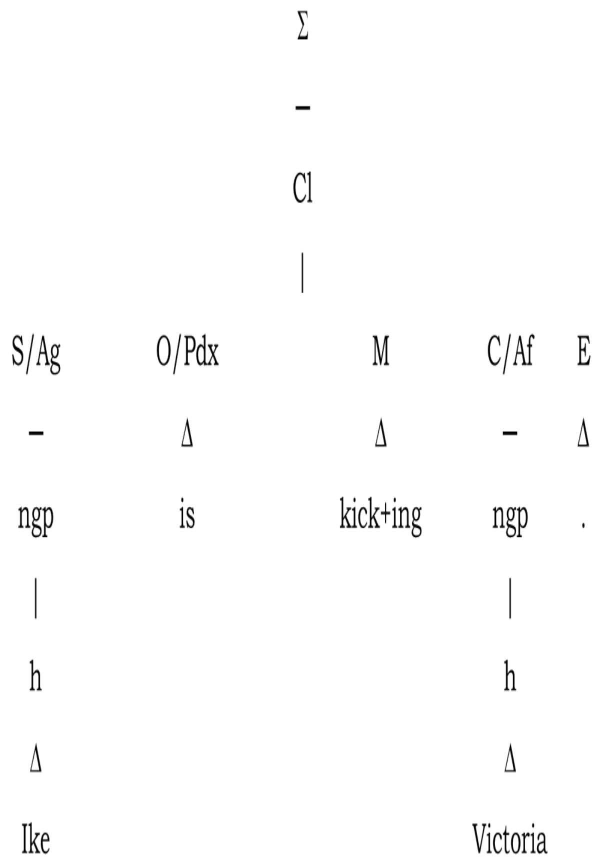
Representing the selection expression structure underlying the text-sentence *Ike is kicking Victoria.*

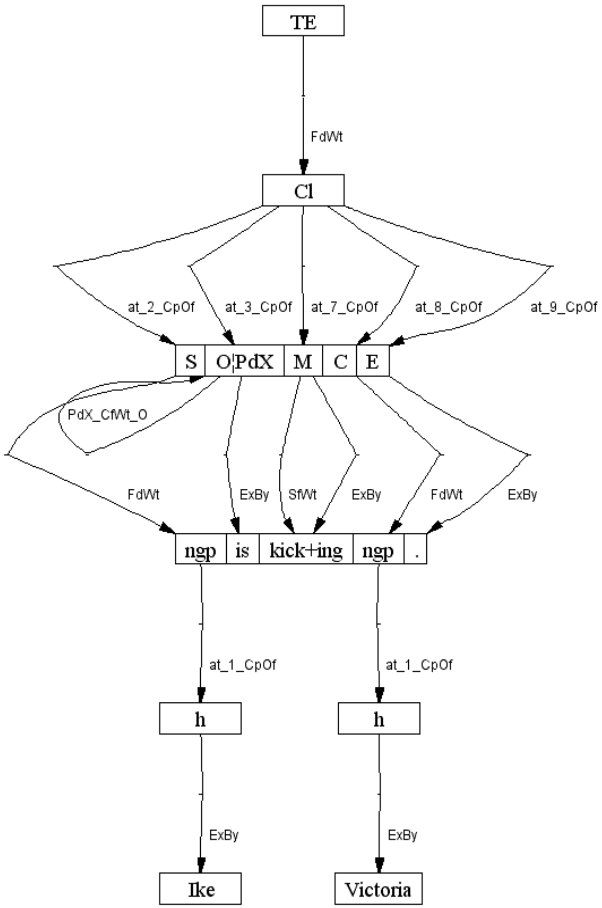


Back to dialog window, Handout: 7, 2’

Representing the form structure underlying the text-sentence *Ike is kicking Victoria.*

A handmade standard tree diagram *vis à vis* an automatically generated graph



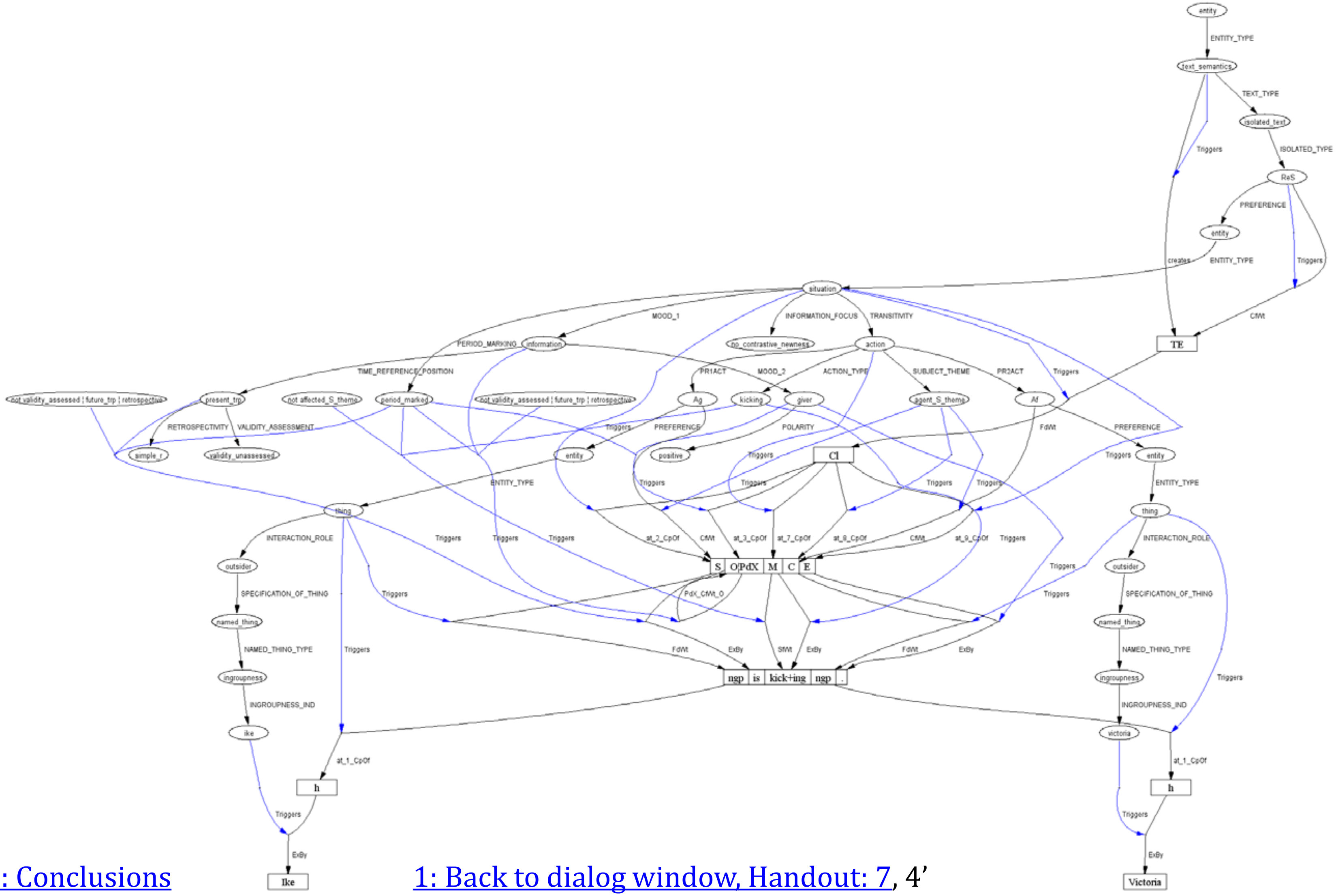


Key

Σ = TE = Text-Element ; —— = FdWt = Filled With ; Cl = Clause; | = CpOf = Composed Of ; S = Subject; / = CfWt = Conflates With; Ag = Agent; O = Operator ; PdX = Period Auxiliary; M = Main Verb; C = Complement ; Af = Affected ; E = Ender; Δ = SfWt = Suffixed With; Δ = ExBy = Expounded By; E = Ender; ngp = Nominal Group; h = head

Back to dialog window, Handout: 7, 3’

Representing the full Mapping of meaning structures onto form structures underlying the text-sentence *Ike is kicking Victoria.*



2: Conclusions 1: Back to dialog window, Handout: 7, 4’

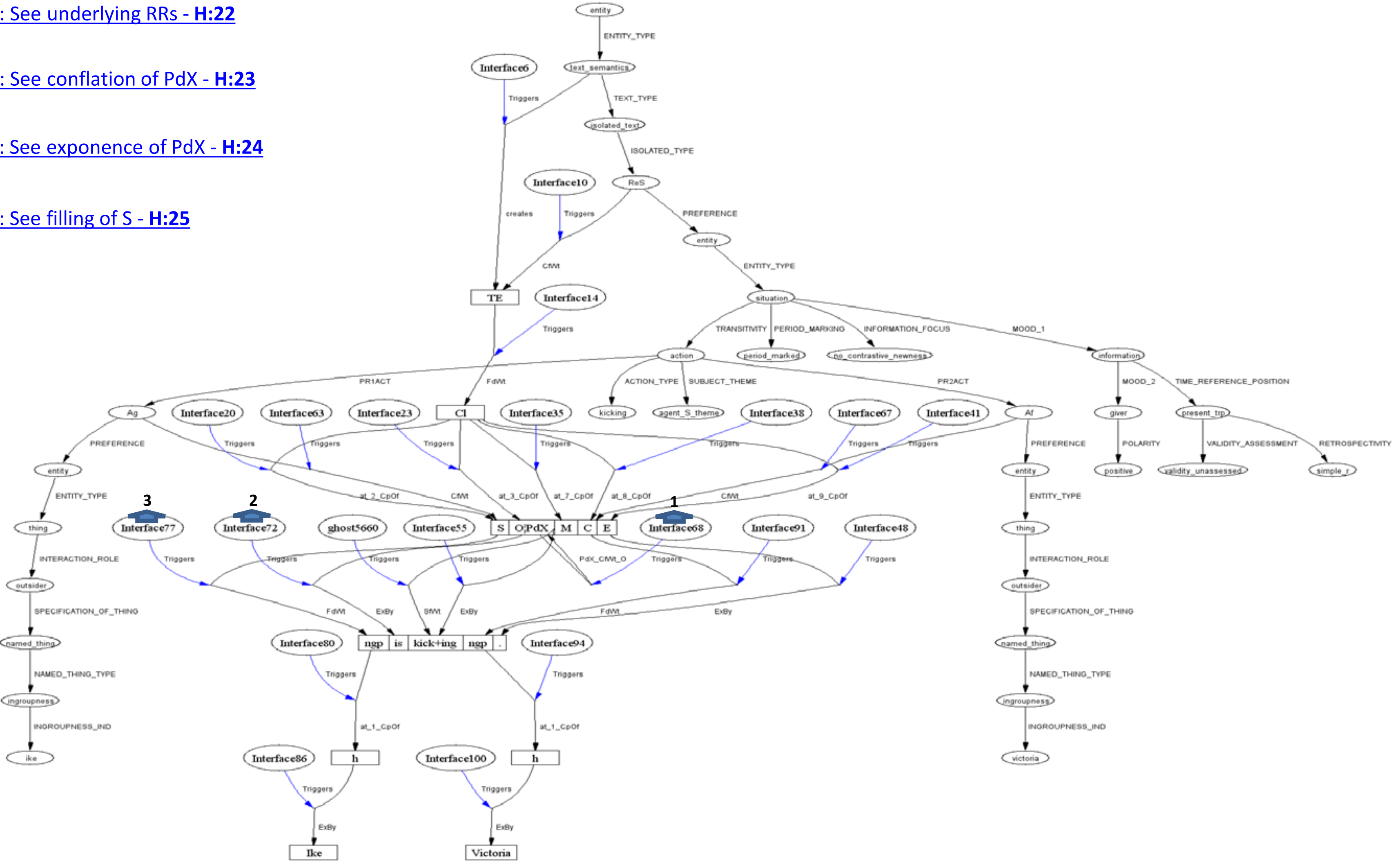
Using interface pointers to understand the Triggering function in the generation of *Ike is kicking Victoria.*

0: See underlying RRs - **H:22**

1: See conflation of PdX - **H:23**

2: See exponence of PdX - **H:24**

3: See filling of S - **H:25**



Constitutive text of the realization rules underlying the generation of *Ike is kicking Victoria*. Micro-Grammar of English (Fawcett 2003)

1st Pass: Creation of the element TE

1.2 : text_semantics : creates TE, [if ReS then ReS by TE, for ReS prefer situation, for ReS re_enter_at entity], [if ReT then ReT by TE, for ReT prefer thing, for ReT re_enter_at entity], [if ReMT then ReMT by TE, for ReMT prefer minor_relationship_with_thing, for ReMT re_enter_at entity].

2nd Pass: Called by ReS

1.3 : situation : Cl, Cl places 9, S @ 2, E @ 9, giver then E < ".", if seeker or confirmation_seeker then E < "?", if directive then E < "!".

2 : information : (if (seeker or confirmation_seeker or negative or contrast_on_polarity or validity_assessed or future_trp or being or affected_S_theme or retrospective or period_marked) then if giver then O @ 3, if (seeker or confirmation_seeker) then O @ 1), if (seeker or confirmation_seeker or negative or contrast_on_polarity) then apply do_support_subrule.

6 : action : M @ 7.

7 : kicking : M < "kick", apply regular_vb_subrule.

11 : agent_S_theme : Ag by S, (if information then for Ag prefer thing, for Ag re_enter_at entity), C @ 8, Af by C, for Af prefer thing, for Af re_enter_at entity.

17 : period_marked : (if information and not (validity_assessed or future_trp or retrospective) then **PdX by O**, if present_trp then **PdX < "is"**, if past_trp then PdX < "was"), (if (validity_assessed or future_trp or retrospective or proposal_for_action) then PdX @ 5, PdX < "be"), if affected_S_theme then PaX <+ "ing".

do_support_subrule : (if information and not (validity_assessed or future_trp or retrospective or period_marked or affected_S_theme or being) then if present_trp then O < "does", if past_trp then O < "did"), (if directive and (negative or contrast_on_polarity) then O @ 1, O < "do").

regular_vb_subrule : if giver and not validity_assessed or future_trp or negative or contrast_on_polarity or retrospective or period_marked or affected_S_theme) then if present_trp then (if kicking then M <+ "s"), (if kissing or touching or washing then M <+ "es"), if past_trp and validity_unassessed then M <+ "ed"), if affected_S_theme then M <+ "ed", if (period_marked and not affected_S_theme) then **M <+ "ing"**, if (retrospective or (past_trp and validity_assessed)) and not (period_marked or affected_S_theme) then M <+ "ed".

3rd Pass: Called by Ag

24 : thing: ngp, ngp places 1, h @ 1.

25 : ingroupness : if ike then h < "Ike", if ivy then h < "Ivy", if tony then h < "Tony", if george then h < "George", if david then h < "David", if victoria then h < "Victoria".

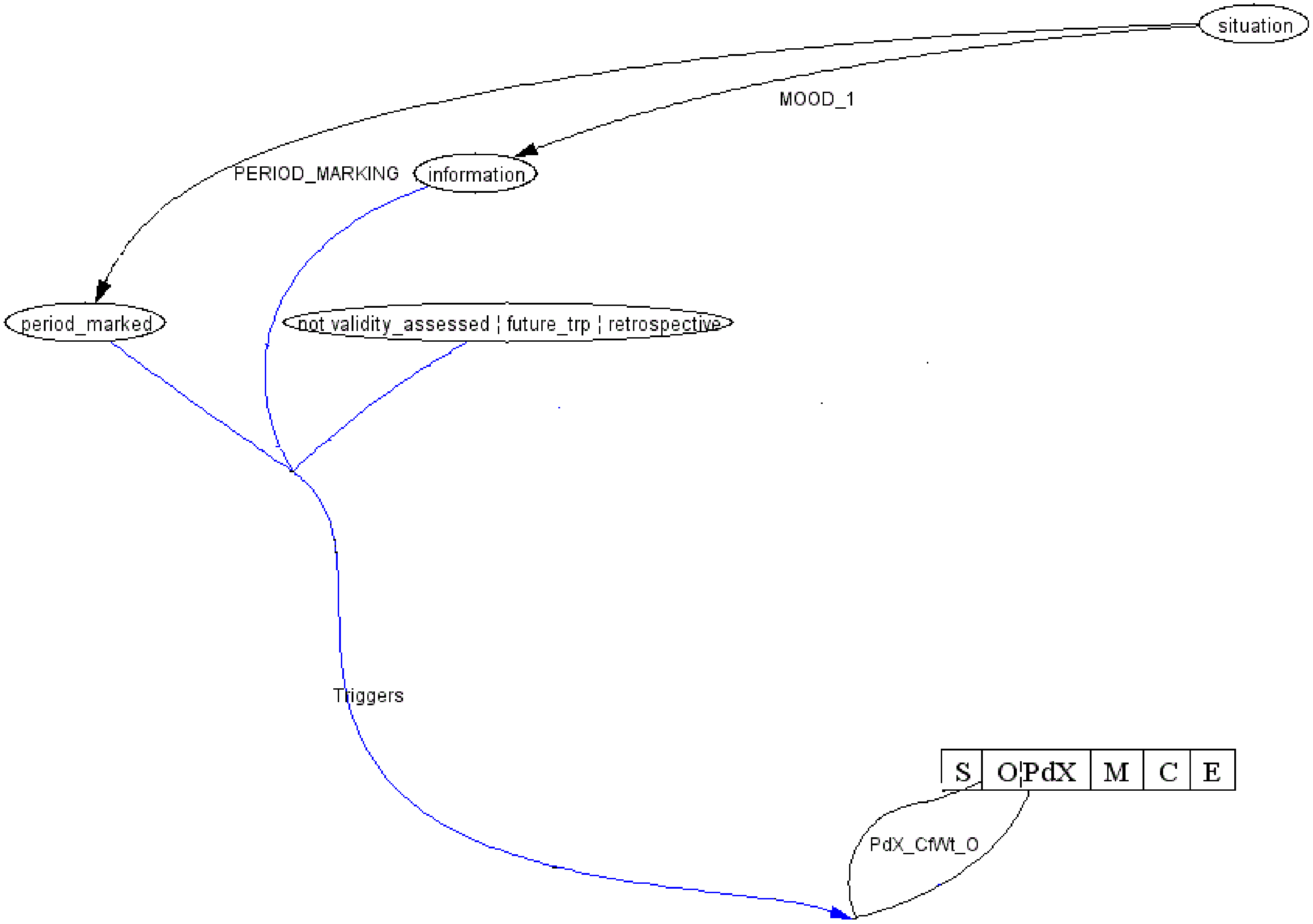
4th Pass: Called by Af

24 : thing: ngp, ngp places 1, h @ 1.

Back to interface pointers, Handout: 21, 0

25 : ingroupness : if ike then h < "Ike", if ivy then h < "Ivy", if tony then h < "Tony", if george then h < "George", if david then h < "David", if victoria then h < "Victoria".

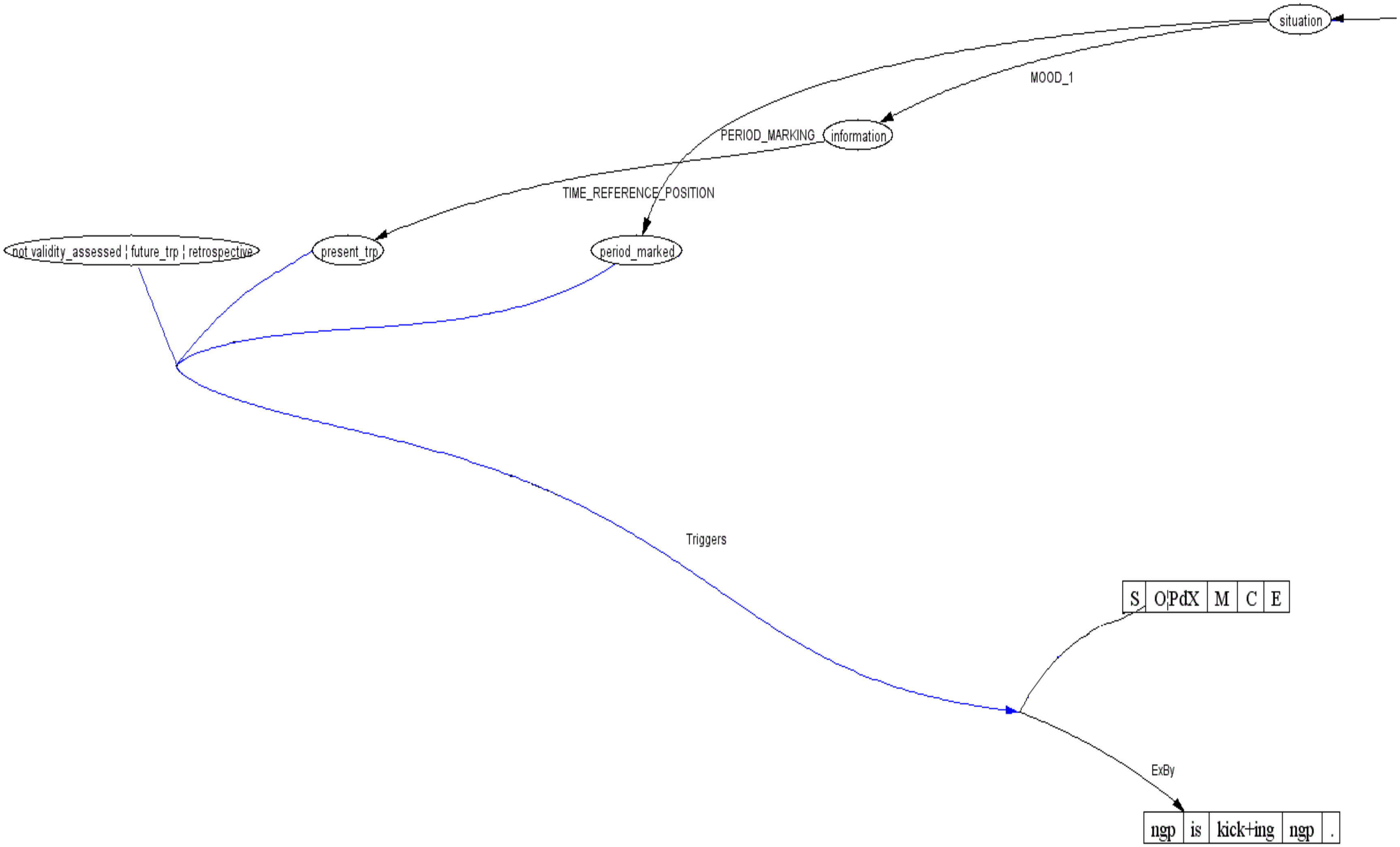
RR#17: Triggering the conflation operation *PdX by O*



See details in RR#17, Handout: 22

Go back to interface pointers, Handout: 21, 2

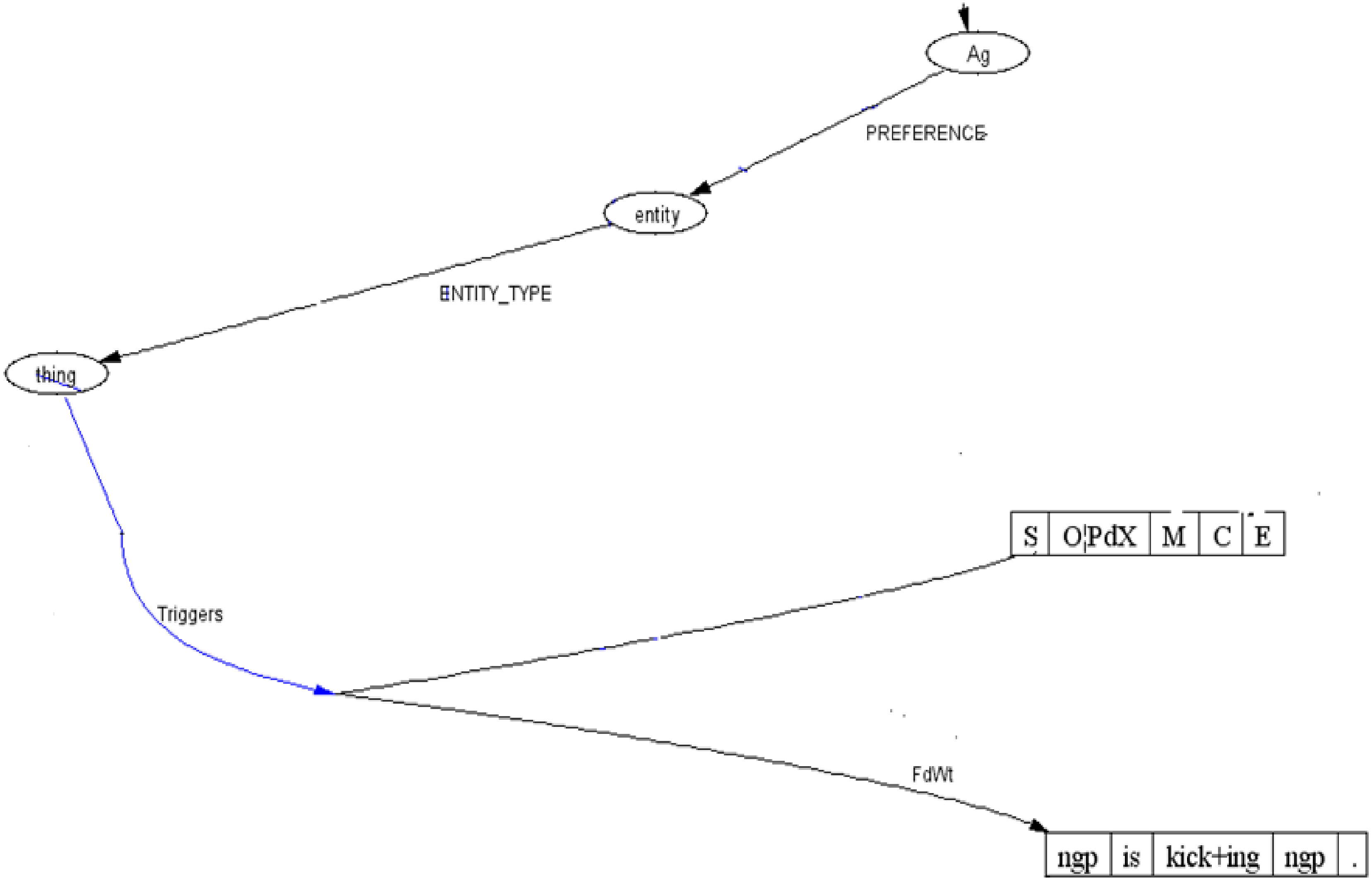
RR#17: Triggering the exponence operation *PdX* < *“is”*



See details in RR#17, Handout: 22

Go back to interface pointers, Handout: 21, 3

RR#24: Triggering the filling operation *ngp*



Ag

PREFERENCE

entity

ENTITY_TYPE

thing

Triggers

S | O|PdX | M | C | E

FdWt

ngp | is | kick+ing | ngp | .

See details in RR#24, Handout: 22

Full graph: Handout: 20

Outline

1 Introduction

2 Towards a grammar of Spanish from the CG view

2.1 The data

2.2 The architecture

2.3 Writing a Micro-Grammar of Spanish clitics

2.3.1 System networks as logical form planners

2.3.2 Realization rules as logical and linguistic forms builders

3 Conclusions and future work

The Standard Cardiff Grammar Architecture vis-à-vis a Modified Architecture of a Grammar of Spanish

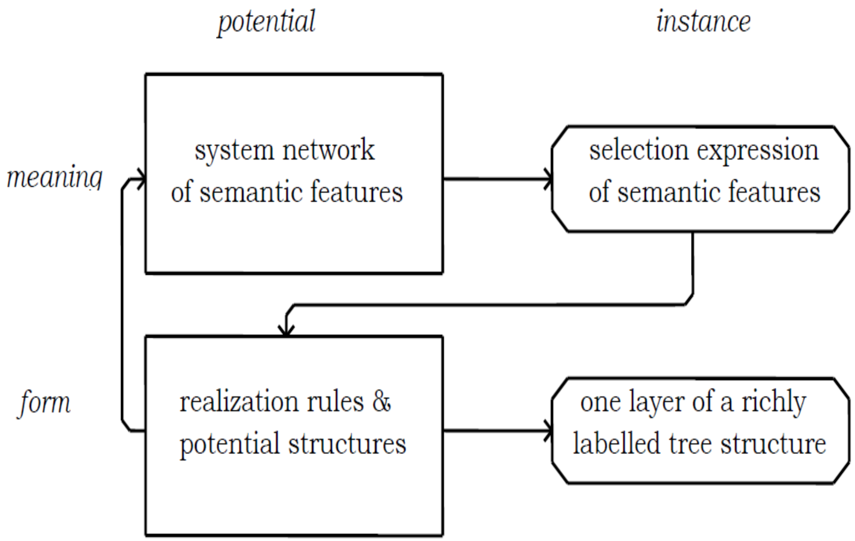
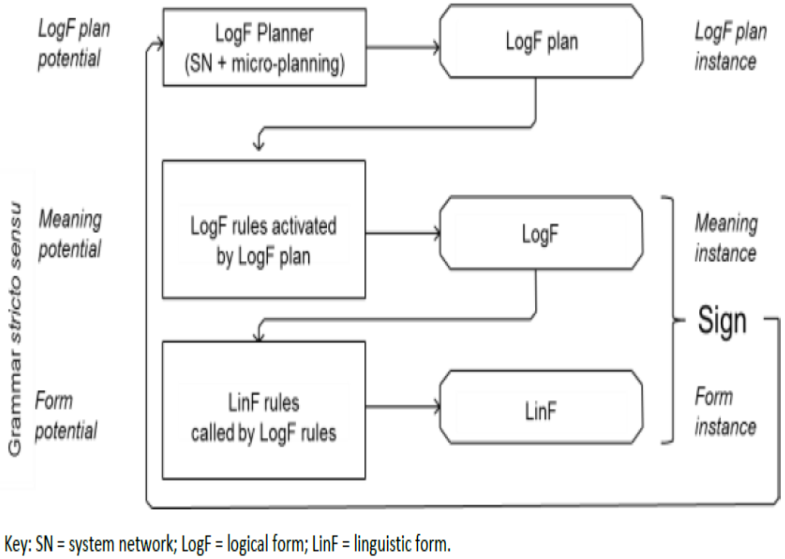
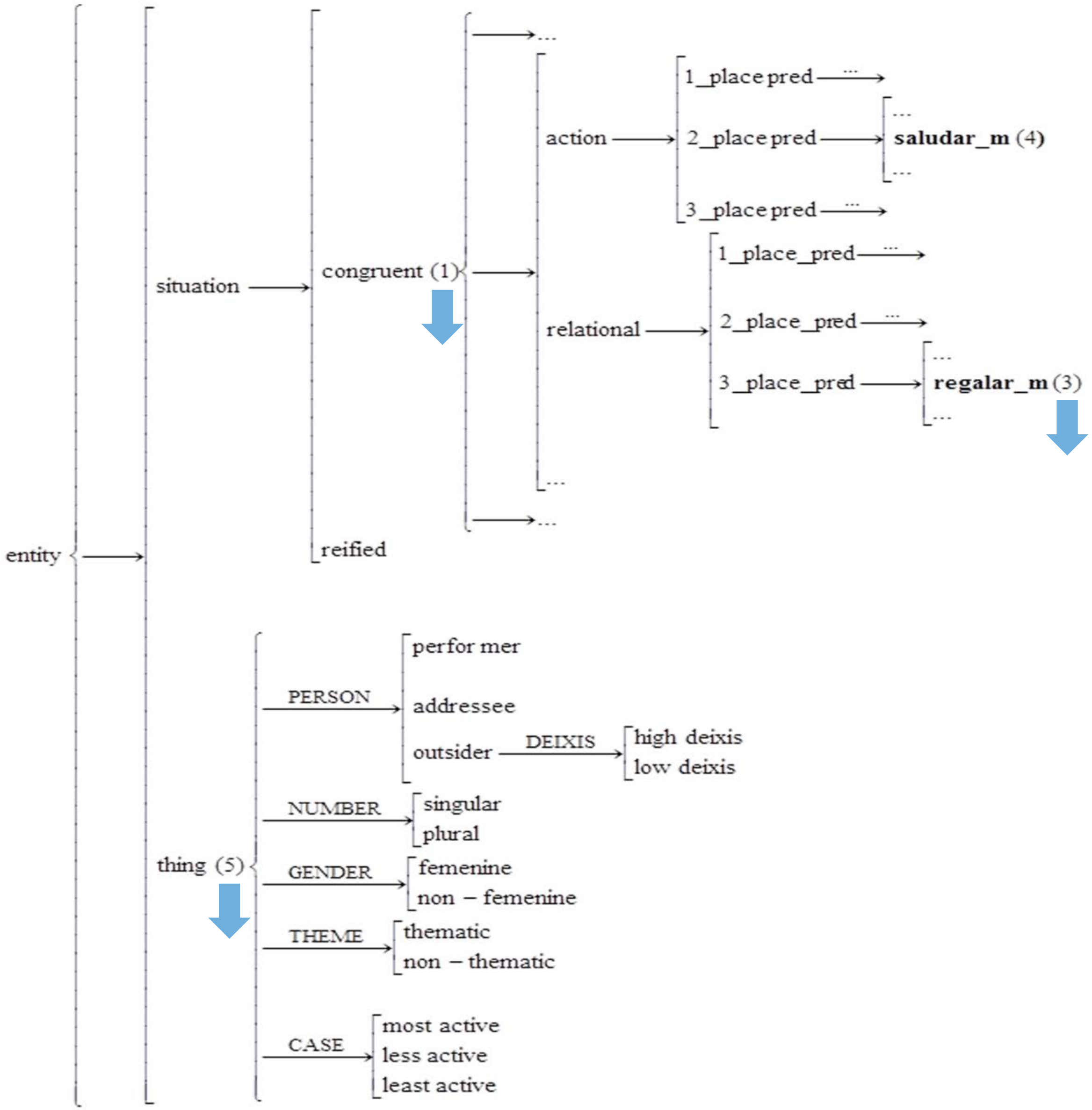

potential
instance
meaning
form
system network of semantic features
selection expression of semantic features
realization rules & potential structures
one layer of a richly labelled tree structure

Figure 2-3: The components and their outputs in a systemic functional grammar (Fawcett 2008).


Grammar stricto sensu
LogF plan potential
LogF Planner (SN + micro-planning)
LogF plan
LogF plan instance
Meaning potential
LogF rules activated by LogF plan
LogF
Meaning instance
Sign
Form potential
LinF rules called by LogF rules
LinF
Form instance
Key: SN = system network; LogF = logical form; LinF = linguistic form.

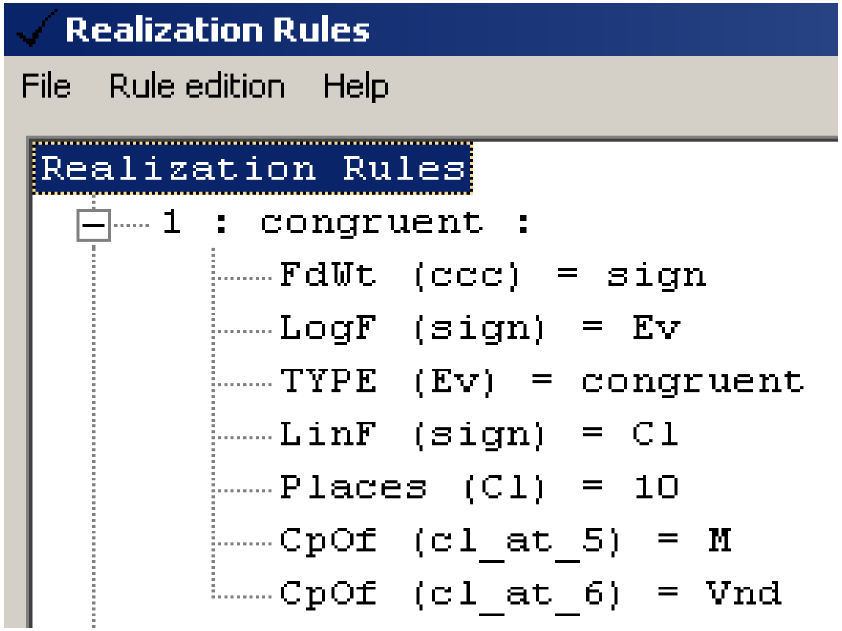
Simplified architecture of a grammar of Spanish inspired by Fawcett 2000, 2008, 2011.

The System Network of a Micro-Grammar of Spanish



Initial Stage Logical and Linguistic Forms

Realization Rule #1



```
Realization Rules
  1 : congruent :
        FdWt (ccc) = sign
        LogF (sign) = Ev
        TYPE (Ev) = congruent
        LinF (sign) = Cl
        Places (Cl) = 10
        CpOf (cl_at_5) = M
        CpOf (cl_at_6) = Vnd
```

Ordinary prose definitions

Handout: 33

Insuing ouput sub-graph

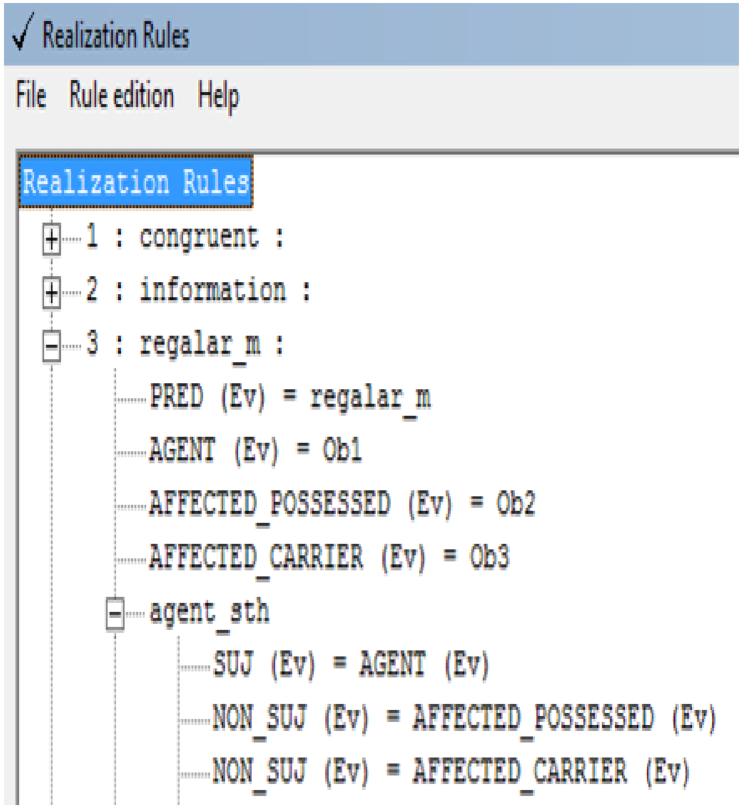
Handout: 34

Key
FdWt = Filled With
ccc = current commanding category
LogF = Logical Form
Ev = Event (variable)
LinF = Linguistic Form
CpOf = Composed Of
M = Main Verb Root
Vnd = Verb Ending

Back to System Network: 3

A Logical Form for *regalar* (='give as a gift')

Realization Rule #3



```
Realization Rules
  1 : congruent :
  2 : information :
  3 : regalar_m :
      PRED (Ev) = regalar_m
      AGENT (Ev) = Ob1
      AFFECTED_POSSESSED (Ev) = Ob2
      AFFECTED_CARRIER (Ev) = Ob3
      agent_sth
          SUJ (Ev) = AGENT (Ev)
          NON_SUJ (Ev) = AFFECTED_POSSESSED (Ev)
          NON_SUJ (Ev) = AFFECTED_CARRIER (Ev)
```

Ordinary prose definitions

Handout: 35

Insuing ouput sub-graph

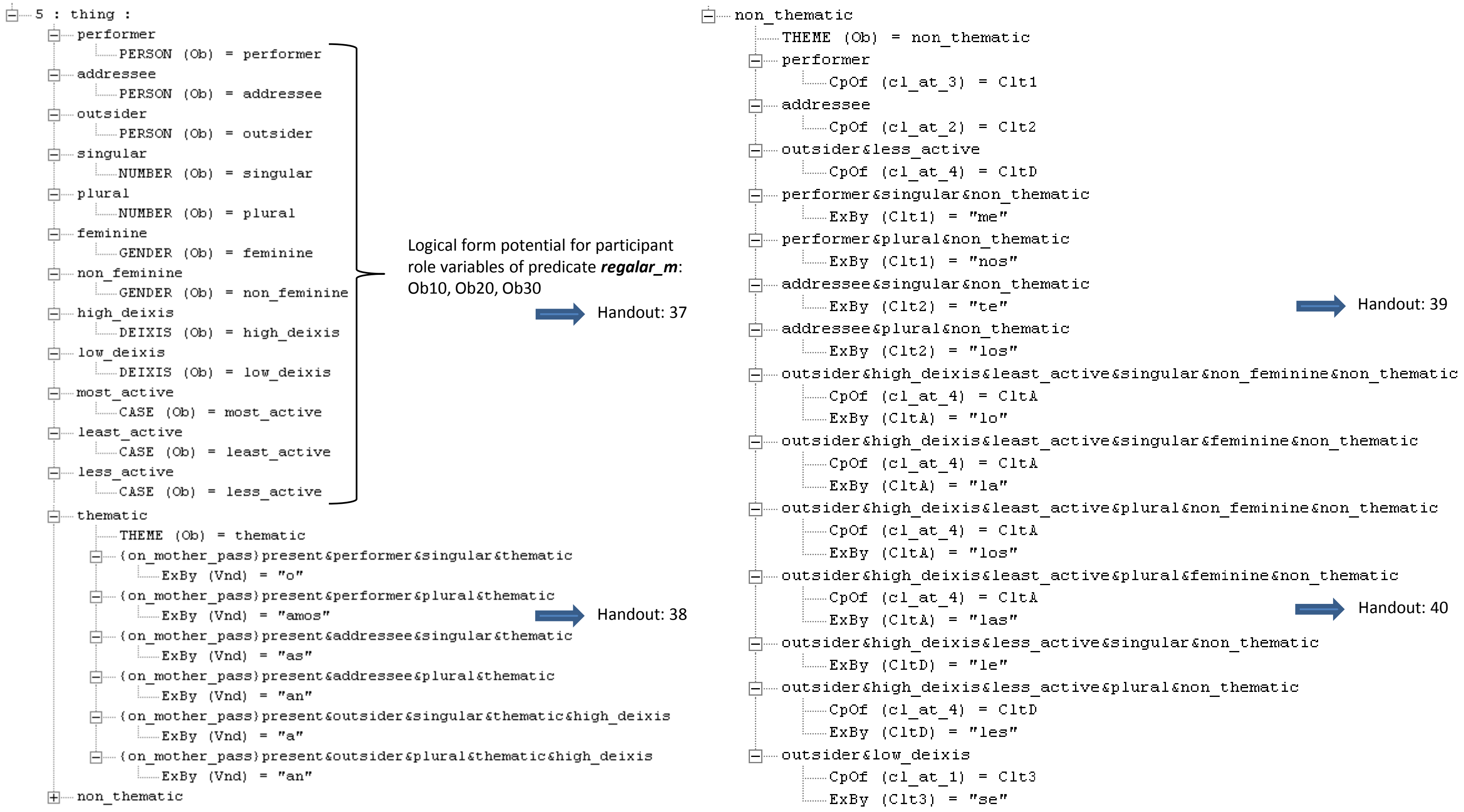
Handout: 36

Key
regalar_m = equivalent to regalar'
PRED = PREDICATE
Ev = Event (variable)
Ob = Object (variable)
SUJ = SUBJECT
NON_SUJ = NON_SUBJECT

Back to System Network: 5

Logical and Linguistic Forms for Verb Endings and Clitics

Realization Rule #5



```
5 : thing :
    performer
        PERSON (Ob) = performer
    addressee
        PERSON (Ob) = addressee
    outsider
        PERSON (Ob) = outsider
    singular
        NUMBER (Ob) = singular
    plural
        NUMBER (Ob) = plural
    feminine
        GENDER (Ob) = feminine
    non_feminine
        GENDER (Ob) = non_feminine
    high_deixis
        DEIXIS (Ob) = high_deixis
    low_deixis
        DEIXIS (Ob) = low_deixis
    most_active
        CASE (Ob) = most_active
    least_active
        CASE (Ob) = least_active
    less_active
        CASE (Ob) = less_active
    thematic
        THEME (Ob) = thematic
        {on_mother_pass}present&performer&singular&thematic
            ExBy (Vnd) = "o"
        {on_mother_pass}present&performer&plural&thematic
            ExBy (Vnd) = "amos"
        {on_mother_pass}present&addressee&singular&thematic
            ExBy (Vnd) = "as"
        {on_mother_pass}present&addressee&plural&thematic
            ExBy (Vnd) = "an"
        {on_mother_pass}present&outsider&singular&thematic&high_deixis
            ExBy (Vnd) = "a"
        {on_mother_pass}present&outsider&plural&thematic&high_deixis
            ExBy (Vnd) = "an"
    non_thematic
```

Logical form potential for participant role variables of predicate ***regalar_m***: Ob10, Ob20, Ob30

Handout: 37

Handout: 38

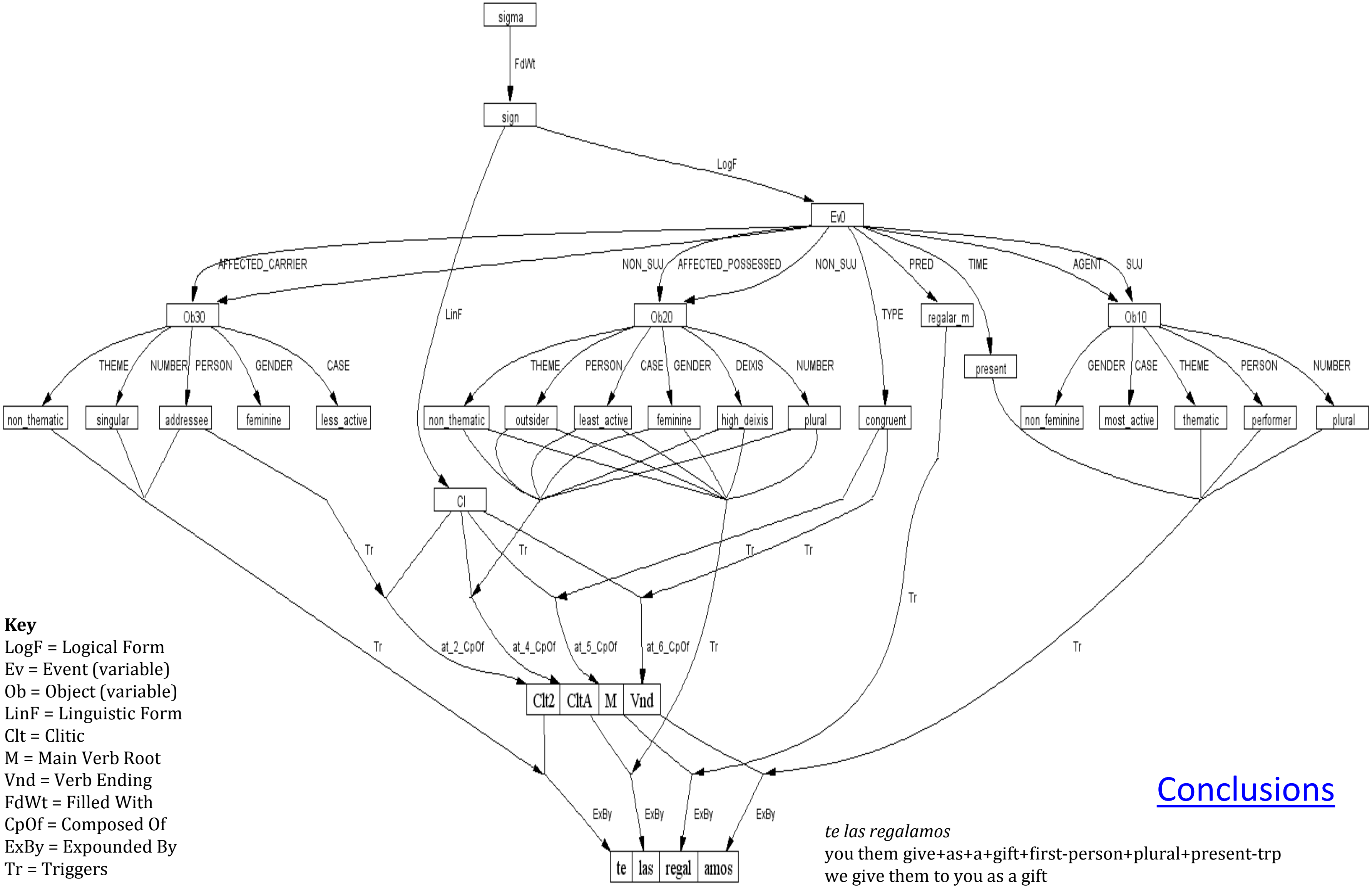
```
non_thematic
    THEME (Ob) = non_thematic
    performer
        CpOf (cl_at_3) = Clt1
    addressee
        CpOf (cl_at_2) = Clt2
    outsider&less_active
        CpOf (cl_at_4) = CltD
    performer&singular&non_thematic
        ExBy (Clt1) = "me"
    performer&plural&non_thematic
        ExBy (Clt1) = "nos"
    addressee&singular&non_thematic
        ExBy (Clt2) = "te"
    addressee&plural&non_thematic
        ExBy (Clt2) = "los"
    outsider&high_deixis&least_active&singular&non_feminine&non_thematic
        CpOf (cl_at_4) = CltA
        ExBy (CltA) = "lo"
    outsider&high_deixis&least_active&singular&feminine&non_thematic
        CpOf (cl_at_4) = CltA
        ExBy (CltA) = "la"
    outsider&high_deixis&least_active&plural&non_feminine&non_thematic
        CpOf (cl_at_4) = CltA
        ExBy (CltA) = "los"
    outsider&high_deixis&least_active&plural&feminine&non_thematic
        CpOf (cl_at_4) = CltA
        ExBy (CltA) = "las"
    outsider&high_deixis&less_active&singular&non_thematic
        ExBy (CltD) = "le"
    outsider&high_deixis&less_active&plural&non_thematic
        CpOf (cl_at_4) = CltD
        ExBy (CltD) = "les"
    outsider&low_deixis
        CpOf (cl_at_1) = Clt3
        ExBy (Clt3) = "se"
```

Handout: 39

Handout: 40

Output Graph for the Text-Sentence *te las regalamos*

Realization Rules ##1, 3, 5



Key
LogF = Logical Form
Ev = Event (variable)
Ob = Object (variable)
LinF = Linguistic Form
Clt = Clitic
M = Main Verb Root
Vnd = Verb Ending
FdWt = Filled With
CpOf = Composed Of
ExBy = Expounded By
Tr = Triggers

Conclusions

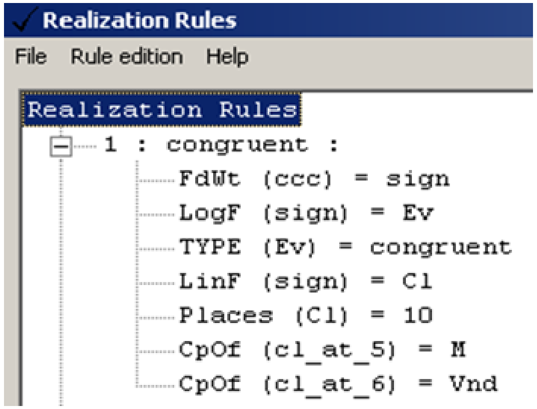
te las regalamos
you them give+as+a+gift+first-person+plural+present-trp
we give them to you as a gift

Conclusions

Initial Logical and Linguistic Forms for a Congruent Semantics

Ordinary Language Paraphrases of Realization Rule #1

Key
FdWt = Filled With
ccc = current commanding category
LogF = Logical Form
Ev = Event (variable)
LinF = Linguistic Form
CpOf = Composed Of
M = Main Verb Root
Vnd = Verb Ending



```
Realization Rules
  1 : congruent :
        FdWt (ccc) = sign
        LogF (sign) = Ev
        TYPE (Ev) = congruent
        LinF (sign) = Cl
        Places (Cl) = 10
        CpOf (cl_at_5) = M
        CpOf (cl_at_6) = Vnd
```

Ordinary language paraphrase I

If you want to realize a congruent semantics, then

(i) the current commanding element, namely, a text-sentence, must be filled with a sign;

(ii) the sign's logical form is an event;

(iii) the event is congruent,

(iv) the sign's linguistic form is a clause;

(v) the clause has ten ten potential places for form elements to land on;

(vi) the fifth landing site is to be occupied by a main verb root; and

(vii) the sixth landing site is to be occupied by a verb ending.

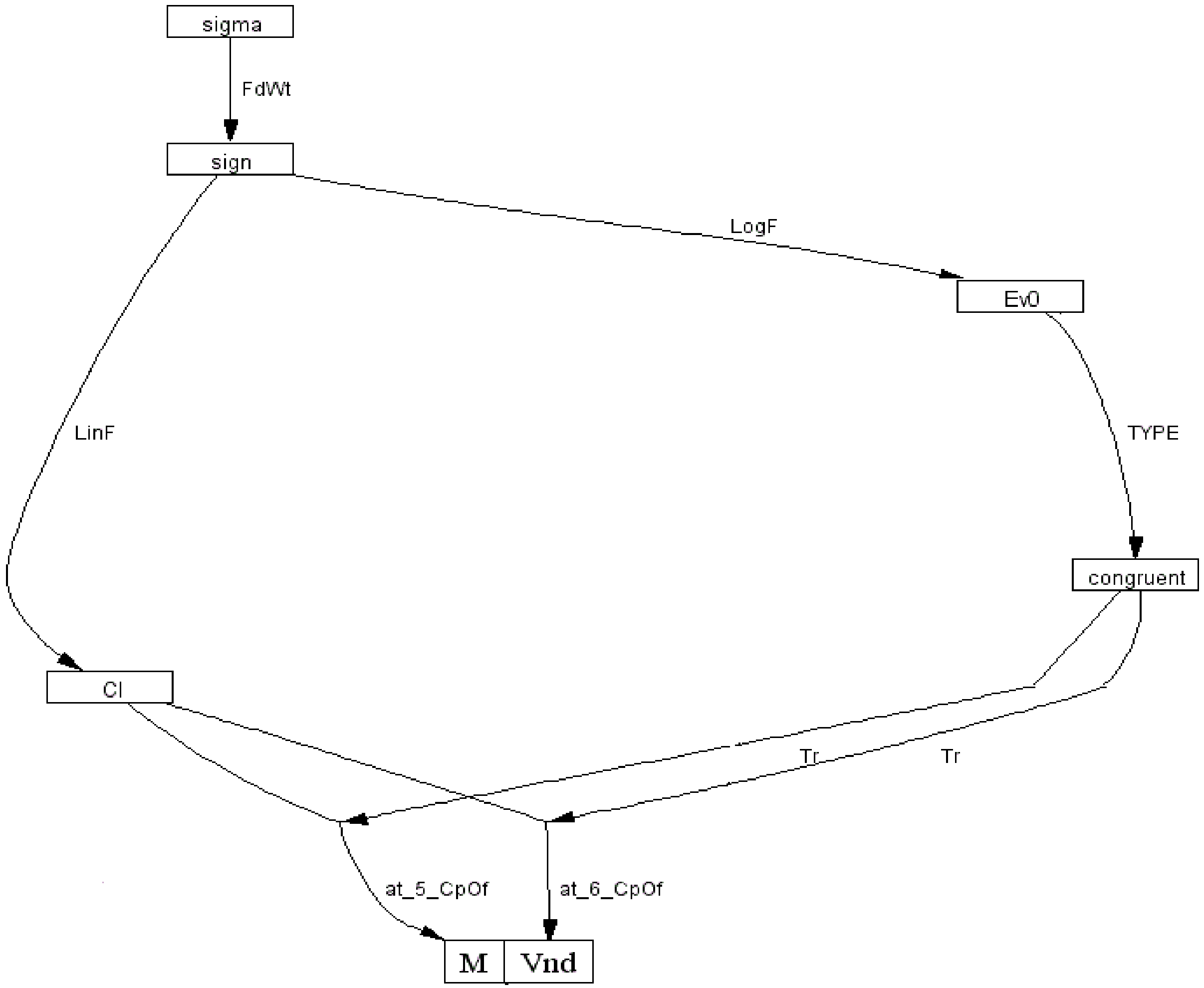
Ordinary language paraphrase II

For a text-sentence to express a congruent semantics, it must result from a sign with a congruent type event, and a clause with ten landing sites for clause elements. The fifth and sixth clause landing sites will be occupied by a main verb root and a verbal ending, respectively.

Back to RR#1: H34

Mapping a Congruent Event onto a Verb Root and its Ending

Output Sub-Graph of Realization Rule #1



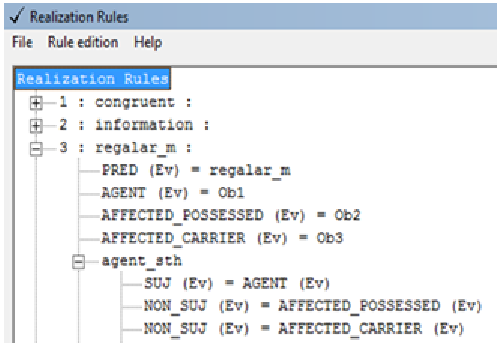
Key
FdWt = Filled With
LogF = Logical Form
Ev = Event (variable)
LinF = Linguistic Form
Cl = Clause
CpOf = Composed Of
M = Main Verb Root
Vnd = Verb Ending

Back to RR#1

A Logical Form for *regalar* (='give as a gift')

Ordinary Language Paraphrases of Realization Rule #3

Key
regalar_m = equivalent to regalar'
PRED = PREDICATE
Ev = Event (variable)
Ob = Object (variable)
SUJ = SUBJECT
NON_SUJ = NON_SUBJECT



```
Realization Rules
 ⊞─1 : congruent :
 ⊞─2 : information :
 ⊟─3 : regalar_m :
       ├─PRED (Ev) = regalar_m
       ├─AGENT (Ev) = Ob1
       ├─AFFECTED_POSSESSED (Ev) = Ob2
       ├─AFFECTED_CARRIER (Ev) = Ob3
       ⊟─agent_sth
           ├─SUJ (Ev) = AGENT (Ev)
           ├─NON_SUJ (Ev) = AFFECTED_POSSESSED (Ev)
           └─NON_SUJ (Ev) = AFFECTED_CARRIER (Ev)
```

Ordinary language paraphrase I

The logical form of the process ***regalar_m*** is built with:

(i) the feature ***regalar_m*** as the core predicate of the event ***Ev***;

(ii) the variable ***Ob1*** as the Agent of ***Ev***;

(iii) the variable ***Ob2*** as the Affected-Possessed of ***Ev***;

(iv) the variable ***Ob3*** as the Affected-Carrier of ***Ev***; furthermore, if the agent participant (***agent_sth***) of ***regalar_m*** is to be the subject of the event ***Ev***, then add to the sub-graph built in steps (i)-(iv) the following sub-structures:

(v) the variable of the Agent participant of ***Ev*** is also its ***SUJ****(ECT)*;

(vi) the variable of the Affected-Possessed of ***Ev*** is also its ***NON-SUJ***;

(vii) the variable of the Affected-Carrier participant of ***Ev*** is also it ***NON-SUJ***.

Ordinary language paraphrase II

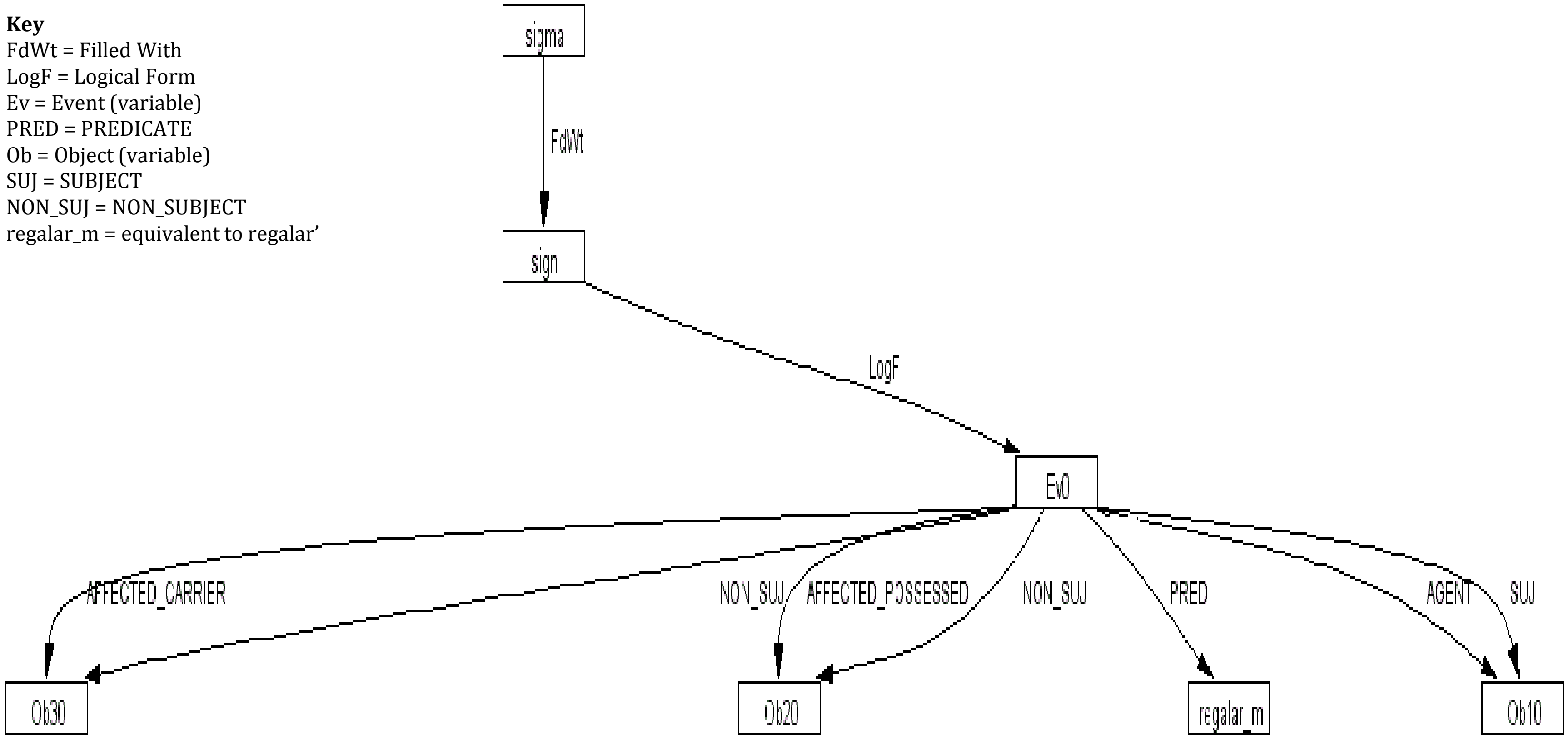
The semantics of the process ***regalar*** is basically a predicate with three participant roles: an agent, an affected-possessed, and an affected-carrier. The agent participant of the process is also its subject, while the affected-possessed and the affected-carrier particpants are both non-sujects.

Back to RR#3: H36

Logical Form for Participant Role Variables of *regalar_m*

Output Sub-graph of Realization Rule #3

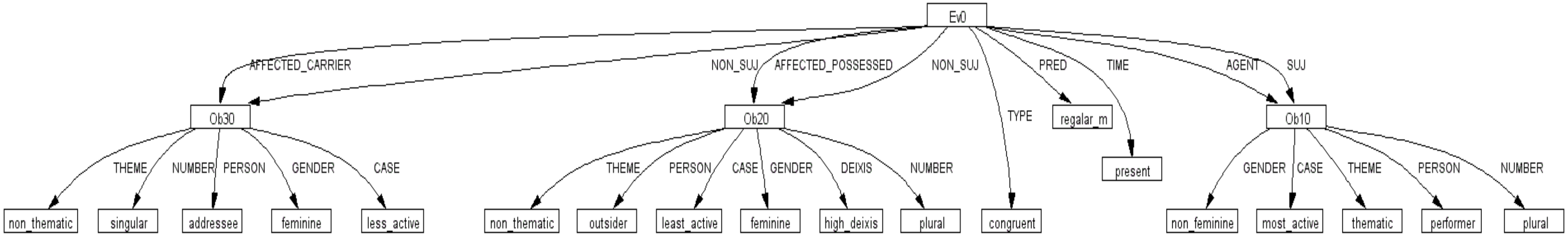
Key
FdWt = Filled With
LogF = Logical Form
Ev = Event (variable)
PRED = PREDICATE
Ob = Object (variable)
SUJ = SUBJECT
NON_SUJ = NON_SUBJECT
regalar_m = equivalent to regalar'



Back to RR#3

Logical Form of Participant Role Variables of the Predicate *regalar_m*

Output Sub-graph of Realization Rule #5

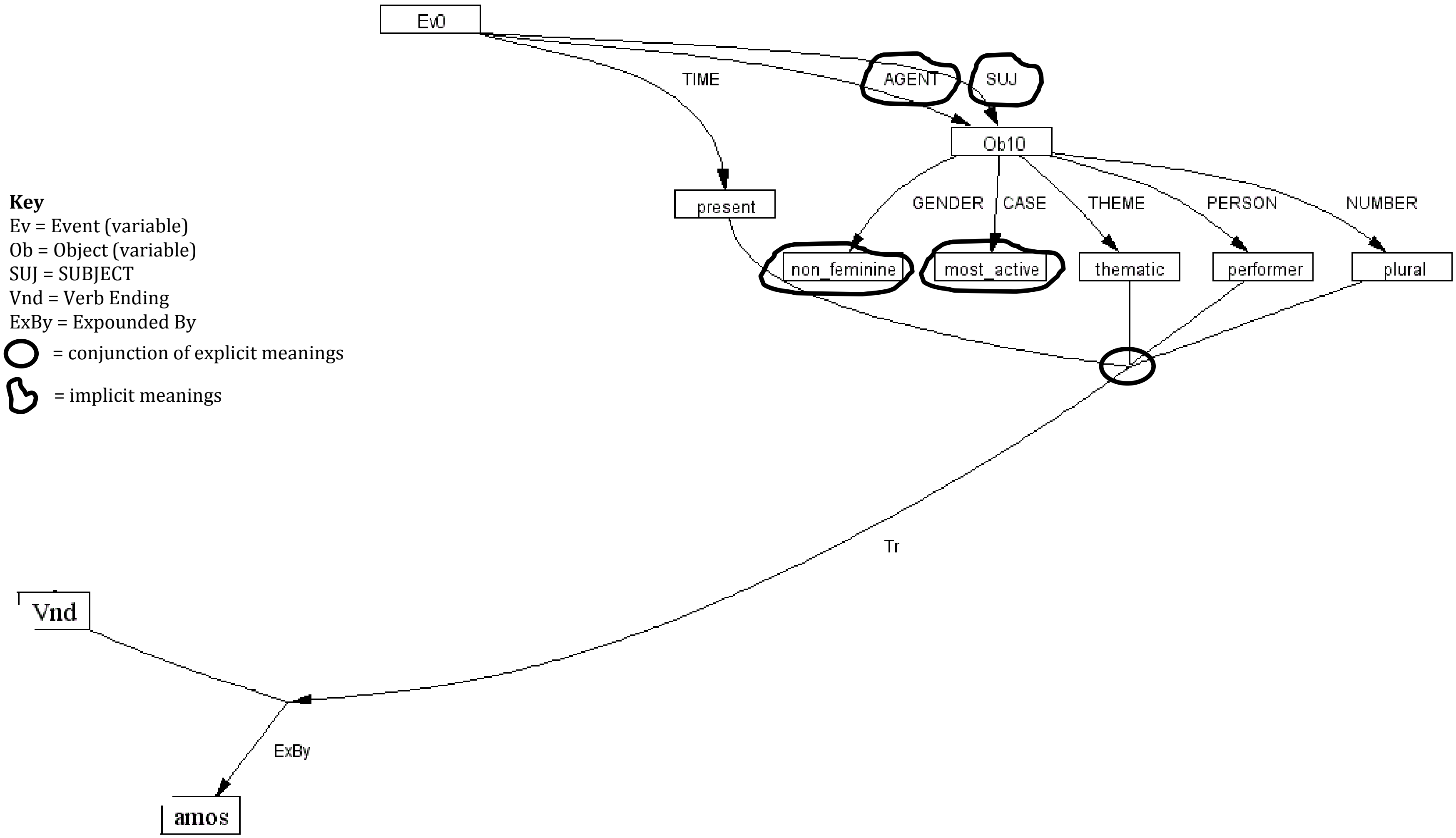


Key
Ev = Event (variable)
PRED = PREDICATE
Ob = Object (variable)
SUJ = SUBJECT
NON_SUJ = NON_SUBJECT
regalar_m = equivalent to regalar'

Back to RR#5: H38

Explicit and Implicit meanings of the Verb Ending *amos*

Output Graph of Realization Rule #5

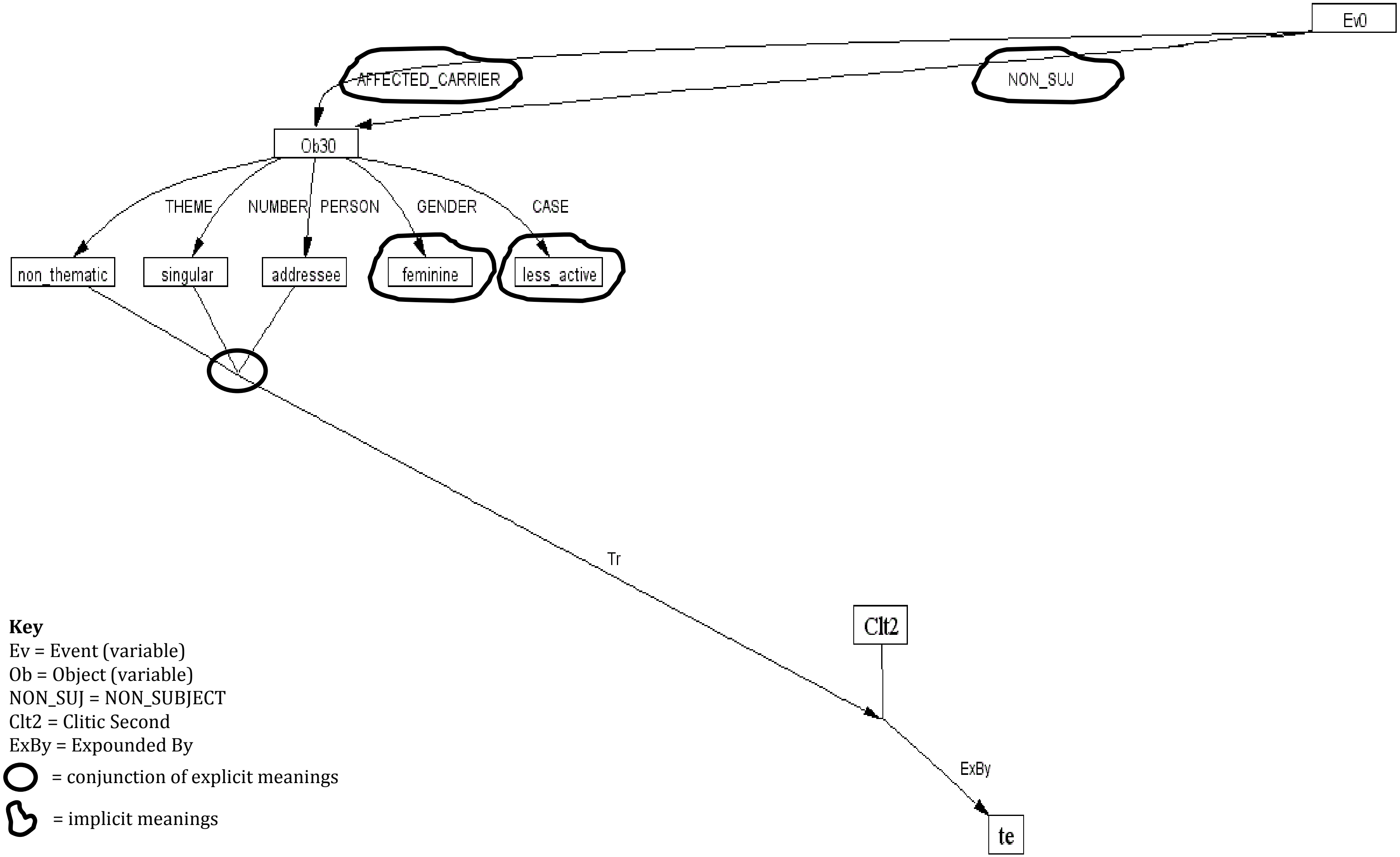


Key
Ev = Event (variable)
Ob = Object (variable)
SUJ = SUBJECT
Vnd = Verb Ending
ExBy = Expounded By
○ = conjunction of explicit meanings
◌ = implicit meanings

Back RR#5: H39

Explicit and Implicit meanings of the Clitic *te*

Output Graph of Realization Rule #5

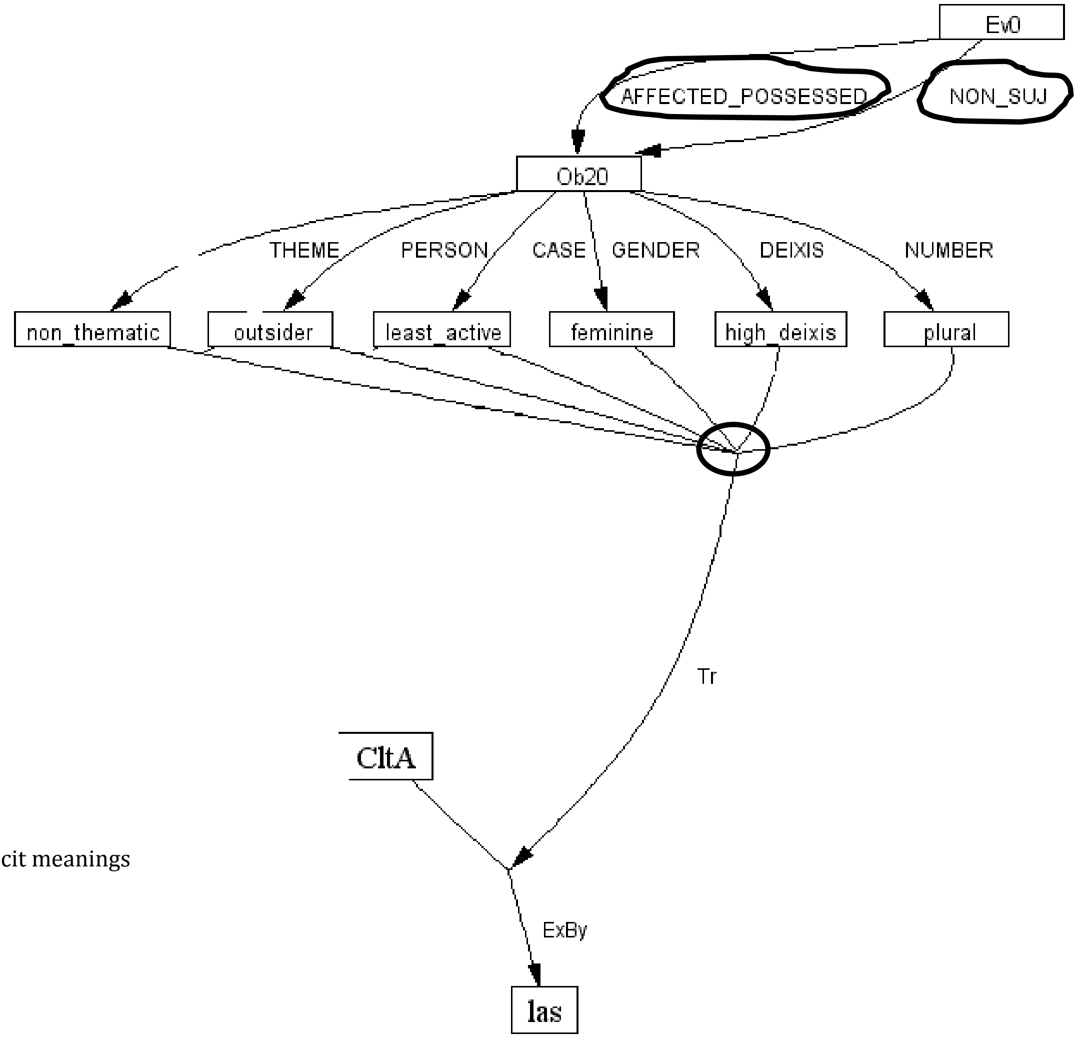


Key
Ev = Event (variable)
Ob = Object (variable)
NON_SUJ = NON_SUBJECT
Clt2 = Clitic Second
ExBy = Expounded By
○ = conjunction of explicit meanings
⬯ = implicit meanings

Back to RR#5: H40

Explicit and Implicit Meanings of the Clitic *las*

Output Graph of Realization Rule #5



Key
Ev = Event (variable)
Ob = Object (variable)
NON_SUJ = NON_SUBJECT
CltA = Clitic Accusative
ExBy = Expounded By
○ = conjunction of explicit meanings
⬯ = implicit meanings

Back to RR#5