

More advanced generation

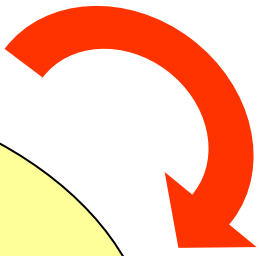
Complete system downloadable from:

<http://www.fb10.uni-bremen.de/anglistik/langpro/kpml/images/kpml41-english.zip>

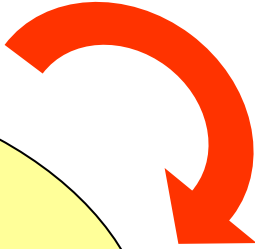


NLG Grammars

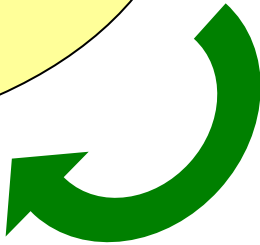
NLG Grammars



WHAT?
WHY?



**WHAT?
WHY?**



HOW?



NLG Grammars

**WHAT?
WHY?**

HOW?

PROPERTIES?



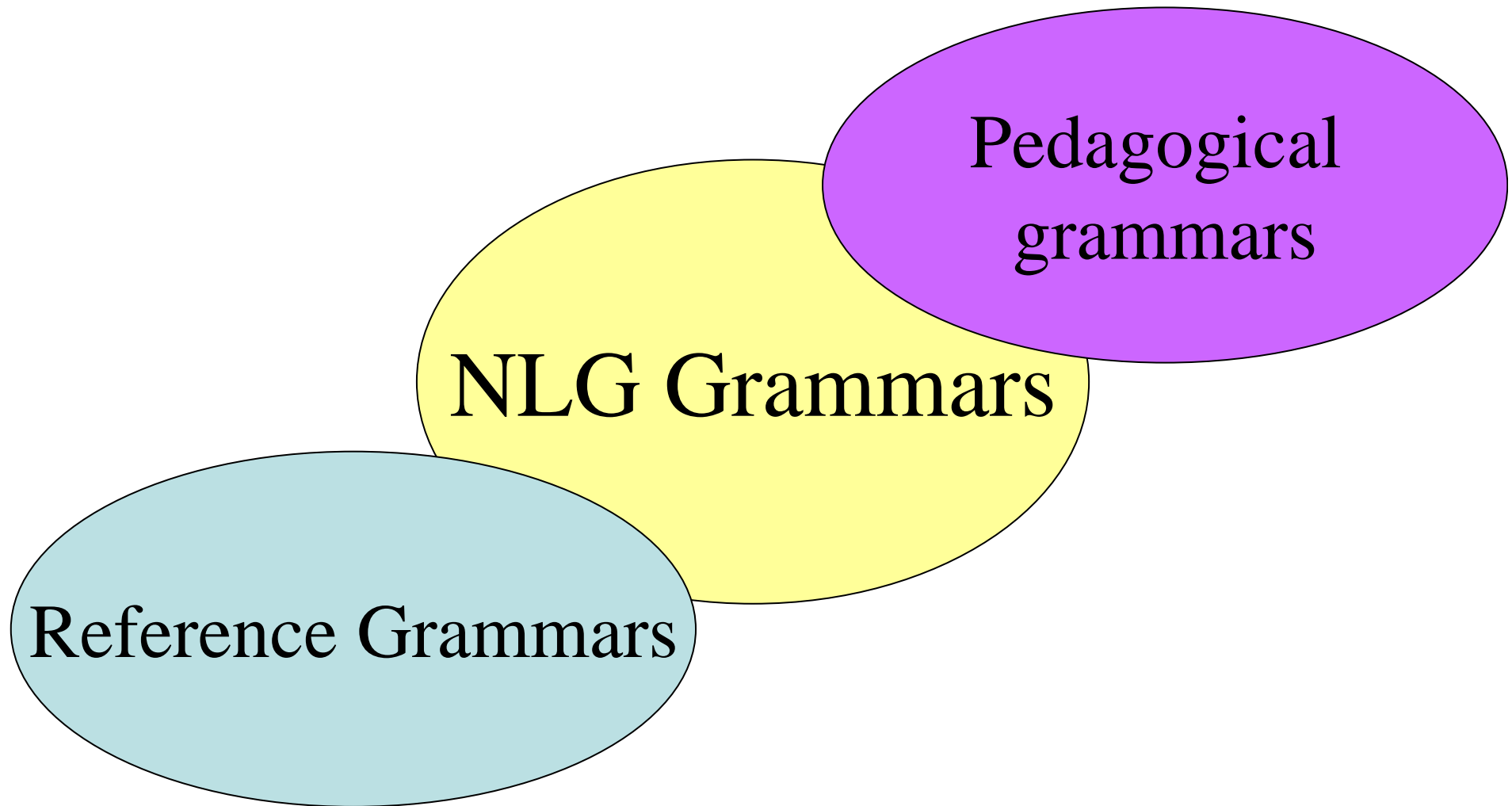


NLG Grammars



NLG Grammars

Reference Grammars



NLG-Grammars share interesting properties with other kinds of grammars - i.e., grammars for other purposes and users -

but they also bring with them several important **additional** properties that may prove to be highly advantage.

How to keep a large grammar 'working'?

- Example sets...

Example set (all currently loaded) generated for language GERMAN at 5-7-1999 21:46:44

3 Examples in this selection.
Click on example names for semantics.

Color Key

- Generated form matches the target
- Generated form does not match the target
- Failed to generate without user interaction

TARGET	GENERATED	NAME
Das Gruppenleitertreffen findet am Montag in KL 57/472 statt. <small>(The group leader meeting takes place on Monday in KL 57/472)</small>	Das Gruppenleitertreffen findet an dem Montag in KL 57/472 statt.	SEM-I-DAY1
Das Gruppenleitertreffen findet an dem Mo in KL 57/472 statt. <small>(meeting one)</small>	Das Gruppenleitertreffen findet an dem Mo in KL 57/472 statt.	SEM-I-DAY2
Das Gruppenleitertreffen findet am 4. in KL 57/472 statt. <small>(The group leader meeting takes place on the 4th in KL 57/472)</small>	Das Gruppenleitertreffen findet an dem 4. in KL 57/472 statt.	SEM-I-DAY1A

Links to further pages with more detailed information about the example

Grammar development and documentation: Example Sets

- large grammars are complex and difficult for newcomers to understand
- this difficulty can be eased by providing *example sets* (*'test suites'*, *'exercise sets'*) that show how particular sentences are generated using a grammar

Many examples 'preloaded'

Example Manager (KPML)

Example Operation Commands File Edit Generate Mark Clear Modes Runner Regression

Current language is: ENGLISH
Example set shown: ALL (504 examples)

marked	name	TARGET	generated?	mismatch?
	BEHRENS1	Behrens, Peter, born in Hamburg in ...	*	*
	BEHRENS2	Behrens like Le Corbusier began his...	*	
	BEHRENS3	He attended the art schools in Karl...	*	
	BEHRENS4	In 1890 he studied in Munich with H...	*	
	BEHRENS5	At the end of the century Behrens g...	*	*
	BEHRENS6	The Grand Duke of Hessen invited Be...	*	*
	BEHRENS1A	Behrens (Peter) was born in Hamburg...	*	*
	COMP-DOUBLE-PROP1	The month was cooler and drier than...	*	
	COMP-DOUBLE-PROP2	The month was cooler and more tempe...	*	
	COMP-FARMORE	The month was far warmer than avera...	*	
	COMP-MORE	The month was warmer than average.	*	
	COMP-MUCHCOMPLEXES	The month was much cooler, far drie...	*	
	COMP-MUCHMORE	The month was much warmer than aver...	*	
	COMP-SINGLE-PROP	The month was cooler than average.	*	
	COMP-TRIPLE-AS	The month was as cool, as dry and a...	*	
	COMP-TRIPLE-LESS	The month was less cool, less tempe...	*	
	COMP-TRIPLE-LESS2	The month was less cool, less tempe...	*	
	COMP-TRIPLE-PROP	The month was cooler, drier and mor...	*	
	COMP-VERYMUCHMORE	The month was very much warmer than...	*	
	CONC-ALSO	Also, we will go to the lake.	*	
	CONC-CONJUNCTIVE	The weather is hot.	*	

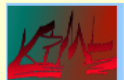
Example sets for ENGLISH loaded... behrens CADCAM COMPARATIVES CO
NCESSIONS curry DECL-WH-SWITCHES eli-testset gumwork IBL IFG-Chapt
er-2 katerina-tests nigel-exerciseset np-new NP-types penman-primer RAN
LP-EXAMPLES reuters ROBOT-LABELLING ROUTES TENSE test TEST-EXA
MPLE-RECS

Preeditor: ON OFF Case: ON/OFF Sort: ON/OFF Classes: ON/OFF Display: TARGET/GENERATED/NONE

R: Menu of operations for this object.



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[Generation Bank](#)

PRIMER-1E

(诺克斯号)	(一直)	(航行)	(下去)
nuo4ke4si1 hao4	yi1 zhi2	hang2xing2	xia4qu4
<i>Knox</i>	<i>long-durative aspect marker</i>	<i>sail</i>	<i>continue-to-future aspect marker</i>

The Knox is keeping sailing.

(EXAMPLE)

```

:NAME PRIMER-1E
:GENERATEDFORM "诺克斯号 一直 航行 下去."
:GLOSS ( :ENGLISH "The Knox is keeping sailing.")
:TARGETFORM "nuo4ke4si1 hao4 yi1zhi2 hang2xing2 xia4qu4."
:LOGICALFORM
(E / HANG2XING2
 :ASPECT-TYPE-Q WITH-ASPECT-MARKER
 :WITH-ASPECT-MARKER-TYPE-Q IMPERFECTIVE
 :IMPERFECTIVE-PRIMARY-TYPE-Q CONTINUE-TO-FUTURE
 :SECONDARY-Q SECONDARY
 :ACTOR
 (S / SHIP
 :NAME KNOX )
 )
:SET-NAME |penman-primer|
)
    
```

Structure:

Function Structure:

```

[SENTENCE]
 [TOPICAL#1/MEDIUM#1/SUBJECT#1]
   [THING#2].. = "诺克斯号 "
 [SECONDARY-MARKER#1].. = "一直 "
 [VOICE#1/LEXVERB#1/PROCESS#1].. = "航行 "
 [PRIMARY-MARKER#2].. = "下去 ."
    
```

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<p>η Αννυ Αλμπερς (Anni Albers) εγκαταστάθηκε μόνιμα σε την Αμερική το χίλια ενιακόσια τριάντα-τρία. (Anni Albers settled in the USA in 1933.)</p>	<p>η Αννυ Αλμπερς (Anni Albers) εγκαταστάθηκε μόνιμα σε την Αμερική το χίλια ενιακόσια τριάντα-τρία.</p>	<p>AALBERS1</p>
<p>ο Μπέρενς (Behrens) σπούδασε [no realization: (DEICTIC)] καλές τέχνες σε την Καρλσρούη (Karlsruhe) και το Ντύσσελντορφ (Duesseldorf).</p>	<p>ο Μπέρενς (Behrens) σπούδασε [no realization: (DEICTIC)] καλές τέχνες σε την Καρλσρούη (Karlsruhe) και το Ντύσσελντορφ (Duesseldorf).</p>	<p>BEHRENS3</p>
<p>ο Μπέρενς (Behrens) γεννήθηκε σε το Αμβούργο το χίλια οχτακόσια εξήντα οχτώ, και ο Μπέρενς (Behrens) πέθανε σε το Βερολίνο το χίλια ενιακόσια σαράντα. (Behrens was born in Hamburg in 1868 and died in Berlin in 1940.)</p>	<p>ο Μπέρενς (Behrens) γεννήθηκε σε το Αμβούργο το χίλια οχτακόσια εξήντα οχτώ, και ο Μπέρενς (Behrens) πέθανε σε το Βερολίνο το χίλια ενιακόσια σαράντα.</p>	<p>BEHRENS1A</p>
<p>ο Μπέρενς (Behrens) όπως ο Λε Κορμπουζιέ (Le Corbusier) άρχισε την επαγγελματική καριέρα του σαν ένας ζωγράφος. (Behrens started his professional career as a painter like Le Corbusier.)</p>	<p>ο Μπέρενς (Behrens) όπως ο Λε Κορμπουζιέ (Le Corbusier) άρχισε την επαγγελματική καριέρα του σαν ένας ζωγράφος.</p>	<p>BIO1</p>
<p>ο Μπέρενς (Behrens) ήταν αρχιτέκτονας. (Behrens was an architect.)</p>	<p>ο Μπέρενς (Behrens) ήταν αρχιτέκτονας.</p>	<p>BIO2</p>
<p>ο Μπέρενς (Behrens) ήταν ένας διάσημος αρχιτέκτονας. (Behrens was a famous architect.)</p>	<p>ο Μπέρενς (Behrens) ήταν ένας διάσημος αρχιτέκτονας.</p>	<p>BIO3</p>
<p>η Αννυ Αλμπερς (Anni Albers) όπως ο Λε Κορμπουζιέ (Le Corbusier) άρχισε την επαγγελματική καριέρα της σαν ένας ζωγράφος. (Albers started her professional career as a painter like Le Corbusier.)</p>	<p>η Αννυ Αλμπερς (Anni Albers) όπως ο Λε Κορμπουζιέ (Le Corbusier) άρχισε την επαγγελματική καριέρα της σαν ένας ζωγράφος.</p>	<p>BIO1B</p>
<p>δεν βρέχει. (It is not raining /It doesn't rain.)</p>	<p>δεν βρέχει.</p>	<p>BREXEI1</p>
<p>βρέχει.</p>	<p>βρέχει.</p>	<p>BREXEI2</p>

Contrastive
Grammars

Pedagogical
grammars

NLG Grammars

Reference Grammars

start (Process) the MAKE-PLINE command (Goal)

by choosing Polyline from the Polyline flyout on the Draw toolbar

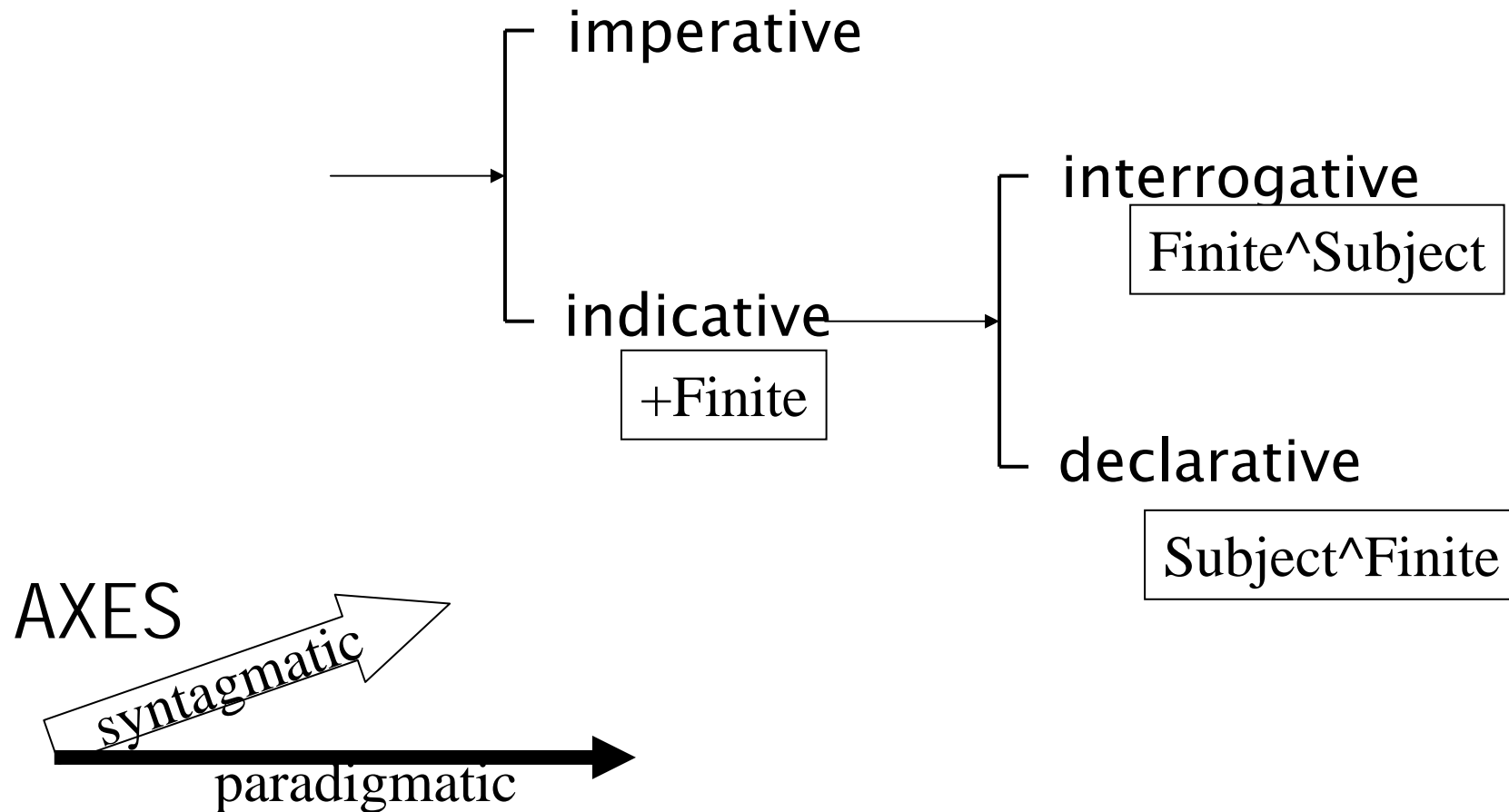
clause							
Sub	Process	Goal	Location				
		Thing	MProc	Minirange			
			Deictic	Class.	Thing	Locative-Qualifier	
					Mproc	Minirange	
						Deictic	Class. Thing

xuanze huitu gongjubang shang duobianxing fubiao zhong de dubianxing
 select draw toolbar on polyline flyout in of polyline

clause				
Process	Goal			
	Qualifier (of flyout)	Qualifier (of polyline)		Q-marker Thing
	Minirange	Mproc	Minirange	MProc

start (Phase) execute (Process) MAKE-PLINE command (Goal)

Linguistic Description within each stratum: system networks



start (Process) the MAKE-PLINE command (Goal)

by choosing Polyline from the Polyline flyout on the Draw toolbar

clause									
Sub	Process	Goal	Location						
		Thing	MProc				Minirange		
			Deictic	Class.	Thing	Locative-Qualifier			
						Mproc	Minirange		
							Deictic	Class.	Thing

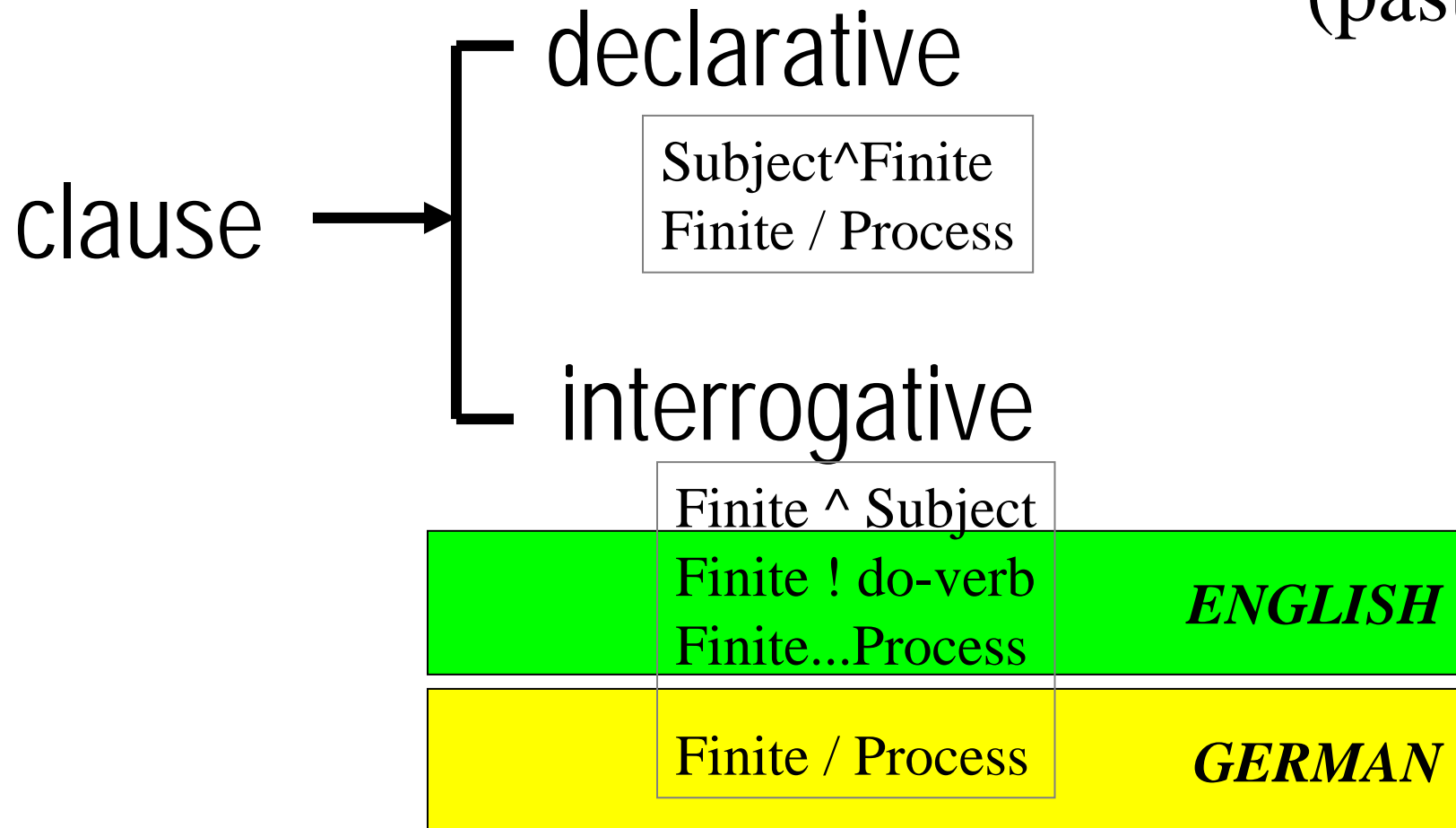
xuanze *huitu* *gongjubang* *shang* *duobianxing* *fubiao* *zhong* *de* *dubianxing*
 select draw toolbar on polyline flyout in of polyline

clause										
Process								Goal		
	Qualifier (of flyout)			Qualifier (of polyline)				Q-marker	Thing	
	Minirange		Mproc	Minirange		MProc				

start (Phase) execute (Process) MAKE-PLINE command (Goal)

Partial congruence of syntagmatic specifications (potential)

(past)



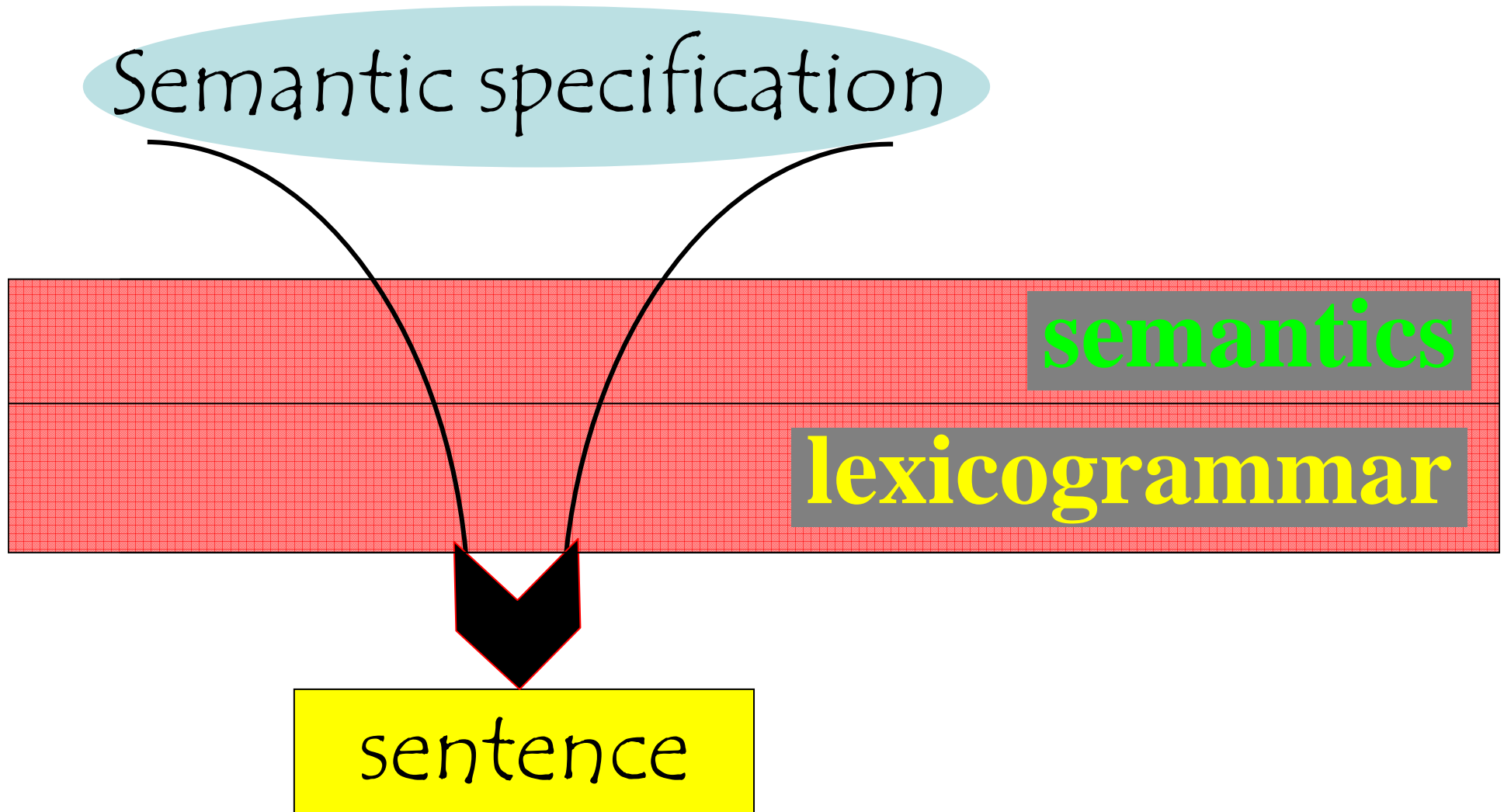
TACTICAL GENERATION

Semantic specification

semantics

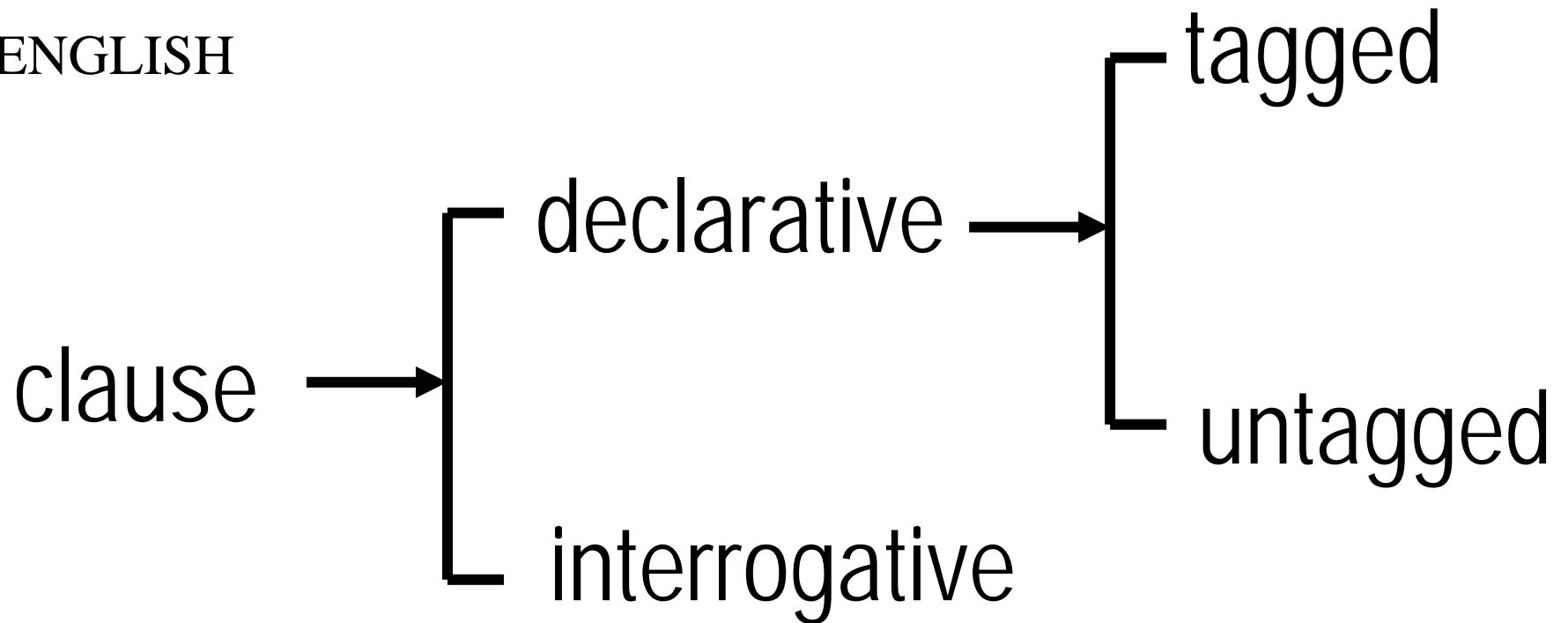
lexicogrammar

sentence



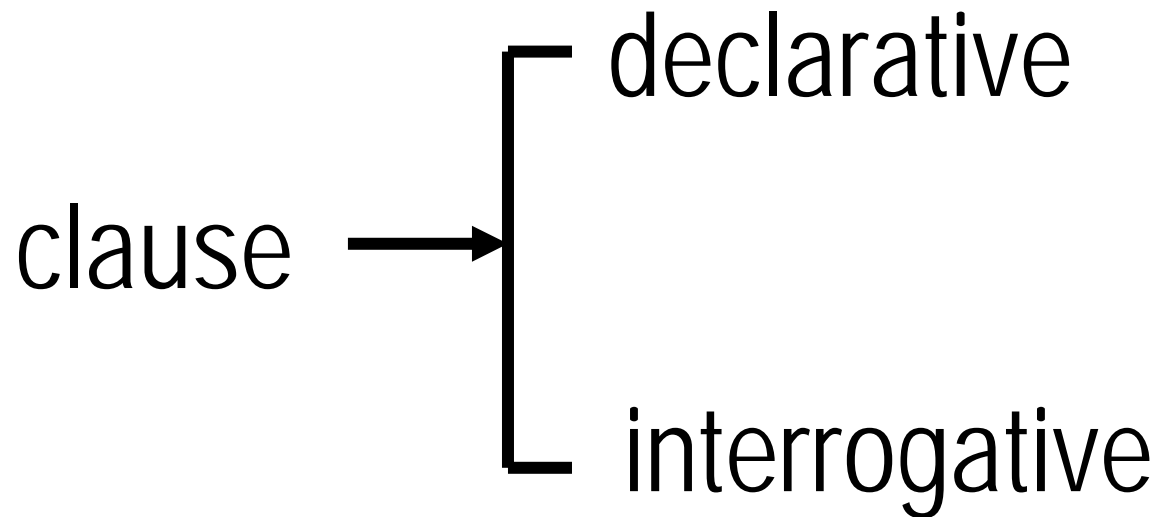
Partial congruence of paradigmatic specifications (potential)

ENGLISH



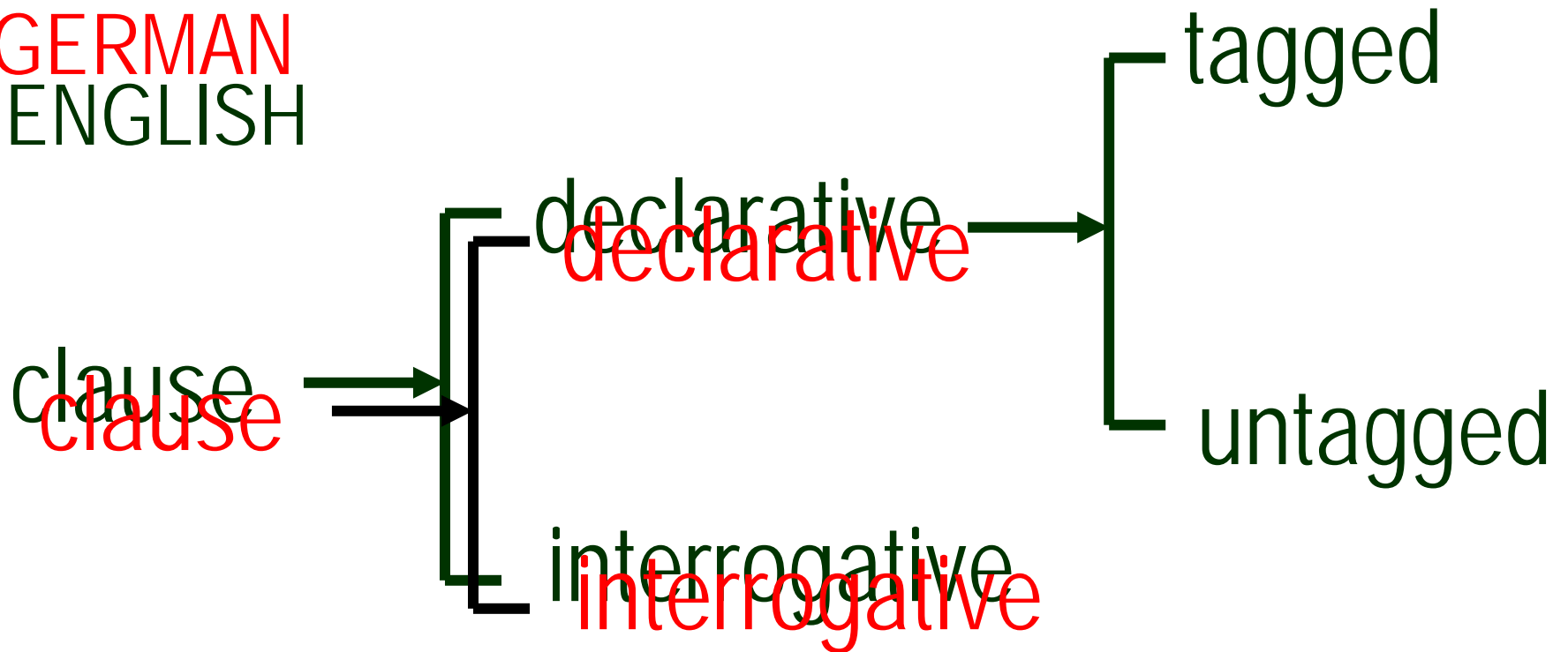
Partial congruence of paradigmatic specifications (potential)

GERMAN



Partial congruence of paradigmatic specifications (potential)

GERMAN
ENGLISH



Example set (all currently loaded) generated for language GERMAN at 5-7-1999 21:45:16

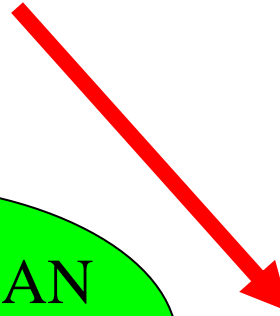
3 Examples in this selection.

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TARGET	GENERATED	NAME
Das Gruppenleitertreffen findet statt an dem Montag in KL 57/472 stattfinden. (The group leader meeting takes place on Monday in KL 57/472)	Das Gruppenleitertreffen findet an dem Montag in KL 57/472 statt.	<i>SEM-1-DAY1</i>
Das Gruppenleitertreffen findet an dem Mo in KL 57/472 statt. (meeting one)	Das Gruppenleitertreffen findet an dem Mo in KL 57/472 statt.	SEM-1-DAY2
Das Gruppenleitertreffen findet statt an dem 4. in KL 57/472 stattfinden. (The group leader meeting takes place on the 4th. in KL 57/472)	Das Gruppenleitertreffen findet an dem 4. in KL 57/472 statt.	<i>SEM-1-DAY1A</i>

ENGLISH GENERATION
GRAMMAR: NIGEL

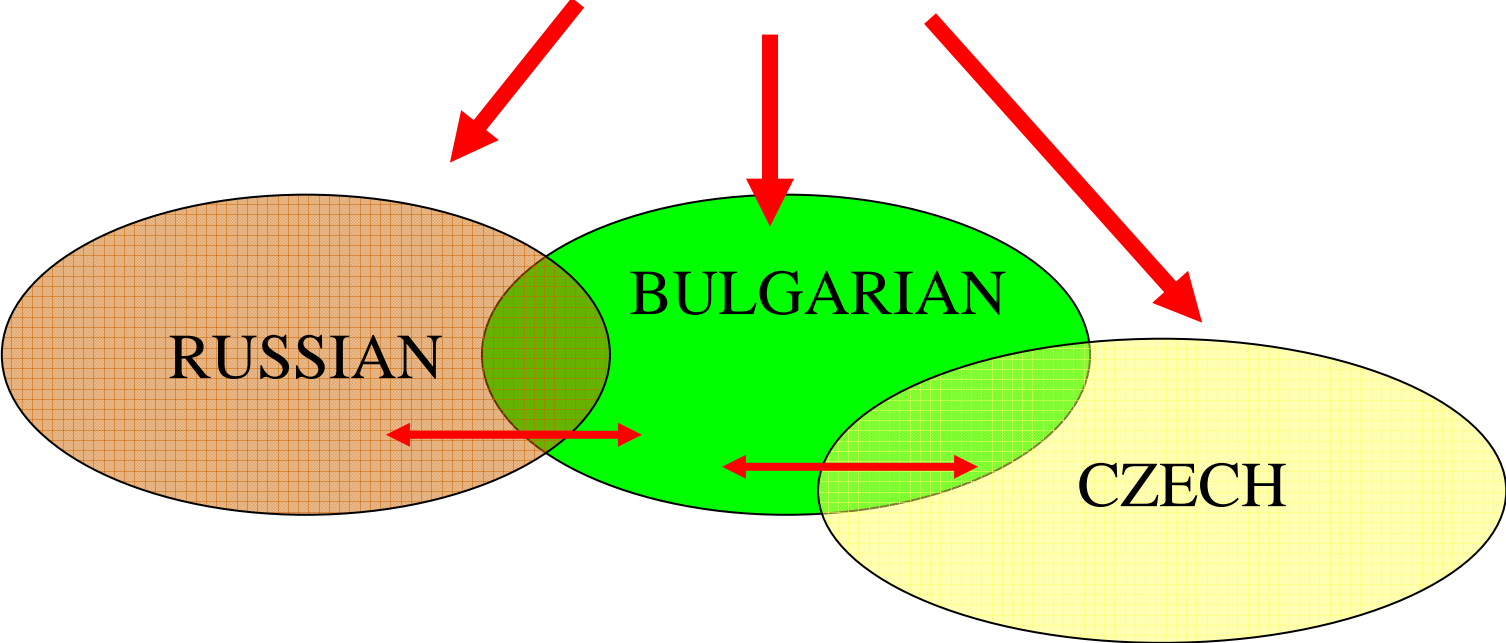


RUSSIAN

BULGARIAN

CZECH

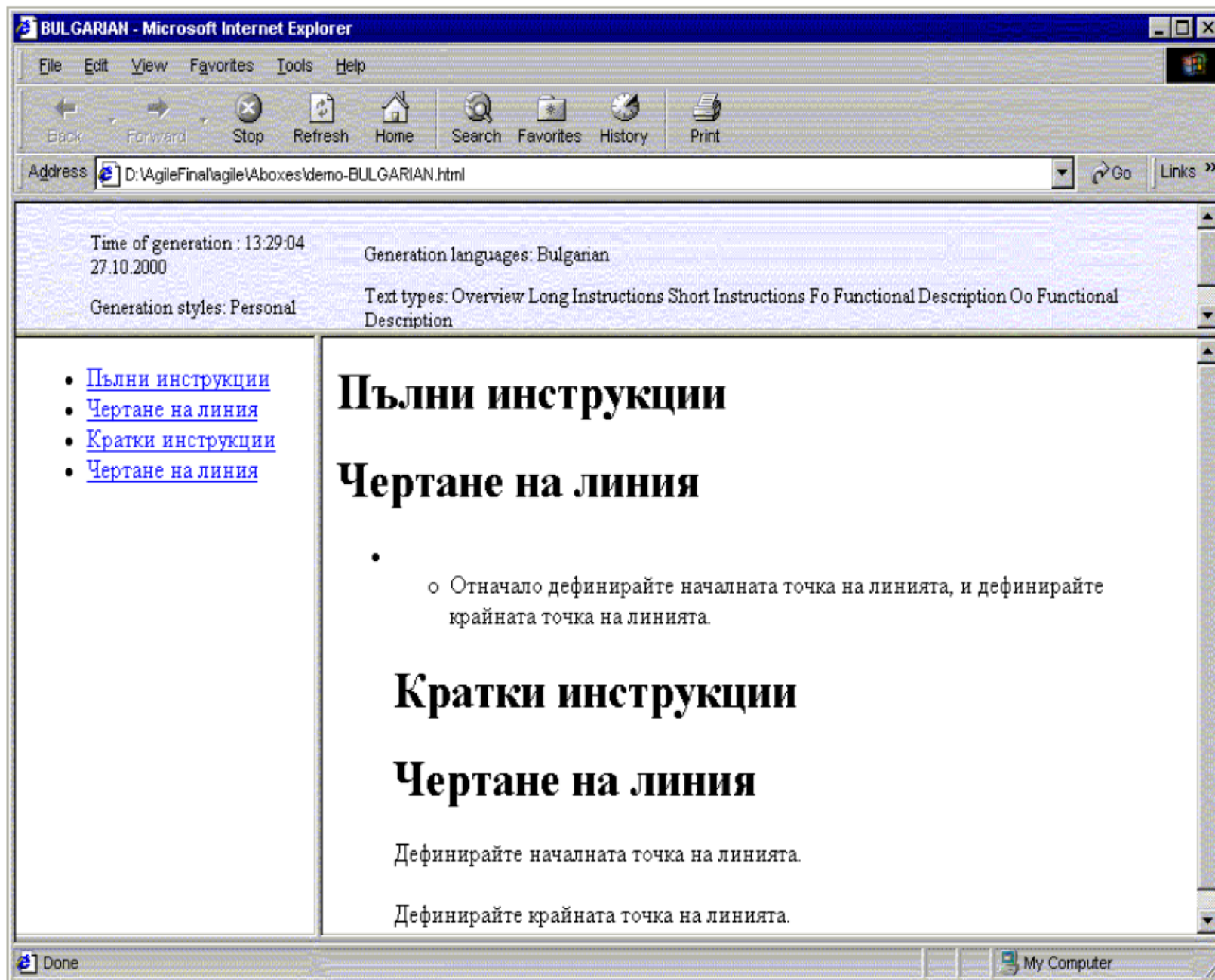
ENGLISH GENERATION
GRAMMAR: NIGEL



RUSSIAN

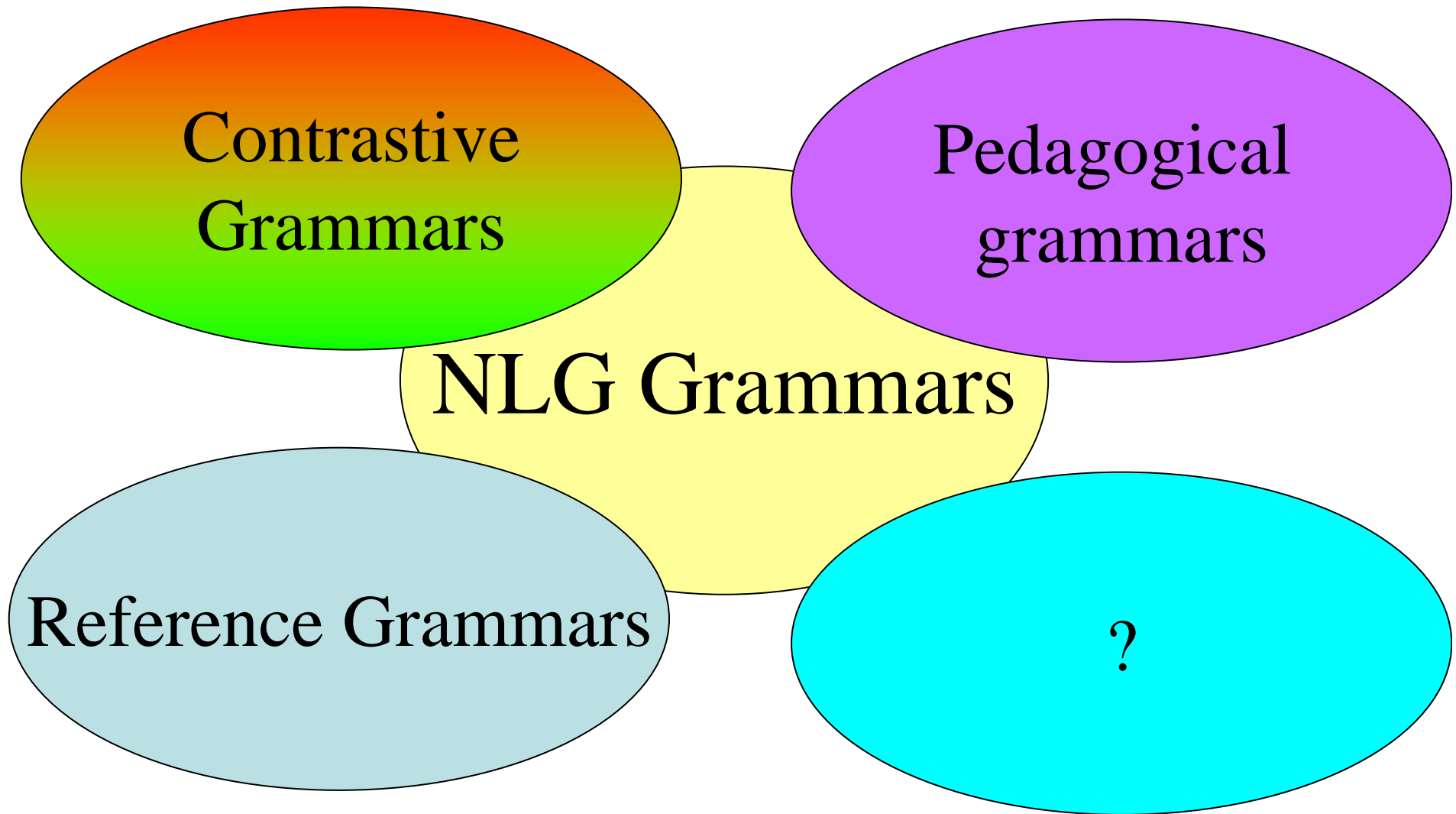
BULGARIAN

CZECH



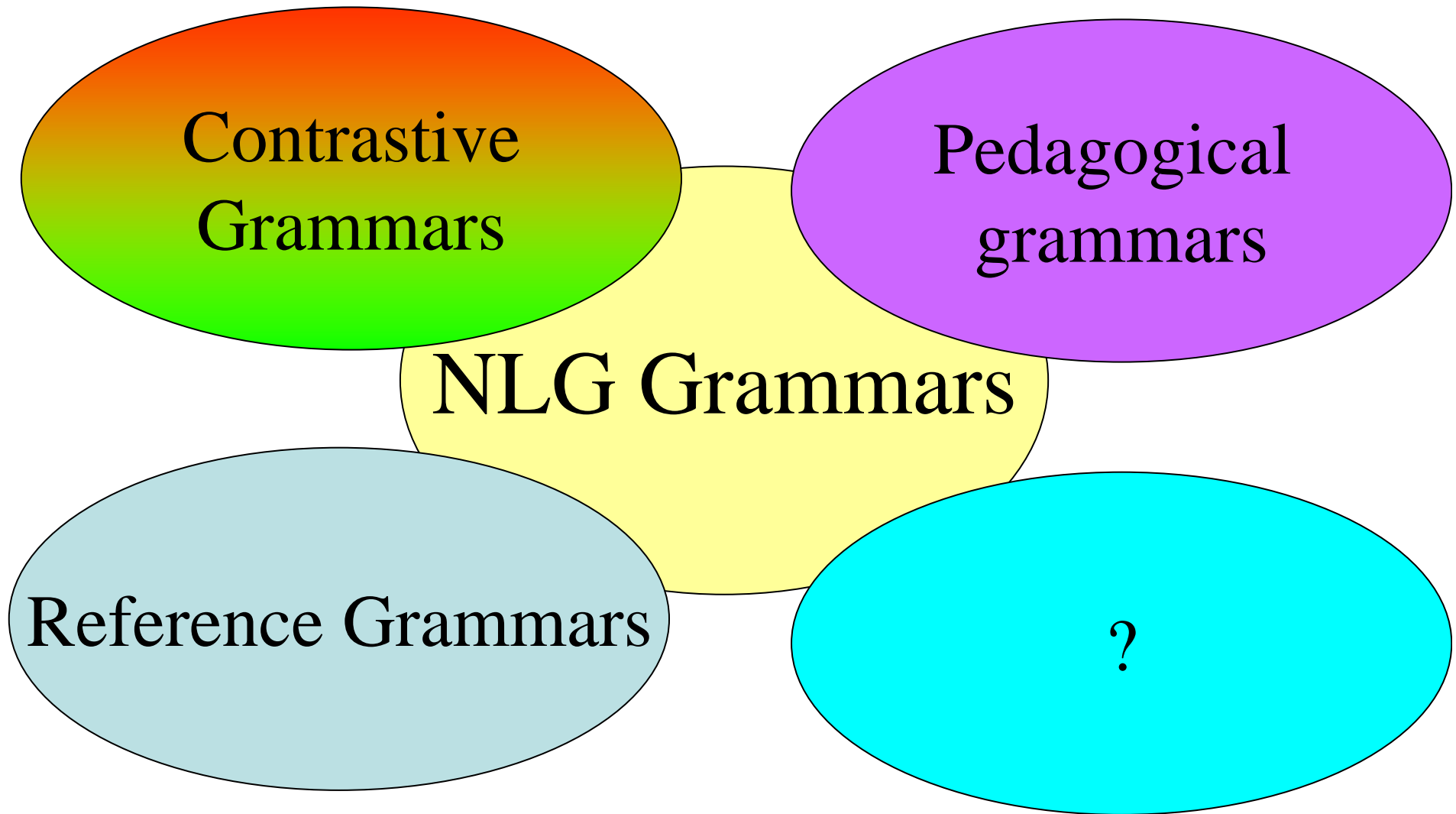
Multilingual generation

- (1) En: To draw a polyline
- (2) Bu: Чертаене на полилиния
Drawing- of polyline-INDEF
NOMINAL
- (3) Cz: Kreslení křivky
drawing-NOMINAL line-GEN
- (4) Ru: Чтобы нарисовать полилинию
in-order draw-INF polyline-ACC



Symbolic Authoring

- Symbolic authoring allows a ‘writer’ to produce texts via a specification of the texts’ intended meaning rather than directly as text
- A text generation component then converts these specifications into natural texts
- Advantages:
 - the text generation component can produce a variety of texts from the same information
 - e.g., variations in *style* and *selected language*
 - *non-variation* can be enforced, e.g., terminology



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?

Synergies for the future

- The production and management of large-scale linguistic resources (LE) requires solutions to tasks that are also found elsewhere:
 - management of test suites and examples: best of all, drawn from *corpora*
 - using the organisation of the linguistic description to organise its documentation: *descriptive* and *reference* grammars
 - *contrastive* linguistics and multilingual descriptions

New forms of reference grammars for the 21st. Century

...will need:

- to support a variety of readings by a variety of readers
- to support a variety of uses
- to support links not just to exemplifying texts but also to flow-through corpus
- to support arguments and alternatives by making it possible to trace through the description

Matthiessen & Nesbitt (1996)