



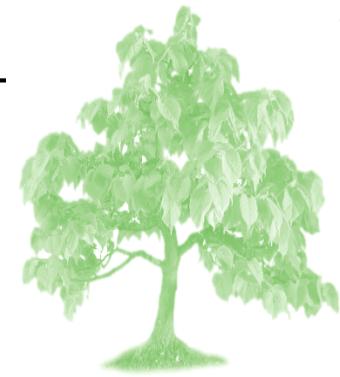
Valency in FGD and in the PDT family (Part I)

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Valency in PDT / PCEDT: Outline



- concept of valency
as the keystone for syntactic structure
- valency in PDT and PDT-Vallex
valency in PCEDT and EngVallex, CzEngVallex

documentation:

PDT: <http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/t-layer/html/index.html>

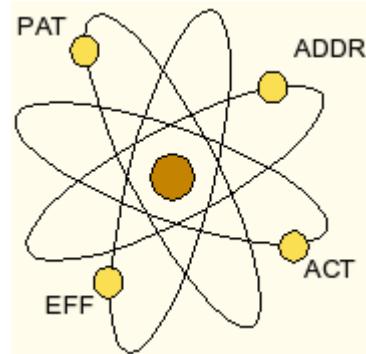
PCEDT: <https://ufal.mff.cuni.cz/pcedt2.0/en/documentation.html>

Concept of Valency

- valency ... Tesnière (1959)

- syntactic structure
- semantic structure

→ dependency syntax ≈ valency syntax



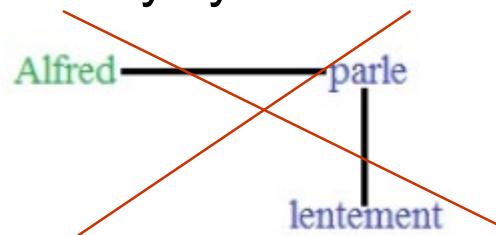
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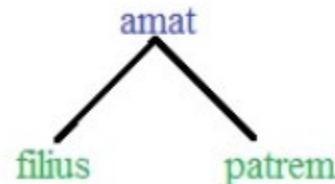
→ dependency syntax ≈ valency syntax

- binary division

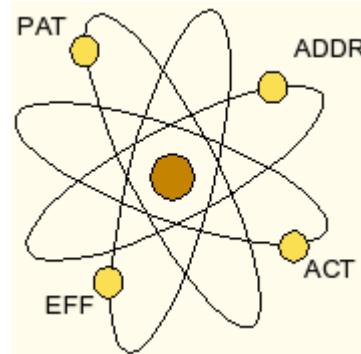


Alfred parle lentement
'Alfred speaks slowly'

- verb centrality



Filius amat patrem
'(The) son loves (the) father'



stemmas

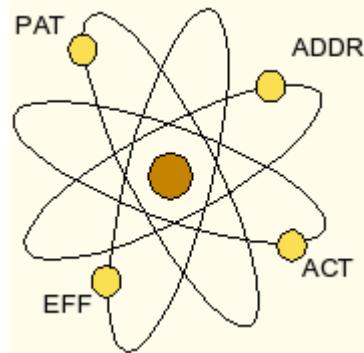
= diagrammatic representations

Concept of Valency

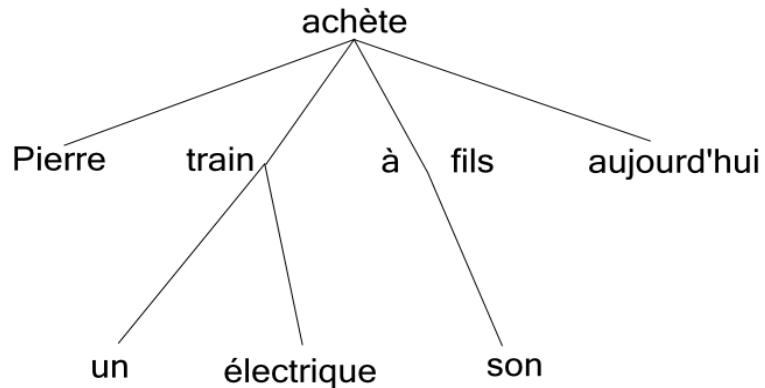
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stemma

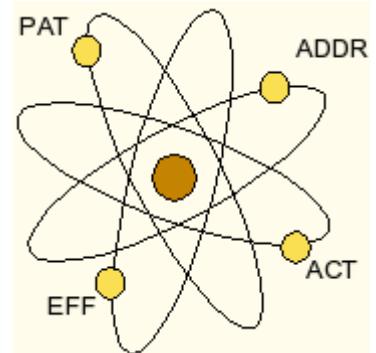


*Aujourd'hui Pierre achète à son fils un train électrique.
Today Pierre is buying his son an electric train.*



Concept of Valency

- Concise Oxford Dictionary of Linguistics (Matthews, 1997):
valency – *the range of syntactic elements either required or specifically permitted by a verb or other lexical unit ...*
- Svozilová et al. (1997):
„Valencí rozumíme v lingvistice schopnost lexikální jednotky, především slovesa, vázat na sebe jiné výrazy a mj. tak zakládat větné struktury.“





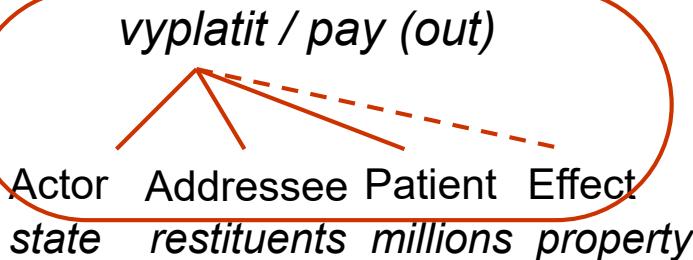
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Stát vyplatil restituentům miliony za zabavený majetek /
The state paid the restituents millions for condemned property

Státem byly vyplaceny restituentům miliony /
Restituentům se vyplatily miliony /
Millions were paid to the restituents for condemned property

Stát nechal vyplatit restituentům miliony /
The state had the millions paid to the restituents
R_{estituenti} dostali vyplaceny miliony /
The restituents got millions paid out



Valency Stored in Valency Dictionaries



- valency structure of lexical units

<i>vyplatit / to pay</i>	...	Actor	Addressee	Patient	(Effect)
<i>spát / to sleep</i>		Actor			
<i>sídlit / to reside</i>		Actor	Location		
<i>pršet / to rain</i>		–	('dummy subject')		

➡ valency dictionaries:
number and type of valency dependents



Valency Stored in Valency Dictionaries

- valency structure of lexical units
 - ➡ valency dictionaries:
number and type of valency dependents
- prototypically: a single valency structure ≈ a single word sense
 - odpovídat₁* ... Actor Addressee (Patient) Effect
≈ dávat odpověď [to answer]
 - odpovídat₂* ... Actor Patient Effect
≈ reagovat [to react, to respond]
 - odpovídat₃* ... Actor (Addressee) Patient
≈ mít odpovědnost [to be responsible]
 - odpovídat₄* ... Actor Patient
≈ být ve shodě [to correspond, to meet]



Valency Stored in Valency Dictionaries

- valency structure of lexical units
 - ➡ valency dictionaries:
number and type of valency dependents
- prototypically: a single valency structure ≈ a single word sense

admit₁ ... Actor Patient

This admits of two possibilities.

≈ to concede (připustit/připouštět, dovolit/dovolovat)

admit₂ ... Actor Patient Location

She was admitted to the hospital.

≈ to take (přjmout/přijímat, umístit/umístoovat)

- ➡ valency lexicon as an *inventory of word senses*

Prominent Examples of Valency Theories



- syntactically based:
 - Lucien Tesnière (1959) ... actants (first / non-first) and circumstnats
 - PropBank ... arguments (Arg0, Arg1, ...) and modifiers (ArgM)



Prominent Examples of Valency Theories

- syntactically based:
 - Lucien Tesnière (1959) ... actants (first / non-first) and circumstnats
 - PropBank ... arguments (Arg0, Arg1, ...) and modifiers (ArgM)
- semantically based:
 - Charles J. Fillmore (1968)
deep cases: Agentive, Objective, Locative, Instrument, Dative, ... (the list differs)
case frame ... each verb selects a certain number of deep cases

The door (O) opened.

The janitor (A) opened the door (O).

This key (I) opened the door (O).

The janitor (A) opened the door (O) with this key (I).

} *to open ... +[__O (I) (A)]*

grammatical functions are determined by the deep valence of the verb

HOWEVER: FrameNet <http://framenet.icsi.berkeley.edu>

- verbs (and other units) evoke a semantic frame (SF)

buy ... SF Commerce_buy Buyer, Goods (core semantic elements)
 Seller, Money, ... (non-core elements)



Prominent Examples of Valency Theories

- Czech linguistics:
- František Daneš (1981, 1987) ... intention vs. valency
 - complex sentence patterns (KVV, komplexní větný vzorec):

- **grammatical sentence pattern** (GVV, gramatický větný vzorec)

Karel rozbil okno. / Karel broke the window. $S_{\text{nom}} - \text{VF} - S_{\text{ak}}$

Otec mi řekl, že nic neví. / My father told me that he knows nothing.

$S_{\text{nom}} - \text{VF} - S_{\text{dat}} - S_{\text{ak}} / že \text{ SENT}$

obligatory / potential / facultative positions

- **semantic sentence pattern** (SVV, sémantický větný vzorec) ... *microsituation*

Karel *rozbil* *okno.* AGENS – PRED – PATIENS

Jan *dal* *Petrě* *knihu.* / *Jan* *gave* *Petra* *a book* ~ *Jane* *gave* *a book* *to* *Petra.*

AGENS – PRED – RECIPIENT – PATIENS

two basic types of semantic roles:

substantive (cz substanční) ... physical objects, location, temporal m.

situational (propositional) ... e.g., information

- Jarmila Panevová (1974, 1980, 1994)

Valency in FGD



- mostly syntactic criteria (coarse-grained deep roles)
 - Panevová (1974-5; 1980; 1994; ...)
 - lexical words: *verbs*, nouns, adjectives, adverbs
frame evoking words / frame bearing words
- layers of language descriptions:
 - primarily tectogrammatical layer
 - ... number, type of dependents
 - reflected also at the surface and morphemic layers
 - ... morphological form



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	actants (inner participants) (~ arguments)	free modifications (~ adjuncts)
obligatory		
optional (cz fakultativní)		

valency frame

stored in a valency lexicon



Actants vs. Free Modifications

- stress on functional tests:
 - can be the given type of dependent repeated?
 - can the given dependent modify any verb?

NO \Rightarrow *actants*

Matka.ACT předělala dětem.ADDR loutku.PAT z Kašpárka.ORIG na čerta.EFF.

Mother.ACT remodeled the puppet.PAT for children.ADDR from Kasper.ORIG to a devil.EFF.

→ they correspond to objects (direct or indirect)



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- additional characteristics of actants:
 - the verb prescribes the form of its actant(s) (cz rekce)
potkat někoho, informovat někoho, myslet na něco/na někoho, soustředit se na něco, učit někoho něco/něčemu, odpovídat něčemu; bát se něčeho, docílit něčeho
 - semantically more or less indistinct
- empirically: 5 actants for verbs
Actor (ACT), Patient (PAT), Addressee (ADDR), Origin (ORIG), Effect (EFF)



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YES ⇒ *free modifications*

V Praze.LOC se sejdeme na Hlavním nádraží.LOC u pokladen.LOC.

In Prague.LOC we will meet at the Main Station.LOC. near the booking office.LOC.

→ they correspond to adverbials (Time, Location, Manner, Cause)



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- additional characteristics of free modifications
 - semantically more or less homogenous
 - Time: he came in time.TWHEN; how long.THL have you been living there?
 - Location or Direction: he came home.DIR3; he lives in Prague.LOC
 - Manner: how.MANN do you do? he appeared with his girlfriend.ACMP
 - Cause: He died of tuberculosis.CAUS; I will not tell you (because ...).CAUS
- empirically: over 35 types for verbs

Actants vs. Free Modifications



- actants ~ more or less theta roles / θ-roles
(Chomsky, Standard Theory; Theory of Government and binding)
 - ~ deep cases (Fillmore, 1968)
 - ~ arguments
 - ~ core ~~dependents~~ in UDs (= subj, obj, iobj)
 - ~ Tesnière: actants
- free modifications ~ adjuncts
 - ~ ~~non-core dependents~~ in UDs (= obl, adv)
 - ~ Tesnière: circumstnats



Obligatory vs. Optional Dependents

- obligatory vs. optional (cz: fakultativní)
- **dialogue test** (Panovová, 1974):
criterion of obligatoriness for free modification

A: <i>Přátelé už přišli.</i>	A: <i>Our friends have already come.</i>
B: <i>Kam?</i>	B: <i>Where (do they come)?</i>
A: <i>*Nevím.</i>	A: <i>*I don't know.</i>

applicable also for actants



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applicable also for actants

- BUT: possibility not to express a dependent in a surface (cz 'vypustitelnost')
- general actant vs. unspecified vs. surface ellipsis

Byl pochválen {#PersPron.PAT}

lit. (*He*) was praised {#PersPron.PAT}

Jana prodává u Bati {#Gen.PAT}

lit: Jana sells at Baťa {#Gen.PAT}

Vedoucí podniku odcestoval {#Oblfm.DIR1}

lit: *The boss of the company left {#Oblfm}*

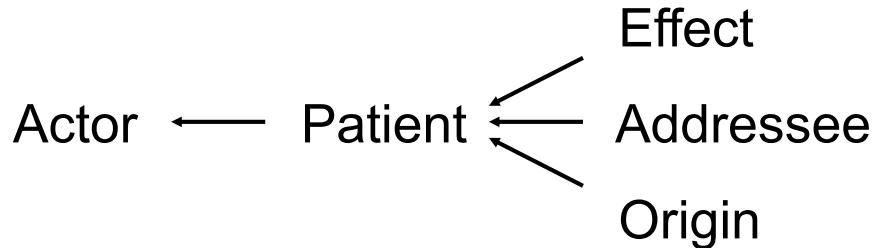
Petr a Marie se potkali v Praze {#Rcp.PAT}

lit: *Petr and Marie have met in Prague {#Rcp.PAT}*

Psali to v novinách {#Unsp.ACT}

lit: *(They) wrote it in the_newspapers {#Unsp}*

Concept of Shifting for Actants



Petr.ACT přišel.

Kniha.ACT již vyšla.

Jan.ACT spadl se skály.

Petr.ACT krájí cibuli.PAT.

Jan.ACT oslovil Marii.PAT.

Petr.ACT vykopal jámu.PAT.

Z banálního nachlazení.PAT se vyvinulo
závažné onemocnění.ACT.

Strana.ACT jej.PAT nominovala
na prezidenta.EFF.

Jan.ACT vyrostl z jinocha.ORIG v muže.PAT.

Petr.ACT has already come.

The book.ACT has already appeared.

Jan.ACT fell from the rock.

Petr.ACT cuts an onion.PAT.

Jan.ACT addressed Marie.PAT.

Petr.ACT dug a hole.PAT.

*A serious disease.ACT has developed
from a banal cold.PAT.*

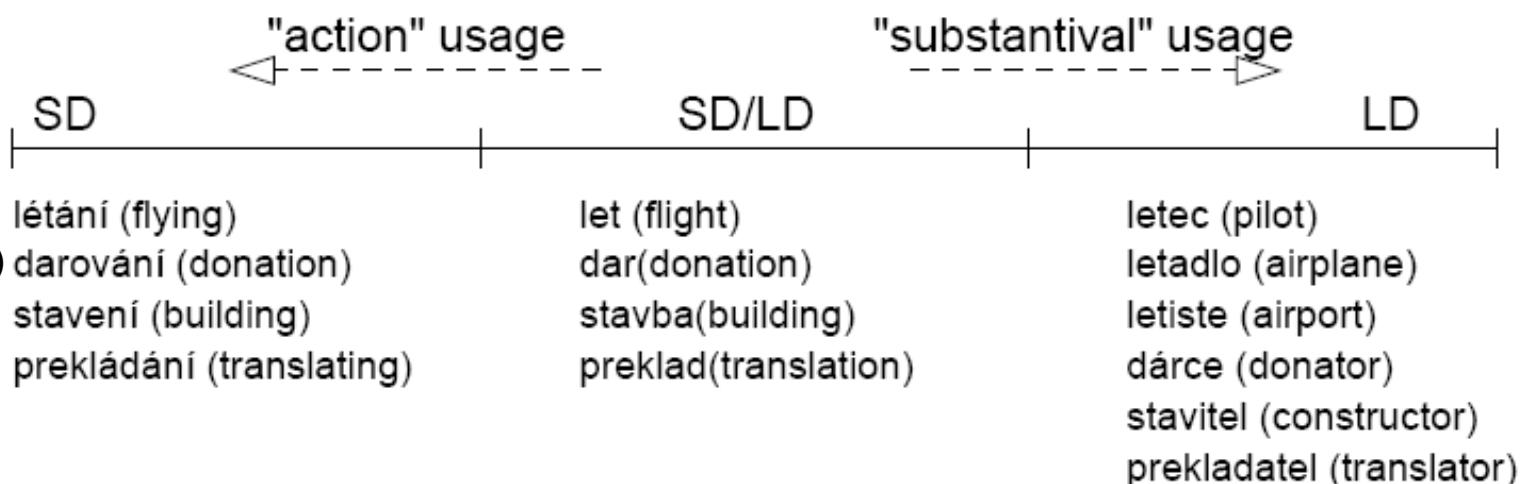
*The party.ACT has nominated him.PAT
for president.EFF.*

Jan.ACT grew from a boy.ORIG into a man.PAT.



Valency in FGD: Syntactic and Lexical Derivation

- *verb → deverbal noun*

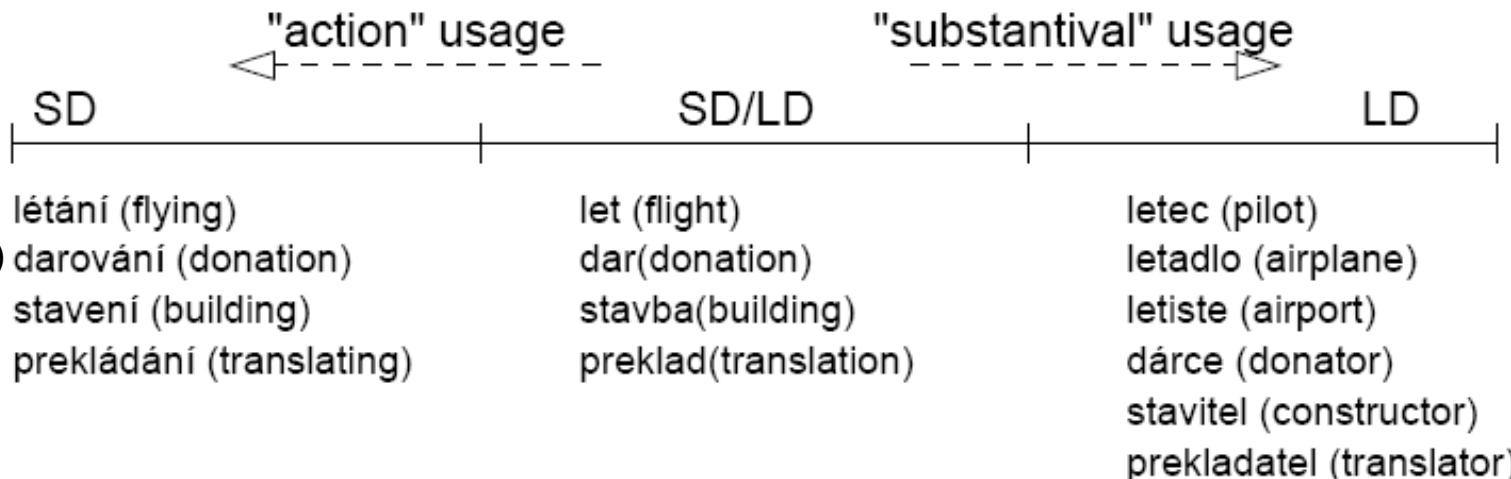




Valency in FGD: Syntactic and Lexical Derivation

- **verb → deverbal noun**

- valency frame is (somehow) inherited
- depending on the type of derivation
- depending on surface form
 - structural cases: Nom, Acc → Gen
 - semantic cases + prep. groups ... preserved
- embedded actants (e.g. *učit* 'teach' ACT PAT ADDR → *učitel* 'teacher' PAT ADDR)





Valency in FGD: Syntactic and Lexical Derivation

- **verbs → adjectives**

- valency frame is (somehow) inherited
- reduction of one valency position

dědeček čte dětem pohádky o princeznách

→ *dědeček čtoucí dětem pohádky o princeznách*
→ *pohádky čtené dědečkem dětem*

a grandpa is reading fairy tales on princesses to his grandchildren

→ *a grandpa (who is) reading fairy tales on princesses to his grandchildren*
→ *fairy tales read by a grandpa to his grandchildren*

číst [to read] ... ACT (PAT) ADDR EFF → *čtoucí ... (PAT) ADDR EFF*
→ *čtený ... ACT ADDR*

omezit [to restrict]... ACT PAT (EFF) → *omezený [restricted] ... ACT EFF*



Valency in FGD: Adverbs

- not studied yet
- **adjectives → adverbs**
valency frame is inherited
kolmý na něco [orthogonal to st] → *kolmo na něco [orthogonally to st]*



References

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addditional reading:

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