What lies at the bottom of morphological oceans?

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Décembrettes 9, Toulouse
December, 3-4, 2015

Introduction

This talk is about nominalizations. A canonical nominalization (NZN) is a noun

- that is morphologically constructed from a verbal predicate,
- that allows one to refer in discourse to what this predicate denotes,
- that shares typical distributional and semantic properties of nouns in the language in question.

According to this definition, *remplacement* must be considered a nominalization in (1).

(1) *Sibelga* **remplace** *généralement les anciens compteurs sans vous avertir (. . .) Le* **remplacement** *d'un compteur est rapide.* (Web)
    'Sibelga generally replaces old meters without informing you (. . .) The replacement of a meter is quick.'

Introduction

Expected properties of nominalizations

- Their aspectual properties are generally inherited from their base-verb (bse-V) (Fábregas & Marín, 2012), but not always (Haas *et al.*, 2008, Huyghe, 2011)
- Their meaning is constructed on the basis of meaning of their bse-V
- Nominalizations share structure (2) with other deverbal nouns such as agent or instrument nouns e.g. fra *chass-eur* 'hunter', *batt-oir* 'beetle'

(2) $\begin{bmatrix} \textit{n-lxm} \\ \text{mtr} \begin{bmatrix} \text{phon } f(\boxed{1}) \\ \text{syn} \begin{bmatrix} \text{cat } \textit{noun} \end{bmatrix} \end{bmatrix} \\ \text{dtrs} \left\langle \begin{bmatrix} \textit{v-lxm} \\ \text{phon } \boxed{1} \\ \text{syn} \begin{bmatrix} \text{cat } \textit{verb} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$

Introduction

Observed properties of nominalizations : semantic repartition
The semantic representation of a V (or predicate more generally) includes
variables of object $x, y, z, \dots$ and a variable of event e : $\mathbf{V(x_i, \dots , e)}$

- By default, a NZN denoting a situation is formed by selecting the e
  variable and its aspectual type reflects the aspectual type of its bse-V
  (with the above mentioned caveat)

  - fra *remplace-ment* $= \lambda e.$ **replace**$(e) \wedge$ AGT$(e, x) \wedge$ PAT(e, y)
    (accomplishment)
  - *disappoint-ment* $= \lambda e.$ **disappointed**$(e) \wedge$ EXP(e, x) (state)

- Deverbal nouns, on the other hand, are formed by selecting an x_i
  variable :

  - *driv-er* (agent) $= \lambda x.$ **drive**$(e) \wedge$ AGT(e, x)
  - *purchase* (patient) $= \lambda y.$ **purchase**$(e) \wedge$ PAT(e, y)

Introduction

- As a rule, and leaving aside creation verbs, NZNs select the event variable and therefore do not denote an object (object proper or animate) but a situation / eventuality
- Whenever they do, it is because a metonymy took place and changed the referent's type (Apresjan, 1974) :
  - *administration* :event ⤳ human agent
  - fra *passage* 'passage' :event ⤳ location
- Creation and representation verbs are special to the extent that their culmination entails the existence of an object (product)(more on this below).

Introduction

Observed properties of nominalizations : specificity of exponence

- Nominalizations have dedicated exponents, even though less specific exponents may also be used to form nominalizations
  - Exponents mainly used for eventive NZNs in French : *-age*, *-ment*, *-ion*
  - Exponents with other uses : *-ure*, *-is*
- These exponents are distinct from those appearing in other deverbal nouns, a property observed in other languages as well
  - Agent nouns fra *-eur*, eng *-er*
  - Instrument nouns fra *-oir*
  - Patient nouns eng *-ee* (Barker, 1998)
- *N-age* never denotes an agent (Ferret & Villoing, (to appear)) ;
  N-eur, *N-oir* never denote an event

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Observed properties of nominalizations : cognitive saliency

- In languages where they exist, deverbal nominals and nominalizations above all denote entities whose role is cognitively salient, such as agent, instrument, manner, location (Mel'čuk, 1994), and occasionally others
- Deverbal nouns with these properties are also more widespread from a typological point of view (Creissels, 2006).

Introduction

- The nominalizations investigated here have three distinctive properties :
    1. The base-verb they are correlated with heads a stative construction
    2. The variable distinguished in their semantic representation is generally the first argument of the bse-V
    3. They denote an object or an entity which is never involved as an acting entity in a force dynamic scenario (Talmy, 2000, Croft, 2012). This entity is such that its very existence allows the eventuality (event or state) described by the base verb / predicate to occur.

- Property 3 explains why the NZN in (3a) is given paraphrase (3b) :

(3) a. *Irma n'a pas eu l'***autorisation** *de venir.*
       'Irma did not get the authorization to come'

    b. *autorisation* = 'ce qui autorise Y (= Irma) à venir'
       'what authorizes Y (= Irma) to come'

Introduction

- The NZNs in question have been observed under four varieties, which correspond to distinct properties of the base-verb
    1. Stative spatial verbs e.g. *entour-age* 'surroundings' ← *entourer* 'to surround'
    2. Verbs of change implying a causal relation e.g. *orne-ment* 'ornament' ← *orner* 'to adorn'
    3. Verbs of depiction and reproduction e.g. *imitat-ion* 'reproduction' ← *imiter* 'to imitate'
    4. Speech act verbs e.g. *autorisat-ion* 'authorization' ← *autoriser* 'to authorize'

- But what justifies studying these various NZNs as an independent topic ?
  The fact that they raise similar issues, both empirical and theoretical

Introduction

1st issue Semantic repartition

- These NZNs violate the semantic repartition since they usually denote an object instead of an event, contrarily to what their exponent indicates.
- For the subpart of them which is based on V of change, this situation could result from a metonymic process of the type 'event $\rightsquigarrow$ <role>' (see Rainer (2011) however)
  - fra *chauff-age* 'heating' : event $\rightsquigarrow$ means
  - rus *oxrana* 'guarding' : event $\rightsquigarrow$ agent (Mel'čuk, 1994, p. 395)
- However, this possibility is not available for many of the NZNs in question. In the following French examples, no source event exists.
  - *renseigne-ment* 'piece of advice' : ? $\rightsquigarrow$ information
  - *entour-age* 'sourroundings' : ? $\rightsquigarrow$ location
- To that extent they constitute a genuine violation of the semantic repartition condition

Introduction

2nd issue Semantic role

- What semantic representation shall we associate with these NZNs? In particular, what semantic role shall we assign to variable x?
  — *autorisation* $= \lambda x.$ **authorize**(e) $\land$?(e, x) $\land$ PAT(e, y)
  — *salissure* 'dirty mark' $= \lambda x.$ **stain**(e) $\land$?(e, x) $\land$ PAT(e, y)

- '?' $=$ INS. This is the answer proposed in many works for the NZNs correlated with base-verbs expressing a change of state e.g. *éclairer* (Koenig *et al.*, 2008, Alexiadou & Schäfer, 2006) :
  — *éclairage* 'lighting' $= \lambda x.$ **light**(e) $\land$ PAT(e, y) $\land$ INS(e, x)

- In many cases however, the NZN does not denote an Instrument at all e.g. *salissure*

- More generally, it can be shown that these NZNs do not behave like typical Instruments (Fradin, 2012)

Introduction

3rd issue The unnaturalness paradox

- The NZNs investigated in this talk do not constitute a natural class
  - Aspectually, the base-V they are built upon may be very different : stative verbs e.g. *to surround*, achievement e.g. *to authorize*
  - These NZNs denote entities which are markedly different : spatial areas, objects / substances, iconic or informational objects, time span. . .

- On the other hand, NZNs of this type seem to be widespread among languages, which indicates that they are not mere oddities

German	Czech	Italian	French	English
Endung	*koncovka*	*terminazione*	*terminaison*	*ending*
Behinderung	*překážka*	—	*empêchement*	*hindrance*
Beleuchtung	*osvětlení*	*illuminazione*	*éclairage*	*lighting*
Verlängerung	*prodloužení*	*prolungamento*	*prolongation*	*prolongation*

Introduction

4th issue The saliency paradox

- The NZNs examined here have been overlooked in the majority of works devoted to this phenomenon. Melloni (2011) is an exception.
- The fact that most studies on nominalizations focussed on action and result deverbal nouns, in the wake of Grimshaw (1990), partly explains this situation.
- The other reason is undoubtedly the lack of cognitive saliency of these NZNs. They denote entities the existence of which does not crucially involve human action. They can function independently of any interaction with human beings.
- However, their status is not fuzzy at all, and their semantic role can be identified with precise enough criteria. This constitutes the second paradox.

Introduction

- In the abstract, the metaphor of the oceanic bottom was intended to capture the idea that the properties these NZNs have in common are hardly discernible to untrained eyes

- In comparison, obvious morphological phenomena, such as Action or Agent nominalizations, have the visibility of islands emerging above sea level

- The point is that even though morphology is more preoccupied by the latter phenomena, phenomena laying at the bottom of the 'morphological ocean', as it were, must also be accounted for, both for the coherence and completeness of the description.

- The metaphor also conveys the idea that morphology probably has very little to say about these NZNs, because their phenomenology is relatively poor. Life in the abysses is very reduced.

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The following issues will be addressed in turn

- Which properties do these NZNs share ?
- Which varieties of NZNs illustrate the phenomenon investigated here ?
- What does morphology have to say to account for these nominalizations ?

Shared properties. Stativity

- Distinguishing between morphological verb and verbal lexeme
  - The morphological verb is identified by the set of its word-forms
  - The verbal lexeme is identified by the construction it heads

The verbal lexemes (VL) on which the NZNs are based head a construction denoting a state

- The progressive will be used as the test for stativity (Dowty, 1979, Martin, 2009) : stative verbs do not occur with the progressive

- Quite often the morphological V corresponds to two verbal lexemes, one dynamic, the other stative

(4) a. *Il* **entoura** *le jardin d'une palissade.*   (Dynamic)
         'He surrounded the garden with a fence'

     b. *Une palissade* **entourait** *le jardin.*   (Stative)
         'The garden was surrounded by a fence'

Shared properties. Stativity

- State verbs e.g. eng *to gleam*, *to lie*, may be used as infinitival complements of perception verbs (5), whereas stative verbs e.g. eng *to weigh*, *to resemble* (6) cannot (Maienborn, 2005, 2008).
- As we shall see, the bse-VLs systematically align with stative verbs

(5) a. *Je vois un lac chatoyer sous la lune.*   (state V)
    'I see a lake glimmering under the moonlight'

   b. *Je vois le volcan fumer au loin.*
     'I see the volcano smoking far off'

(6) a. **Je vois le camion peser 3 tonnes.*   (stative V)
    'I see the truck weighing 3 tons'

   b. **Je vois Marie ressembler à sa soeur.*
     'I see Mary resemble her sister'

Shared properties. Properties of the first argument

- The variable distinguished in the semantic representation of the NZNs studied here is the first argument of the base verbal lexeme
- $I(\text{NZN}) \equiv \lambda x_1.\mathbf{P}(x_1,\ldots,e)$
- What semantic role can be assigned to variable x ?
  - not AGT because the verbal lexeme denotes a stative eventuality
  - not INS either, for 3 reasons at least (of which 2 are discussed here)
- 1st reason : true instruments never occur in subject position if the interpretation is eventive (7b)
  - Why ? because a foregrounded NP entails control, but instruments are deprived of any control (Schlesinger's Deliberation condition) (Schlesinger, 1989)

(7) a. Carol wrote the letter with a fountain pen.

    b. *The fountain pen wrote the letter.

    c. The fountain pen smudged the letter.

Shared properties. Properties of the first argument

- True instruments may occur in subject position in a sentence with an eventive reading
  - only if the action happens inadvertently as in (7c) above,
  - or if the Agent is backgrounded (Schlesinger's Naturalness condition) as in the context of (8b)

  (8) a. ($^{\#}$)The stick hit the horse.

  b. After being thrown into the air, the stick fell and hit the horse.

- Sophisticated instruments or devices, which almost control the action they perform, can be first arguments and occur as subjects cf. (9). They are considered as pseudo-agents by Booij (1986).

  (9) The computer calculated the orbit of the two satellites in less than five minutes.

- On the contrary, the studied NZNs occur in subject position without any problem

Shared properties. Properties of the first argument

- 2nd reason : an argument must satisfy the Explicit Marking and the Reusability constraint to be considered a true instrument

- Explicit Marking constraint A verbal construction may contain an instrument only if it conforms to the schema of inference (10), which is a necessary condition (Koenig *et al.*, 2008)

  (10) X V Y $\rightarrow$ X V Y with Z

- Consequently, *the stick* is not an Instrument in (11a), whereas *fountain-pen* is one in (11c), since it belongs to the class of 'writing instruments'.

  (11) a. Carol hit the horse. $\nrightarrow$ Carol hit the horse with a stick.

  b. Carol wrote the letter. $\rightarrow$ Carol wrote the letter with a writing instrument.

  c. Carol wrote the letter with a fountain pen. $=$ (7a)

Shared properties. Properties of the first argument

- Second constraint that must be fulfilled :

  (12) Reusability Constraint (Fradin & Winterstein, 2012)
       An Instrument must denote (i) an object (ii) existing by itself as
       a separate entity before and after the event in which it has been
       used as an instrument.

- The PP arguments in (13) do not meet this constraint and cannot be
  considered as expressing an Instrument role (*contra* Ferret & Villoing
  ((to appear)). They are rather Means (MNS).

(13) a. Mary stained her dress with blueberry jam.

      b. *Jean a carrelé la cuisine avec un carrelage gris.*
         'John tiled the kitchen with a grey tiling'

Shared properties. Immediateness

- A distinctive feature of the NZNs in question is that their referent plays a role in the happening of the situation denoted by base verbal lexeme without being either an agent or an instrument.

- The NZN plays the role of a 'satisfier' to the extent that it allows the clause expressed by its base verbal lexeme to be logically satisfied. As a consequence, the proposition corresponding to the minimal sentence **DET NZN bse-V (X)** is analytically true (generic reading)
  e.g. *Une salissure salit* 'a stain stains'

- For this reason, I propose to call the role assumed by these NZNs in this case 'satisfier' (SAT)

- The intent of the immediateness property is to convey the idea that the relation between the NZN's referent and the situation the base-VL denotes when it is used referentially manifests itself without delay : no time interval occurs, no force intervenes (compare with Vs involving a causal chaining)

Bse-verbal lexeme = spatial stative verb

- Spatial stative verbs heading a direct construction come in two types as shown in the table below

  (14) a. *Une forêt de hêtres entoure la résidence.*
         'A beech forest surrounds the residence'   (Type A)
      b. *Le flacon rouge renferme un poison mortel.*
         'The red bottle contains a deadly poison'   (Type B)

- Only type A is relevant for our discussion

	Structure	NP0	NP1	Type
Direct	NP0 V NP1	FIG	GRND	A
Direct	NP0 V NP1	GRND	FIG	B

TABLE : Direct spatial constructions

Bse-verbal lexeme = spatial stative verb

- The test based on progressive shows that these VLs are stative

  (15) a. *Une forêt de hêtres est en train d'entourer la résidence.*
         'A beech forest is surrounding the residence'

      b. *Le flacon rouge est en train de renfermer un poison mortel.*
         'The red bottle is containing a deadly poison'

- Moreover, these spatial verbs behave like stative verbs (and not state verbs) according to Maienborn's test

  (16) a. *?Je vois une forêt de hêtres entourer la résidence.*
         'I see a beech forest surrounding the residence'

      b. *Je vois le flacon rouge renfermer un poison mortel.*
         'I see the red bottle containing a deadly poison'

Bse-verbal lexeme = spatial stative verb

- The morphological verbs these spatial NZNs are derived from may sometimes denote a state or an event
- Hence the possibility of having three types of nominalizations for the same morphological V, as shown in the table below

Verb	Translation	NZN Satisfier	NZN State	NZN Event
border	'to border'	*bordage*		*bordage*
couvrir	'to cover'	*couverture*		*couverture*
croiser	'to cross'		*croisement*	*croisement*
encadrer	'to frame'	*encadrement*		*encadrement*
encercler	'to circle'		*encerclement*	*encerclement*
entourer	'to surround'	*entourage*		
soutenir	'to support'	*soutien*		*soutènement*
traverser	'to cross'	*traverse*		*traversée*

TABLE : Range of nominalizations

Bse-verbal lexeme = spatial stative verb

- The analysis of spatial relations has been couched in terms of vector space semantics (Zwarts & Winter, 2000, Zwarts, 2005)
- This approach makes it possible to deal with modification in spatial domain e.g. *five meters behind the car* in the same way as adjectival modification e.g. *the blue scarf*, that is intersectively
- Vector semantics preserves the insights of point semantics (Kracht, 2002)
- Zwarts and Winter deal mainly with locative adpositions and Vs of movement as in (17a), whereas our spatial verbs are of type (17b)
- (17) a. Troops surrounded the parliament building.   (dynamic)
      b. A tropical forest surrounds the temple.   (stative)
- Because of space limits, I refer to the written version of the talk for the details of the account and to Zwarts & Winter (2000), Zwarts (2005) for a discussion of the formalism.

Bse-verbal lexeme = causal relationship

- In this case, the NZN derives from an accomplishment or a degree achievement verb of the type illustrated in (18)

  (18) a. *Un étai d'acier renforce le mur.*
        'A steel prop strengthens the wall'

      b. *Un poêle à bois chauffe la salle.*
        'A woodstove warms the room'

- The base VL involves a causal relationship which conforms to the general patterns given in (19b) or (19c) (lambdas omitted)

  (19) a. NP0 verb NP1

      b. CAUSE(x_1, e_2) $\wedge$ **Q**(y, δ_2, e_2) $\wedge$ $\delta_1 < \delta_2$

      c. CAUSE(e_1, e_2) $\wedge$ **P**($\ldots$, x_i, $\ldots$ e_1) $\wedge$ **Q**(y, δ_2, e_2) $\wedge$ $\delta_1 < \delta_2$

  Where NP0 = x_1/e_1, NP1 = y, e_2 may be a state, **Q**, **P** are predicates, δ_i is the degree at which y is mapped on the scale associated with predicate **Q**, and '$<$' is the inferiority relation.

Bse-verbal lexeme = causal relationship

- To fix the ideas, the (partial) interpretation of (18a) and (18b) would be something like (20a) and (20b) respectively.

   (20) a. $\lambda x_1.\textsc{cause}(x_1, e_2) \land \textbf{strong}(y, \delta_2, e_2) \land \delta_1 < \delta_2 \land \textbf{a-prop}(x_1)$
      b. $\lambda x_1.\textsc{cause}(e_1, e_2) \land \textbf{burn}(x_1, y, \ldots e_1) \land \textbf{warm}(z, \delta_2, e_2) \land$
         $\delta_1 < \delta_2 \land \textbf{a-woodstove}(x_1) \land \textbf{the-room}(z) \ldots$

- To be suitable for our purposes, verbal constructions (19) must be such that :
   - The referent of NP0 is an object (non-agentivity),
   - The construction is stative,
   - Its semantics instantiates one of the causal patterns sketched in (19)

- If this situation occurs, the causal relationship corresponds to what is called by Wolff (2007, p. 106) a "continuing state of causation", of which (21) is an example. No force transmission is involved.

   (21) Dirt caused the valve to stay open.

Bse-verbal lexeme = causal relationship

- Two series of verbal lexemes head constructions with these properties
  - In the first one, the endstate i.e. the situation that is denoted by **Q**, is expressed by a scalar predicate (an adjective)
  - In the second the endstate expresses an impossibility or a hindered possibility
- Verbs illustrating each series are given in the following table

NZN	Translation	Bse V	A	Translation
renfort	'reinforcement'	*renforcer*	*fort*	'strong'
salissure	'dirty mark'	*salir*	*sale*	'dirty'
ornement	'ornament'	*orner*	*beau*	'beautiful'
déguisement	'disguise'	*déguiser*	—	'to disguise'
encombrement	'clutter'	*encombrer*	—	'to clutter up'
protection	'protection'	*protéger*	—	'to protect'

Bse-verbal lexeme = causal relationship

- These verbs are stative according to usual tests cf. (22)-(23)

  (22) a. *Des statues sont en train d'orner les arcades.*
          'Statues are adorning the arcades'
       b. *Les vélos sont en train d'encombrer l'entrée.*
          'Bikes are cluttering up the entrance'

  (23) a. *Je vois les statues orner les arcades.*
          'I see statues adorning the arcades'
       b. *?Je vois les vélos encombrer l'entrée.*
          'I see the bikes cluttering up the entrance'

Bse-verbal lexeme = causal relationship

- The NZNs based on the verbal lexemes just discussed are formed by abstracting away the variable of object occurring in the eventuality which is the cause

- A sketchy representation of *ornement* and *déguisement* is proposed in (24) and (25) respectively

  (24) *ornement* $\equiv \lambda x_1.\lambda y.\exists e_1.$**added-to**$(x_1, y, e_1) \wedge$ **beautiful**$(y, \delta_2, e_2) \wedge \delta_1 < \delta_2 \wedge \exists e_2.\textsc{cause}(e_1, e_2)$
      'set of things such that, when added to something else, make the latter (looks) more beautiful (than it was before / without)'

  (25) *déguisement* $\equiv \lambda z.\lambda x.\exists e_1.$**wear**$(x, z, e_1) \wedge$ **clothing**$(z) \wedge \exists y \exists e_2.(\textbf{identify}(y,x,e_2) \wedge \textbf{difficult}(e_2,\delta_2) \wedge \delta_1 < \delta_2 \wedge \textsc{cause}(e_1, e_2))$
      'set of pieces of clothing worn by somebody such that it makes the latter more difficult to identify (than before / without) by an individual *y*'

Bse-verbal lexeme = representation verb

- Verbs of depiction e.g. *to draw* and representation e.g. *to represent* may be considered as a subset of creation verbs e.g. *to build*
- Verbs of creation denote "the coming into being of the referent of their direct internal argument as a result of the event named by them" (Piñon, 2007, p. 493), also (Bisetto & Melloni, 2007)
- Unlike verbs of creation, verbs of representation create an entity which is not completely new to the extent that some crucial properties of an original entity ought to have a correspondent in this resulting entity
- Following Piñon (2010), I call this resulting entity the 'mapping entity'
- The way the two types of verbs are articulated is summed up in the next slide. Note that only *to draw*[2] is a V of depiction in (26).

(26) a. John drew[1] a lion with four wings. hun *rajzol*
     b. John drew[2] the Eiffel Tower. hun *lerajzol*

Bse-verbal lexeme = representation verb

	Initial state		**Result state**
Verb	**Existing object**	**New object**	**Mapping entity**
to build	no	building	no
to draw[1]	no	drawing[1]	no
to draw[2]	yes	no	drawing[2]
to imitate	yes	no	imitation
to reproduce	yes	no	reproduction

TABLE : Agentive verbs of creation vs. reproduction / depiction

- The verbal lexemes we are interested in are those describing the creation of a mapping entity
- However, the nature of the mapping depends on the nature of the created entity

Bse-verbal lexeme = representation verb

- At least three sorts of verbs of creation have to be distinguished as a result of the nature of the created entity. The latter can be :
    - a physical object = verb of creation proper e.g. *build a house*
    - an event = performance verb e.g. *recite a poem*
    - an abstract entity = verb of abstract creation e.g. *invent a cocktail*
      Condition : abstract entities are created if they are represented in some physical medium (Piñon, 2007)
- As a consequence, three distinct types of semantic predicates should be postulated to encode the nature of the creation relation
    - event → physical object ; predicate : created
    - event → performance ; predicate : performance
    - event → template (matrix) ; predicate : created
- We are not interested here in NZNs correlated with a performance V, such as *imitation* in (27)

    (27) *J'ai admiré son **imitation** de la Callas.*
       'I admired her imitation of Maria Callas'

Bse-verbal lexeme = representation verb

Many physical artefacts x may be correlated with two types of entities e.g. an object template **x**, and an object plan y. Here an example with *house* :

Object type	Nº	Correlate	Relation	Symbol
House : object	1	House :template	Instantiation	$\rhd$
	2	House : plan	Deriv. instantiation	$\rhd'$
House : plan	3	House :object	—	—
	4	House : template	Representation	$\Rightarrow$
House : template	5	House :object	—	—
	6	House :plan	—	—

TABLE : Correlations between created objects (Piñon, 2007)

- $x \rhd$ **x** : 'x instantiates **x**'
- $y \Rightarrow$ **x** : 'y represents **x**'
- $x \rhd'$ y : 'x derivatively instantiates y' : there is an abstract house that the concrete house instantiates and the house plan represents (Piñon, 2007, p. 13)

Bse-verbal lexeme = representation verb

- Among the relations mentioned in the above table,
  - Only the 'representation' relation is relevant for our purpose
  - Template = abstract non-extensional entity (Flaux & Van de Velde, 2000)
- In Piñon (2007), the entity 'plan' is the only one liable to represent another entity, namely a template i.e. an abstract entity
- However, all iconic entities e.g. pictures, drawing, photographs, etc. by definition involve a representation. But in this case (i) the representation needs not be as strict as the one associated with plans, (ii) it is commonly correlated with physical entities
- To distinguish it from the plan-representation, I call this type 'iconic representation' and add the following notation to the previous ones :
- $y \Rightarrow^i x$: 'y iconically represents x'
  e.g. house :image $\Rightarrow^i$ house :object

Bse-verbal lexeme = representation verb

- What semantic characterization can we give of iconic representation ?

- Representation vs. depiction Depiction is a purely perceptual experience, whereas a representation is a mapping between a physical entity and a conceptual object (Peacock, 1987, Bach, 1970).
  "A painting may depict a lamb, and the lamb may represent the man Christ ; but it does not depict the man Christ" Peacock (1987, p. 383)

- The French N *représentation* is notoriously ambiguous
  1. 'Act of making an absent entity present in somebody's mind using a substitute or an image'
  2. 'Fact of acting on behalf of someone who is absent or state of being so represented'
  3. 'Act of staging or presenting a play'

- Only the first meaning involves a 'mapping entity'. However, it does not correspond to the meaning of our NZNs, because it describes an event.

Bse-verbal lexeme = representation verb

On the other hand, the VL *représenter* denotes a state in example (28) :

(28) On y voit aussi un très ancien tableau **représentant** les funérailles de Raymond Lulle. Sand, 1842
‘A very old painting can also be seen there representing Raymond Lulle's funeral’

- Tests (29) confirm the stative nature of the construction in (28)
- This makes the V suited to be a base for the NZNs studied here

(29) a. *Un tableau est en train de représenter les funérailles de R. Lulle.*
‘A painting is representing R. Lulle's funeral’

  b. *Je vois un tableau représenter les funérailles de R. Lulle.*
‘I see a painting representing R. Lulle's funeral’

- A tentative representation of the meaning associated with *représenter* in examples such as (28) is proposed in (30).

Bse-verbal lexeme = representation verb

(30) a. NP0 représenter^1 NP1
   NP0 = x = SAT, NP1 = y = TH

   b. *représenter*^{1} $\equiv$ λy.λx.λe.**map-into**(y,x,e) $\wedge$ SAT(e, x) $\wedge$ TH(e, y)
   $\wedge$ $\exists$y'.**mental-image**(y',y) $\wedge$ $\exists$s.$\exists$z.INESS(z, y',s) $\wedge$
   spk's-mind(z) $\wedge$ CAUSE(x, s)
   '*represent* denotes a three-place relation between individuals x,
   individuals y, and a mapping event e such as y maps into x, and there is
   a y' such as y' is a mental-image of y, and there is a state s such as x
   causes this state, which is such that y' is in z and z is, by default, the
   speaker's mind'

- The representation of the NZN follows in a straightforward manner :

(31) *représentation*^{1} $\equiv$ λx.$\exists$y.$\exists$e.**map-into**(y,x,e) $\wedge$ SAT(e, x) $\wedge$ TH(e, y)
   $\wedge$ $\exists$y'.**mental-image**(y',y) $\wedge$ $\exists$s.$\exists$z.INESS(z, y',s) $\wedge$ **spk's-mind**(z) $\wedge$
   CAUSE(x, s)
   'set of x such that x représenter^1 (something)'

Bse-verbal lexeme = representation verb

- The proposed account can be extended to other NZNs of the same type such as *représentation*[2], *imitation*[2] 'imitation', *éclaircissement*[2] 'clarification', *description*[2] 'description', etc.

- It correctly predicts the contrast in (32) : the NZNs in question can only refer to the subject of a stative verbal construction (32a), which henceforth cannot be anaphorized by an eventive NZN (32b).

  (32) a. *Une église en béton imitait vaguement Notre-Dame. On se demande pourquoi on fait de telles imitations.*
     'A concrete church vaguely imitated Notre-Dame. We wonder why such imitations are made'

  b. **Une église en béton imitait vaguement Notre-Dame. On se demande pourquoi de telles imitations ont lieu.*
     'A concrete church vaguely imitated Notre-Dame. We wonder why such imitations take place'

Morphological account

- Claim : the existence of the NZNs investigated here follows from assumptions that have to be made anyway. These are listed in (33) :

(33) a. The semantic representations of verbs may include sequences such as : $\mathbf{V}(x, y, e)$ or $\text{CAUSE}(e^1, e^2)$ or else $\text{CAUSE}(x^1, e^2)$.

   b. Some of the verbs manifesting this property may have a stative meaning, which implies that the following constraints hold :
   — $\neg\text{AGT}(x) \wedge \neg\text{INS}(x)$
   — $\text{denotatum}(x) = \text{object}$

   c. The semantics of some nominalizations obtains by abstracting away the first semantic argument of their base-V or a semantic argument of an eventuality which is the causer in CAUSE relation.

Morphological account

Predictions

- Languages with no stative verbs should lack the NZNs in question. For instance, languages without spatial stative verbs are predicted to have no NZN such as *entourage* 'surroundings'.

- No noun derived from a noun can exist with the meaning in question : this type of meaning is strictly verb-based in complex nouns.

- It is predicted that the meaning in question will appear with any exponent used for NZNs, since it is not correlated with any such exponent in particular, but not with exponents specific to deverbal nouns.

- The difficulty in ascribing a clear semantic role to these NZNs stems from the uncertain nature of the semantic role assigned to the first argument of stative verbs. It oscillates between MNS and SAT, the content of which is very poor. The possibility of a *with* PP favors the MNS reading : *Elle se chauffait avec un chauffage d'appoint.* / *Un chauffage d'appoint la chauffait.* 'She had extra-heating'

Conclusion

- The phenomena investigated here, that lie at 'the bottom of morphological oceans', are not instances of the emergence of the unmarked (Prince & Smolensky, 1993). In no way does their existence result from universal choices by default.
- What they probably illustrate is the capacity of meaning to attach to any difference of form provided it is entrenched in a structure / construction.
- The empirical import of the account can be summed up in two points :
  - It captures the semantic similarity existing between these NZNs, assuming a semantic role has to be specified for NZNs in general
  - It helps to clarify the description of nominalizations, teasing apart a subgroup of them, thereby making it possible to exceed the three-way classification 'event/state/result' (Bauer *et al.*, 2013)

Conclusion

THANK YOU FOR YOUR ATTENTION

"The literal chosen to satisfy a clause is its satisfier" Vijay Chandru, John Hooker. 1999. *Optimization Methods for Logical Inference*, New York : John Wiley, p. 278

The ISO 639-3 three-letter code for identifying languages has been adopted throughout this presentation. More information at glottolog.org or www.ethnologue.com.

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