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Instrument and Means interpretation of deverbal nominals: The role of ambiguous stative verbs in French VN compounding[1]

Abstract: This article examines French Verb-Noun compounds with Means value (*couvre-pied* 'blanket', lit. cover-feet), derived from stative bases. It shows that they are generally ambiguous between Means and Instrument reading. The regularity of this double value discards an analysis relying on verbal homonymy, in favor of Rothmayr's (2009) hypothesis of bi-eventive verbs. We assume that the presence of an agentive as well as a stative component in the verbal bases accounts for the double Means/Instrument value of the VNs studied here. We also examine "pure" Instrument VNs, available with similar verbal bases. We show that the distribution of the Instrument vs. Means/Instrument values relies on the state of the referent of the noun involved in the compound after the event described by the verbal base occurred. A permanent state entails a "pure" Instrument reading, whereas Means/Instrument reading obtains if the state of N is reversible (Fábregas & Marín 2012).

Keywords: French, VN compounds, participant nominals, stativity, reversible states, Means reading, Instrument reading

1. Introduction

This article deals with French Verb-Noun compounds (henceforth VN) with a Means interpretation, as illustrated in (1-3).

(1) a. *couvre-pieds* 'feet blanket' (lit. cover-feet)
     b. *Le couvre-pieds rose lui couvre les pieds.*
         'The pink blanket covers his feet.'
(2) a. *protège-cahier* 'notebook cover' (lit. protect-notebook)
     b. *Le protège-cahier vert protège son cahier de poésie.*
         'The green notebook cover protects his poetry notebook.'
(3) a. *pince-nez* 'nose clip' (lit. pinch-nose)
     b. *Son pince-nez de natation lui pince trop fort le nez.*
         'His swimming nose clip pinches his nose too hard.'

Based on the study of a list of 1473 French VN compounds from both ordinary and specialized language found in large French dictionaries[2] as well as

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1   We are grateful to the participants of JENOM 8 and to the reviewers of ZWJW for their valuable comments.
2   Specifically, *Trésor de la Langue Française* (https://www.cnrtl.fr/), *Grand Robert de la langue française* (Dictionnaire alphabétique et analogique de la langue française,

randomly collected neologisms, we show that VN compounds have a Means interpretation, that is, they describe inert causes of stative eventualities. This interpretation relies on the stativity of their base verbal lexeme, as shown in examples (1b, 2b, 3b), and is distinct from the Instrument reading (Fradin 2012, Fradin & Winterstein 2012, Villoing 2018). In this way, Means VNs behave as other participant nominals. Morphological operations such as nominalization operate indeed on the semantic participants of verbal bases, disregarding their syntactic status (Fradin & Kerleroux 2003, 2009). Since Means are semantic participants in the event denoted by the verb[3], Means VNs, similarly to Agents / Instruments / Patients VNs, are deverbal participant nominals; their interpretation relies heavily on the aspectual, argumental and semantic properties of their base verb. As we will show, however, most Means VNs also display an Instrument reading, as exemplified in (4).

(4) a. *J'ai couvert mes pieds avec le **couvre-pied** rose.*
         'I covered my feet with the pink blanket.'
     b. *J'ai protégé mon cahier de poésie au moyen du **protège-cahier** vert.*
         'I protected my poetry notebook by the means of the green notebook cover.'
     c. *Cette fois-ci, j'ai bouché mon nez non pas avec les doigts mais avec un **pince-nez** avant de plonger du plongeoir de 5 mètres.*
         'This time, I blocked my nose not with my fingers but with a nose clip before jumping from the 5 meters diving board.'

In this article, we hypothesize that the Means/Instrument polysemy in VNs originates in the properties of the verbal lexemes selected by VN compounding. We examine these properties, and show that the verbal bases involved comprise a stative as well as a dynamic subcomponent, both selected by the compounding rule. This questions the analysis according to which the verbal lexemes used as bases in Means/Instrument VN compounds are homonyms. In our view, their relationship rather pertains to polysemy (Apresjan 1974).

Our work is organized as follows. In section 2, we introduce the morphological formation schema of VN compounding and its treatment in the framework of Lexematic Morphology (Matthews 1991, Anderson 1992,

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(1951–1966 [1ᵉʳᵉ édition], 9 vol.), Paris: P. Robert, Dictionnaires LE ROBERT), *Grand Larousse Universel de la langue française* (7 vol., 1971–1986), *Dictionnaire Général de la Langue Française*, du commencement du XVIIè siècle à nos jours (A. Hatzfeld & A. Darmesteter, 1890–1900. Paris: Librairie Ch. Delagrave), *Dictionnaire de la langue française* (Littré, 1863–1872. Paris: Hachette).

3 Since our study does not relate to syntax, we will not discuss the argumental status of Means. Observe however that their possible use as subjects (cf. (1–3)) would advocate for treating them as arguments.

Aronoff 1994, Fradin 2003, Booij 2010), and we review their semantic values. Section 3 characterizes Means (Melloni 2007, Fradin 2012) as opposed to Instrument readings, and describes VNs with a Means interpretation and their regular shift to an Instrument value. In section 4, we show that the double Means/Instrument value of VNs relies on the properties of their base verbs, whose structure comprises a dynamic as well as a stative subcomponent (Kratzer 2000, Rothmayr 2009), as is illustrated in (5).

(5) $[_{vP} v_{DO} [_{vP} V_{CAUSE} [_{vP} V]]]$

We further hypothesize that it is the selection of both subcomponents by the compounding rule that produces the double value in question. In section 5, we offer some clues about the mechanism responsible for the appearance of the Means/Instrument value, as opposed to "pure" Instrument (i.e. deprived of any other value), and we suggest in section 6 that it relies on the (non) reversibility of the state characterizing the referent designated by N after the occurrence of the eventuality described by V. In section 7, we study the properties of "pure" Means VNs and argue that they result from a specific formation pattern, in which the verbs do not receive a literal meaning.

2. French VN compounds

VN compounding is a common morphological schema of word formation consisting in the formation of a nominal lexeme by the combination of a verbal lexeme and a nominal lexeme (i.e. uninflected verbal and nominal bases), as schematized in (6):

(6) $Lx1_V + Lx2_N = Lx3_N$

Since VN compounding constructs nominal lexemes on lexeme bases and that they share the variety of interpretations of nominalizations built by suffixation or conversion, it is considered as a morphological schema of word formation (see Corbin 2005, Villoing 2009, 2012, Fradin 2009), common to all Romance languages (Gather 2001, Ricca 2015) (7).

(7) Verb-Noun compound 'corkscrew' (lit. pull-cork)
    tire-bouchon (French); *cavatappi* (Italian); *llevataps* (Catalan); *sacacorchos* (Spanish); *saca-rolhas* (Portuguese)

VNs are exocentric compounds (see the classification of Bisetto & Scalise 2005, and Scalise & Bisetto 2009), where the verbal and nominal bases are prototypically in a transitive predicate-patient relation. VN compounding mostly forms nominals denoting participants in the eventuality described by

their verbal base[4] (see Villoing 2009 and Villoing 2012 for more details). This is illustrated in (8). Event denotation, while available, as in (9), is infrequent.

(8) a. Agent: *brise-image* 'iconoclastic' (lit. break-picture)
     b. Cause: *tue-mouche* 'fly agaric' (lit. kill-flies) (mushroom)
     c. Instrument: *tire-bouchon* 'corkscrew' (lit. pull-cork)
     d. Instrument-Causer: *chauffe-eau* 'water heater' (lit. heat-water)
     e. Location: *rince-doigts* 'finger bowl' (lit.rince-fingers)
     f. Patient: *broute-biquet* 'honeysuckle' (lit. graze-goat)
     g. Experiencer: *souffre-douleur* 'whipboy' (lit. suffer-pain)

(9) *baisemain* 'handkissing' (lit. kiss-hand)

Deverbal nouns built by derivation or compounding do not necessarily describe arguments; VN compounding, like *-eur* or *-oir* suffixation, for example, can nominalize syntactic arguments and produce Agent nominals (10b), but also participants such as Instruments (10c), which are implied by the verb meaning but lack an argumental status (see, among other, Namer & Villoing 2008, Villoing 2009, Ferret & Villoing 2015, Huyghe & Tribout 2015).

(10) a. *gratter* 'to scratch'
      b. Agent: *gratte-papier* 'paper pusher' (lit. scratch-paper); *gratteur* 'scratcher'
      c. Instrument: *gratte-dos* 'brush for the back' (lit. scratch-back); *grattoir* 'scraper'

As we show in the following section, among the 1473 VNs of our corpus, 536 (36%) display a Means interpretation.

3. Means VNs

In this section, we describe the Means interpretation, and show that Means nominals are built on stative verbal bases.

3.1. Means interpretation

The identification of a Means interpretation for deverbal nominals is due to Bierwisch (1991), Melloni (2007) and Fradin (2012), who observed it as an additional semantic value of (Event/)Result nominals, in the terminology of

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4 As a matter of fact, it is crucial to distinguish between the intrinsic semantic value of the nominal and the role the NP it heads plays in the sentence in which it occurs. The former is determined by the properties of its verbal base, while the latter relies on the verb on which it syntactically depends. For example, while *rince-doigt* 'finger bowl' intrinsically denotes a location (cf. *se rincer les doigts dans un rince-doigt* 'to rinse one's fingers in a finger bowl'), due the properties of its V and N components, it can head a NP receiving a Patient role in a sentence such as *Le rince-doigt est tombé*. 'The finger bowl fell'.

Grimshaw (1990). Fradin (2012) defines Means as non-dynamic entities participating into stative eventualities in which they act as inert causes. In other words, Means can be analyzed as stative performers. As such, they occur in the subject position of stative sentences, and are built on stative Vs (11).

(11)   *protection* 'protection/guard' from V *protéger* 'to protect'

  a. *La protection des genoux lors de la pratique du ski est indispensable.* [Event N]
    'The protection of knees while skiing is essential.'

  b. *Le skieur porte des protections aux genoux.* [Means N]
    'The skier wears knee guards.'

  c. *Ses nouvelles protections lui ont protégé (efficacement / *lentement) les genoux et lui ont évité une fracture.* [Means N]
    'Her new knee guards protected her knees (efficiently /*slowly) and prevented fracture.'

The identification of VNs with Means value, exemplified in (12), is due to Villoing (2018), who noticed that VN compounds can be built on stative bases, contrary to previous observations. Note from example (12d) that Means can refer to humans.

(12) a. *pince-nez* 'nose clip'[5] (lit. pinch-nose) from *pincer* 'to pinch'
    Le pince-nez que j'ai emprunté à Elise pince vraiment trop fort le nez.
    'The nose clip that I borrowed from Elise pinches the nose really hard.'

  b. *couvre-pieds* 'blanket' (lit. cover-feet) from V *couvrir* 'to cover'
    Le couvre-pieds rose me couvrait aussi bien les pieds que les jambes et me tenait bien chaud.
    'The rose blanket covered my feet as well as my legs and kept me warm.'

  c. *protège-cahier* 'notebook cover' (lit. protect-notebook) from V *protéger* 'to protect'
    Le protège-cahier vert a bien résisté et a protégé son cahier de poésie toute l'année.
    'The green notebook cover withstood well and protected his poetry notebook for the whole year.'

  d. *porte-flingue* 'gunman (lit. carry-gun) from V *porter* 'to carry'
    A cause des flingues qu'ils portaient, les porte-flingues ont été repérés aux portiques de sécurité de l'aéroport.
    'Because of the gun they carried, the gunmen were detected at the security checkpoint of the airport.'

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5 A methodological note about the use of syntactic tests to reveal the semantic properties of the deverbal morphological constructs under consideration is in order here. In our examples, the same verbs are used as sentential verbs and as verbal bases in VNs. The Means role appears when the main verb is stative, while the Instrument role is activated when the main verb is dynamic. This will be discussed in more detail in section 4.

In addition, Villoing (2018) observed that the base verbal lexemes represent two homonyms – a stative and a dynamic one, as we will see in 4.2. As she noted, this explains why VNs with stative bases had not been previously identified.

3.2. The stativity of verbal bases in VN compounding

The identification of Means VNs relies on the stativity of their verbal bases. The verbs used in such VNs reject both the progressive *en train de*, and dynamic adverbs (De Miguel, 1999, Márin & McNally 2011, Fábregas & Marín 2012), while the sentences in which they appear do not admit eventive anaphoric reference with *cela s'est passé* 'this happened' (Maienborn 2005: 285–286). This is shown in (13–15).

(13)   a.   *{Mon pince-nez / mes lunettes} {est / sont} en train de pincer mon nez.*
             'My {nose clip / glasses} {is / are} pinching my nose.'
       b.   *{Le couvre-pieds / l'édredon} est en train de couvrir ses pieds.*
             [comp. (12b)]
             'The {blanket / quilt} is covering his feet.'
       c.   *Le {protège-cahier / papier kraft} est en train de protéger le cahier.* [comp. (12c)]
             'The {notebook cover / kraft paper} is protecting the notebook.'

(14)   a.   *{Le pince-nez / les lunettes} pince(nt) lentement le nez.*
             'The {nose clip / glasses} pinch(es) my nose slowly.'
       b.   *{Le couvre-pieds / l'édredon} a vite couvert ses pieds.*
             'The {blanket / quilt} quickly covered his feet.'
       c.   *Le {protège-cahier / papier kraft} protègera rapidement le cahier.*
             'The {notebook cover / kraft paper} will rapidly protect the notebook'

(15)   a.   *{Le pince-nez / les lunettes} {a/ont} pincé mon nez. *Cela s'est passé pendant la soirée.*
             'The {nose clip / glasses} pinched my nose. This happened during the evening.'
       b.   *{Le couvre-pieds / l'édredon} m'a couvert les pieds. *Cela s'est passé pendant la nuit.*
             'The {blanket / quilt} covered my feet. *This happened during the night.'
       c.   *Le {protège-cahier / papier kraft} a protégé le cahier. *Cela s'est passé pendant le cours.*
             'The {notebook cover / kraft paper} protected the notebook. *This happened during the lesson.'

The behavior of *pincer* 'to pinch', *couvrir* 'to cover' and *protéger* 'to protect' above qualifies them as stative[6]. Consequently, we can analyze *pince-nez* 'nose clip', *couvre-pieds* 'blanket' and *protège-cahier* 'notebook cover' as Means, similarly to nouns that are not VN compounds such as *lunettes* 'glasses', *édredon* 'quilt' and *papier kraft* 'kraft paper'.

It appears, however, that the stative verbal bases used in the above VNs also have dynamic homonymous lexemes, which cooccur with agentive subjects (Villoing 2018), and combine with the progressive and dynamic adverbs, as in (16). Due to their different argument structure and selectional properties, Villoing analyzes them as homonyms, following Fradin & Kerleroux's (2009) and Fradin's (2012) theoretical perspective. In this view, each semantic value corresponds to a different lexeme, although both share the same inflectional properties (Fradin & Kerleroux 2003; Bonami & Crysmann 2018).

(16) a. *Le peintre a peint la harpiste*_{Agent} *en train de pincer les cordes de son instrument.*
'The artist_{Agent} painted the harpist plucking the strings of her instrument.'
  b. *L'infirmier*_{Agent} *a rapidement couvert les jambes du malade pour qu'il ait chaud.*
'The nurse_{Agent} quickly covered the patient's legs to keep him warm.'
  c. *Le vendeur*_{Agent} *est en train de protéger le vase avec du papier bulle.*
'The seller_{Agent} is protecting the vase with bubble wrap.'

Villoing (2018) concludes that VN compounding, while preferably selecting the homonymous lexeme with a stative value (cf. *ouvre-bouche*_{Means/Instr} 'mouth opener' lit. open-mouth, *serre-bouchon*_{Means/Instr} 'cork tightener', lit. tighten-cork), may also select the dynamic homonymous verb to form instruments (e.g. *ouvre-boite*_{Instr} 'can opener' lit. open-can, *serre-écrou*_{Instr} 'nut tightener' lit. tighten-nut) or agents (e.g. *ouvre-route*_{Agent} 'leader cyclist' lit. open-road, *serre-frein*_{Agent} 'brakeman' lit. apply-brakes). The agentive and instrumental VNs are built on the dynamic lexemes (such as i.e. *couvrir* in (16b)) whereas Means VN are built on a homonymous lexeme *couvrir* that heads a stative construction as in (1b).

However, as we are going to show, most VNs with Means interpretation also qualify as Instruments, a property that Villoing (2018) had not considered. This leads to a revision of the theoretical position previously adopted about such homonymous lexemes.

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6   According to Rothmayr (2005), as well as Villoing (2018), the verbs *couvrir* 'to cover' and *protéger* 'to protect' qualify as K(imian)-states in Maienborn's (2005) terminology.

4. The Instrument value of Means nominals

In this section, we show that the above Means VNs also qualify as Instruments.

4.1. Characterizing Instruments

The Instrument role of deverbal nominals has been studied by various authors (see, for French Namer & Villoing 2008, Fradin 2012, Fradin & Winterstein 2012, Ferret & Villoing 2015, Huyghes & Tribout 2015), who consider them as inert entities —typically artefacts— used by agents to perform some action. According to Alexiadou & Schäfer (2006), instruments need to be constantly manipulated by agents, and cannot act on their own[7]. Due to this requirement of constant manipulation, Grimm (2007) considers Instruments as mobile entities. These characteristics distinguish them from Means, which are defined as inert by Fradin (2012) (see 3.1.), and as inherently non-dynamic by Melloni (2007: 104). Since Instruments rely on agentivity, which is a property of dynamic verbs, they necessarily occur in dynamic sentences, while Means occur in stative sentences. Thus, when deverbal, Means and Instruments are distinguished by the [± dynamic] value of their base verbal lexeme. Finally, Instruments are not affected (i.e. modified) by the events into which they participate (see Fradin & Winterstein 2012), a property that Grimm (2007) labels *persistence*. As a result, unlike Means, Instruments cannot denote substances[8]. Thus, in (17) *de la colle forte* 'strong glue', although introduced by *avec* 'with', cannot be characterized as an Instrument since it is not qualitatively persistent throughout the event.

(17) *Sarah a collé le ruban avec de la colle forte.*
       'Sarah bonded the ribbon with strong glue.'

Now, some of the tests used to discriminate Instruments produce similar results when applied to Means. Consequently, the above properties have to be kept in mind when distinguishing them. Let us now describe the tests used to characterize Instruments. First, they occur in PPs introduced by the prepositions *avec* 'with' and *au moyen de* 'by means of' (Namer & Villoing 2008). Second, they occur as objects of *utiliser* 'to use' in the structure *utiliser .. pour V* 'to use .. to V' (Namer & Villoing 2008, Huyghe & Tribout 2015). Finally, as noted by Alexiadou & Schäfer (2006), contra Fillmore (1968) and subsequent literature, the use of Instruments is restricted in the subject position of S-level

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7   On this basis, Kamp & Rossdeutscher (1994) distinguish instruments strictly speaking from instrument-causers, such as *medicine*, that can act independently from agents once applied or set in motion. Contrary to instruments, instrument-causers need not be persistent. See Section 6.

8   We thank the reviewer who draw our attention to this property.

sentences⁹, while they appear unrestrictedly as subjects in I-level sentences. As for VNs, their use as subjects in S-level sentences, while not being ungrammatical, is frequently odd, unless the main verb appears as an infinitive introduced by *permettre* 'to enable', 'to make something possible'.

The following examples illustrate these tests, showing that the compound *presse-agrumes* 'citrus juicer' (lit. squeeze-citrus) behaves as an Instrument.

(18)   a. *Je suis en train de presser des oranges avec ton presse-agrumes en métal.*
         'I am squeezing oranges with your metal citrus juicer.'

      b. *J'ai utilisé un presse-agrumes pour presser les oranges.*
         'I used a citrus juicer to squeeze the oranges.'

      c. *Un presse-agrumes presse les oranges comme les citrons* [I-level / *S-level]
         'A citrus juicer squeezes oranges as well as lemons.'

      d. *Ce presse-agrumes m'a permis de presser les oranges pour ton petit déjeuner ce matin.* [S-level]
         'The citrus juicer enabled me to squeeze oranges for your breakfast this morning.'

4.2. Means nominals with an Instrument value

As shown in section 3.2., VNs such as *couvre-pied* 'blanket', *pince-nez* 'nose clip' and *protège-cahier* 'notebook cover' behave as Means, due to the stative value of their base verbs. Recall, however, that their verbal bases also display a dynamic value (16). Yet, as was shown in (13–15), the use of these VNs prevents a dynamic interpretation of the main verbs in S-level sentences.

However, the examples in (19–21) show that *couvre-pied* 'blanket', *pince-nez* 'nose clip' and *protège-cahier* 'notebook cover' also react positively to the instrument tests provided above and display the properties described in section 4.1.

(19)   a. *Pendant qu'elle dormait, j'ai doucement couvert ses pieds {avec le couvre-pieds en laine / au moyen du couvre-pieds en laine}.*
         'While she was sleeping, I gently covered her feet {with / by the means of} the woolen blanket.'

      b. *J'ai utilisé un couvre-pied en laine pour couvrir mes pieds cette nuit.*
         'I used a woolen blanket to cover my feet last night.'

      c. *Quand je l'ai posé correctement, le couvre-pieds m'a bien couvert les pieds.*
         'When I positioned it correctly, the blanket covered my feet well.'

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9 While S-level predicates are located in time, I-level predicates describe permanent properties. Although originally introduced by Carlson (1980) for predicates, this notion has been extended to sentences by Diesing (1992).

(20) a. *Pour éviter que l'eau n'entre par leurs narines, les nageuses de natation synchronisée se sont bouché le nez {avec / au moyen d'} un pince-nez.*
        'To prevent water from entering their nose, the synchronized swimmers blocked their nose {with / by the means of} nose clips.'

      b. *Les nageurs olympiques ont tous utilisé un pince-nez en plastique flexible pour se boucher le nez.*
        'The olympic swimmers all used flexible plastic nose clips to block their nose.'

      c. *Ces nouveaux pince-nez très efficaces ont permis aux nageurs olympiques de se boucher le nez pendant la compétition.*
        'These very efficient new nose clips enabled the olympic swimmers to block their nose during the competition.'

(21) a. *L'institutrice est en train de protéger tous les cahiers des élèves {avec / au moyen de} protège-cahiers transparents.*
        'The teacher is protecting all the pupils' notebooks {with / by the means of} transparent notebook covers.'

      b. *Il a utilisé un protège-cahier vert pour protéger mon cahier de poésie.*
        'He used a green notebook cover to protect my poetry notebook.'

      c. *Une fois mis sur le cahier de poésie, le protège-cahier l'a bien protégé.*
        'Once set on the poetry notebook, the notebook cover protected it well.'

As can be seen from (19a, 20a, 21a), the VNs previously analyzed as Means can be introduced by the prepositions *avec* 'with' and *au moyen de* 'by the means of', used for Instruments; (19b, 20b, 21b) show that they also occur as subjects of *utiliser* 'to use'. We can see in (20c) that the compounds can be used as subjects of *permettre* 'to enable', 'to make possible' in S-level sentences, similarly to Instruments (16d). In the same manner, (19c, 20c) indicate that they occur as subjects if dynamicity is explicitly specified. Dynamicity markers such as dynamic adverbs and the progressive in (19, 20) exclude a stative interpretation.

To summarize, we have seen that, provided the sentential verbs they depend on are dynamic, *couvre-pied, pince-nez*, and *protège-cahier* pass the Instrument tests, besides the Means tests. This double Means/Instrument value is quite systematic for the VNs we examined. Consequently, this interpretation does not rely on the context, but is lexically constrained; it depends indeed on (i) the stativity/dynamicity of the base verb and (ii) the semantic relation between the base verbal and nominal lexemes. Our analysis supports Melloni's (2007) and Jezek & Melloni's (2009) analysis of the event/result polysemy of nominalizations. These authors indeed argue that this phenomenon relies on the semantic structure of the base verb and the semantic properties of the morphological schema of nominalization, rather than on a

semantic shift from the event sense due to the context.[10] This is why we will refer to these nominals as 'Means/Instrument VNs'.

These observations crucially challenge Villoing's (2018) claim that the stative and dynamic readings are conveyed by homonymous verbs. Rather, they motivate an analysis according to which the two readings pertain to the same verb, as we are going to show in section 5.

5. The verbal origin of Means/Instrument interpretation

5.1. The properties of the verbal bases

The fact that the double Means/Instrument reading of the VNs under consideration is quite regular leads us to discard an analysis based on verbal homonymy for two reasons. First, homonymy is relatively fortuitous, contrary to polysemy, which is more systematic. Second, such an analysis would amount to neglecting the semantic proximity between the stative and the dynamic values, which describe events implying the same participants, and can be seen as successive: the stative event follows the dynamic one, as its consequence. Thus, instead of considering two different lexemes, one stative and one dynamic, as Villoing (2018) proposed, we rather analyze both values as pertaining to a unique verbal lexeme, due to the semantic relationship they stand in. To capture both their formal (i.e. flexional and phonological) identity and semantic proximity, we adopt a decompositional analysis of these base verbs (Hale & Keyser 1993), and claim that the aspectual properties and argument structures proper to each value depend on how many and which subevents they include.

More precisely, we consider that the verbs discussed here comprise both a stative and a dynamic subcomponent (Kratzer 2000, Rothmayr 2009), as illustrated in (22b), adapted from the full argument structure in (22a), from Rothmayr (2009: 48–49).

(22) a. $[[_{vP} \text{ DP}_{\text{Agent}} \text{ v}_{\text{DO}} [_{vP} \text{ DP}_{\text{Causer}} \text{ V}_{\text{CAUSE}} [_{vP} \text{ DP}_{\text{Patient}} \text{ V}]]]$
     b. $[_{vP} \text{ v}_{\text{DO}} [_{vP} \text{ V}_{\text{CAUSE}} [_{vP} \text{ V}]]]$

Let us first describe the internal structure of the verbs, common to (22a) and (22b). The V labelled CAUSE represents a causative relation between an event and a state and is internal to the verb meaning (Wunderlich 1997). The lower VP introduces the stative situation. Finally, the v labelled DO introduces agentivity. The structure is exemplified in (23), from Rothmayr

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10 This seems to be also the case for most of the Result nominals with Means value presented in Fradin (2012), cf. *protection* in (11), *revêtement* 'coating', *déguisement* 'disguise', etc.

(2009: 49). Observe that the stative causer *the truck* corresponds to what we label Means.

(23) a. Irmi obstructs the street with her truck.
      b. [$_{vP}$ [Irmi] v$_{DO}$ [$_{VP}$ [with her truck] V$_{CAUSE}$ [$_{VP}$ [the street] obstruct$_V$]]]

We can now describe the argument structure in (22a), in relation with example (23). In (23b) the Agent *Irmi* is introduced in the specifier of the agentive head DO, and the cause of the obstruction, i.e. [the truck], merges in the specifier of the causative verb[11]. The patient *the street* appears as a complement in the projection of the stative lexical V *obstruct*. Such a structure describes a transition to a state in which the street is obstructed, caused by the Agent *Irmi* by means of her truck.

Now, the structure in (23b) is syntactic; it aims to describe the sentence in (23a) and comprises a verb and its arguments. In this work, we are not concerned with the structure of sentences, but with that of compounds, which are morphological units. However, we consider that the semantic components and relations described in (22–23) also characterize morphological units, including compounds. Let us now go back to (22b) and show how it can describe the verbal component in VN compounds.

Recall that Means are inert causes of states; as such they rely on the presence of CAUSE and of the lower stative V. Since Instruments rely on agentivity (see 4.1.), we consider that the presence of the agentive DO$_v$ accounts for the Instrument value of these VNs. If we take Means/Instrument VNs to comprise the whole structure in (22), their double value is expected, due to the presence of both CAUSE and DO in the structure of their base verbs.

Further observations support such a view. First, as noted by Villoing (2018), no strictly stative verbs are used as Means VN bases. The most frequent verbal bases occurring in their formation can be found in the classes of support and holding verbs (cf. *porter* 'to carry' > *porte-bébé* 'baby carrier', lit. carry-baby), as well as obstruct verbs (cf. *cacher* 'to hide' > *cache-pot* 'planter', lit. hide-pot; *boucher* 'to block up' > *bouche-four* 'oven cover', lit. cover-oven), which are analyzed as verbs comprising a stative and a dynamic subevent by Kratzer (2000) and correspond to the structure in (22–23) in Rothmayr (2009). Similarly, Melloni (2007: 104) noted that the verbal bases producing Result nominals with Means interpretation are systematically ambiguous between an accomplishment and a stative value.

This consequently confirms that the structure in (22b) is responsible for the regular combination of Means and Instrument values in derived

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11 Interestingly, Kratzer (2000) considers that the PPs introduced by *with*, that we analyze as Means, are Instruments independent from Agents.

nominals. Their Means value relies on the presence of a stative component in the base verb, while their Instrument value is made available by its dynamic component.

5.2. The derivation of "pure" Instruments

Some of the verbal bases used in Means/Instrument derivation also produce VNs which can only be construed as Instruments. This is the case for *presse-agrumes* 'juicer' (lit. 'squeeze citrus') illustrated in (18), and for *pince-pâte* 'pastry clip', (lit. 'crimp pastry') in (24).

(24) a. *Un pince-pâte, ça pince la pâte à tarte et ça permet d'en régulariser les bords.*
'A pastry clip crimps pastry and is used to level the sides.'   [I-level / *S-level]

 b. *?? Le pince-pâte a pincé la pâte ce matin à 10h.*
'The pastry clip crimped pastry at 10 this morning.'

 c. *Mon nouveau pince-pâte m'a permis de pincer et de régulariser rapidement le bord de la tarte aux pommes que j'ai faite hier.*
'My new pastry clip enabled me to crimp pastry and level rapidly the sides of the apple pie I made yesterday.'

The examples (24a,b) show that, unless the verb *permettre* 'to make possible' is introduced in (24c), *pince-pâte* 'pastry clip' can, conversely to Means (11), only occur as subject of I-level sentences. Conversely, and as was illustrated in (13a), (14a) and (15a), the verb *pincer* 'to pinch' is the base of the Means/Instrument *pince-nez* 'noseclip'. As for *presser* 'to squeeze', in addition to the instrument *presse-agrumes* 'juicer' (lit. squeeze citrus) (18), it produces *presse-raquette* 'racket press' (lit. press racket), that has a Means value. The possible use of *presse-raquette* in subject position of a stative sentence (25a), and the fact that it can be introduced by *utiliser* 'to use' (25b) guarantee its Means/Instruments value.

(25) a. *Les presse-raquettes$_i$ qui pressaient nos vieilles raquettes en bois ont évité leur déformation pendant les mois humides.*
'The racket press that pressed our old wooden tennis rackets prevented their warping during wet seasons.'

 b. *Tous les hivers, mon grand-père utilisait son presse-raquette pour protéger ses raquettes de tennis des déformations dues à l'humidité.*
'Every winter, my grandfather used his racket press to protect his tennis rackets from deformations due to humidity.'

We conclude that the verbal bases used in Means/Instrument compounding produce either "pure" Instruments, or Means/Instruments. By contrast, the VNs built on strictly dynamic verbs only behave as Instruments, as expected. This is the case for *épluche-légumes* 'vegetable peeler' (lit. peel vegetables),

from *éplucher* 'to peel' and *casse-noix* 'nutcracker' (lit. crack-nuts), from *casser* 'to crack'.

(26) a.   *Un épluche-légumes épluche les légumes et les fruits.* [I-level / *S-level]
           'A vegetable peeler peels vegetables and fruits.'
      b.   **L'épluche-légumes épluchera les légumes pour la soupe.*
           'The vegetable peeler will peel the vegetables for the soup.'
      c.   *Ce vieil épluche-légumes a permis d'éplucher facilement 3 kg de légumes ce matin.*
           Lit. 'This old vegetable peeler made possible to peel 3 kg of vegetables easily this morning.' (i.e. it made the peeling of the vegetables possible)

(27) a.   *Un casse-noix casse aussi bien les noix que les noisettes.* [I-level / *S-level]
           'A nutcracker cracks nuts as well as hazelnuts.'
      b.   **Ce casse-noix a cassé les noix pour le gâteau hier soir.*
           'This nutcracker cracked nuts for the cake yesterday evening.'
      c.   *Ce nouveau casse-noix a permis de casser les noix pour le gâteau hier soir.*
           Lit. 'This new nutcracker made possible to crack nuts for the cake yesterday evening.' (i.e. it made the cracking of the nuts possible)

At this point, two observations are in order. First, all the VNs examined so far behave either as Means/Instrument or as "pure" Instruments. A careful study of our data has indeed shown that only a very small proportion of VNs behave strictly as Means[12]. This is the case for *coupe-vent* 'wind breaker' (lit. cut-wind) or *abat-jour* 'lampshade' (lit. 'fell day'). These VNs will be examined in section 7. Second, we need to account for the fact that the same verbal bases can derive both Means/Instruments and "pure" Instruments. In other words, the question that needs to be addressed is why we unambiguously identify a Means/Instrument value in *pince-nez* 'nose clip' (lit. pinch-nose) but only an Instrument value in *pince-pâte* 'pastry clip' (lit. 'crimp pastry'). The derivation of "pure" Instruments is indeed expected from strictly dynamic bases, that do not comprise a stative subcomponent, but unexpected in the case of verbs displaying the structure in (22b). Recall from this representation that the dynamic component stands above the stative one. Consequently, the selection by the compounding rule of the dynamic component without the stative one is impossible.

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12 When they do not also behave as Instruments, most Means convey a locative value, cf. *garde-meuble* 'furniture storage', lit. keep-furniture, *repose-plat* 'table mat', lit. rest-plate, *porte-parapluies* 'umbrella holder', lit. hold umbrella. When occurring in PPs, Locative Means are introduced by *dans* 'in' or *sur* 'on' instead of *avec* 'with', cf. *garder ses meubles {dans / *avec} un garde-meuble* 'to keep one's furniture {in / *with} a furniture storage'.

In fact, the only clear difference between Means/Instruments and "pure" Instruments derived from such verbal bases lies in the nominals selected by VN compounding. This leads us to suggest that these are crucial in distinguishing between these VNs' semantic values. In section 6, we examine the distinctive properties of these nouns.

6. The role of N in distinguishing Means/Instrument from Instruments

In this section, we provide an explanation as to why Means/Instrument as well as "pure" Instruments can be derived from the same verbal bases, and we claim that the distinction between these values depends on the permanent vs reversible state of the entity described by N after the eventuality described by V occurred. To do so, we introduce additional tests distinguishing between those types of states. But first, since we aim at distinguishing between Means and Instrument readings, a reminder of their definitions and properties is in order. Instruments are auxiliary objects used by agents to perform actions. When deverbal, Instrument nominals denote artefacts typically used to perform the action denoted by their base verb. Contrary to Instrument-Causers (Kamp & Rossdeutscher 1994), "pure" Instruments do not act on their own. In other words, they participate in an event as long as they are manipulated by the agent. Once the event performed, the role of the agent, and consequently that of the instrument is over, and the latter can be discarded.

　　Thus, sentences such as (28), ending by *puis j'ai rangé* +Instr 'then I stored + Instr', in which Instruments are discarded once the actions of the predicates are over, are perfectly fine.

(28)　a.　*J'ai épluché les légumes avec l'épluche-légumes$_i$, puis je l$_i$'ai rangé.*
　　　　　　'I peeled the vegetables with the vegetable peeler$_i$, then I stored it$_i$.'
　　　b.　*J'ai ouvert la boîte avec l'ouvre-boîte$_i$ puis je l$_i$'ai remis dans le tiroir.*
　　　　　　'I opened the can with the can opener$_i$, then I put it$_i$ back in the drawer.'

What is crucial here is that the actions described by the verbs entail a stable change of state of the referent of the nouns; once peeled / opened, the vegetables and the can remain so, even after the storage of the vegetable peeler or the can opener.

　　Now consider the case of Means. Means are involved in stative eventualities, in which they act as inert causes. Their inertness contrasts with the mobility of Instruments pointed out by Grimm (2007), see section 4.1. As causers of states, Means crucially participate in stative eventualities as long as these eventualities hold. As atelic eventualities, states have no telos, or "natural ending", and if they end, it is due to external circumstances (Smith 1991). The removal of the object denoted by a Means from a state results in

such a circumstance, since it entails its interruption. Consider the examples in (29), forged on the same pattern as (28):

(29) a. *Durant la compétition de natation, j'ai bouché mon nez en le pinçant avec mon pince-nez$_i$, puis je l$_i$'ai rangé dans mon sac.*
'During the swimming competition, I blocked my nose by pinching it with my nose clip$_i$, then I stored it$_i$ in my bag.'

   b. *Cette nuit, j'ai couvert mes pieds avec mon nouveau couvre-pieds$_i$, puis je l$_i$'ai rangé.*
'I covered my feet with my new blanket last night, then I stored it.'

Contrary to (28), the examples in (29) imply that, after the storage of the nose clip and the blanket, the nose is no longer blocked and the feet are no longer covered. In these cases, the removal of the cause results in the interruption of the state.

   These contrasting properties provide us with an effective test to distinguish Instruments from Means: while a sentence containing a Means cannot be followed by *puis j'ai rangé* + Means' 'then I stored + Means' without implying the interruption of the state (29), such a continuation in a sentence with an Instrument does not entail a reverse of the Patient's state (28).

   These considerations lead to another observation concerning the reversibility of the Patient's state, that is, the property for the Patient to recover the state in which it was before the event occurred. As observed by Fábregas & Marín (2012), some change-of-state verbs admit the measuring of the duration of the state resulting from the event by 'for x time'. According to these authors, this is possible only if the state is reversible[13]. If it is not the case, the temporal extension, if possible, measures the duration of the event leading to the state. This is exemplified by the contrast in (30), from Fábregas & Marín (2012: 47–48):

(30) a. *The storm broke the communications down for two hours.*
   b. *The army destroyed the city for two months.*

In (30a), *two hours* is construed as measuring the duration of the break up, that is, of the state of the communications resulting from the breaking event. Put differently, it measures the duration of the broken state in which the communications are due to this event. This reading is made possible by the reversible character of the state in question. Conversely in (30b), *two months* can only measure the duration of the change of state (i.e. of the event), because the destruction of a city is perceived as non-reversible. The reading under which it would measure the duration of the destroyed state of the city is unavailable. Consider now the contrast between (31) and (32):

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13 We define reversibility as the possible return to the state holding prior to the event.

(31) a. *Ce couvre-pied m'a couvert les pieds pendant deux heures (*lentement)*[14].
          'The blanket has covered my feet for two hours (*slowly).'
          ⇒ entails: 'My feet stayed covered for two hours.'

      b. *En me pinçant le nez (*rapidement), mon pince-nez m'a bouché le nez pendant 30 minutes*
          'By pinching my nose (*quickly), my nose clip blocked my nose for 30 minutes.'
          ⇒ entails: 'My nose stayed blocked for 30 minutes.'

      c. *Le protège-cahier vert a (*vite) protégé le cahier de poésie pendant 6 mois.*
          'The green notebook cover protected the poetry notebook for 6 months (*quickly).'
          ⇒ entails: 'The poetry notebook stayed protected for 6 months.'

(32) a. *Mon vieux presse-agrume m'a quand même permis de presser des oranges pendant deux heures ce matin!*
          'My old citrus squeezer still enabled me to squeeze oranges for two hours this morning!'
          ⇒ does not entail: 'The oranges stayed squeezed for two hours.'

      b. *Ce vieil épluche-légumes a permis d'éplucher ces légumes pendant 15 mn avant de se casser.*
          Lit. 'This old vegetable peeler has made possible to peel these vegetables for 15 mn before breaking apart.' (i.e. it made the peeling of the vegetables possible)
          ⇒ does not entail: 'The vegetables stayed peeled for 15 mn.'

      c. *Ce nouveau pince-pâte m'a permis de froncer le bord de ma tarte {en à peine 1 minute / *pendant 1 minute} pour la mettre au four sans tarder.*
          'This new pastry clip enabled me to crimp the sides of my pie (in one minute / *for one minute) and put it in the oven immediately.'
          ⇒ does not entail: 'The pie's sides stayed crimped in 1 minute.'

In (31) *pendant x temps* 'for x time' measures the duration of the state in which the Patient (i.e. *pieds* in *couvre-pieds, nez* in *pince-nez, cahier* in *protège-cahier*) is after the event occurred, thus patterning like (30a). We conclude that the nouns used in Means compounding describe entities whose states after the events described by the verbs occurred are reversible.

By contrast, *pendant x temps* in the examples (32) either measures the duration of the squeezing and peeling events (32a, 32b), similarly to (30b), or is ill-formed (32c). We assume that the impossibility for the temporal expressions to pertain to the states of the Patients (*agrumes* in *presse-agrumes,*

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14 The unacceptability of the dynamic adverbs *lentement* 'slowly' *rapidement* 'rapidly' and *vite* 'quickly' in the examples (29) guarantees that the events described are not construed as dynamic, since the verbs *couvrir* 'to cover', pincer 'to pinch' and *protéger* 'to protect' have a dynamic as well as a stative value, see (19-21).

légumes in *épluche-légumes* and *pâte* in *pince-pâte* 'pastry clip' (lit. 'crimp pastry') after the events occurred is due to their irreversibility.

Now, the question of the internal structure of "pure" instrumental compounds built on the same verbal bases as Means/Instrument, such as *pince-pâte* 'pastry clip', has to be raised. Recall indeed from (22) that the agentive part of the verbal structure, which legitimates Instruments, dominates the causative structure. In other words, "pure" Instrument and Means/Instrument derivations from similar verbal structure are unexpected. However, as we have just seen, the "pure" Instrument vs Means/Instrument reading of VNs relies on the permanence or reversibility of N state after the occurrence of the event. In other words, it stems from the relationship between V and N. Consequently, we suggest that this difference is encoded in some manner at the lower VP level, where both V and N merge. For example, one could consider that V can come with a [±R] (for Reversible) feature depending on its object. Thus, *pâte* in *pince-pâte* 'pastry clip' would be [-R], but [+R] in *pince-nez* 'nose clip'[15].

7. "Pure" Means?

The above discussion mostly focused on VNs with a Means/Instrument value, and, to a lesser extent, on purely instrumental VNs. However, as we mentioned in section 5.1., a few cases of VN strictly behaving as Means ("pure" Means) have been found in the data under study. This is the case for *coupe-vent* 'wind breaker' (lit. cut-wind) and *abat-jour* 'lampshade' (lit. fell day). Observe that both *jour* 'day' and *vent* 'wind' describe natural forces, and that *couper* 'to cut' and *abattre* 'to fell', 'to kill' are destruction verbs. Since verbs of this class are dynamic, this would lead us to expect them to produce Agent, Instrument or Instrument-Causer nominals instead of "pure" Means. This pattern is however regular, as shown by *brise-lame* 'breakwater' (lit. break-wave), *brise-bise* 'curtain' (lit. break-wind), *tue-vent* 'shelter' (lit. kill-wind) *coupe-feu* 'firewall' (lit. cut-fire). Semantically, these VNs are causes of states: *coupe-vent* 'wind breaker' causes protection from the wind, and *abat-jour* 'lampshade' prevents the diffusion of light. The objects denoted by these nouns cause the states of being in the shadow (for *abat-jour*) and unaffected by the wind (for *coupe-vent*). As before, the removal of the objects entails the interruption of the states, which are reversible, a typical property of VNs with Means value (see section 6). Moreover, all these VNs fail the Instrument tests, as illustrated in (33) with *abat-jour*.

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15 According to Fábregas & Marín (2012), non-reversible states are not encoded in the semantic structure of verbs and are only pragmatically inferred. We consider by contrast that the verbal bases of VNs always include a stative component, which is the result of the causing event.

(33) a. *J'ai abattu le jour {avec / au moyen d'} un abat-jour.*
          Lit. 'I fell the day {with / by the means of} a lampshade.'

      b. *??J'ai utilisé un abat-jour pour abattre le jour.*
          Lit. 'I used a lampshade to fell the day.'

Now, since the VNs in question here are inert causes, we expect them to pass the test for Means, that is, they should be able to occur as subjects of stative verbs. Consider, however, the examples in (34):

(34) a. ?? *L'abat-jour a abattu le jour pendant la soirée.*
          Lit. 'The lampshade felled the day during the whole evening.'

      b. ?? *Le brise-bise a brisé la bise pendant la tempête.*
          Lit. 'The curtain broke the wind during the storm.'

      c. ?? *Le coupe-feu a coupé le feu pendant 2 heures.*
          Lit. 'The firewall cut the fire for two hours.'

The unacceptability of the above examples contrasts with the well-formedness of Means/Instrument VN (cf. *protège-cahier* 'notebook cover' *couvre-pieds* 'blanket', etc.) in the subject position of stative sentences (13, 14, 15). The examples (33) are ill-formed due to the fact that the verbs *briser* 'to break', *abattre* 'to kill' and *couper* 'to cut' do not select nouns such as *jour* 'day', *bise* 'wind' and *feu* 'fire' when used in sentences. In the VNs under discussion, these verbs are not used with their usual meaning[16]. Due to these interpretive properties, these verbs behave as blocking verbs[17] in this context. They are construed as *arrêter* 'to stop', whose use as a main verb would restore the acceptability of the examples in (34). We can consequently conclude that we are facing here rare (10 to 15 cases) and marginal construction patterns of lexeme coining, relying on phenomena such as metaphors, meaning narrowing, peculiar sociolects, and responding to onomasiological needs of the social community[18]. This shows moreover that the structure in

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16 The fact that the relationship between the V and the N lexemes does not always reflect the syntactic relationship between the verb and its object provides an additional argument in favor of a morphological (vs syntactic) formation of French VN compounds. This is also the case for compounds such as *broute-biquet* 'honeysuckle' (lit. graze-goat) (8g), in which the N *biquet* 'goat' corresponds to the subject of the V *brouter* 'to graze', *réveille-matin* 'alarm clock' (lit. wake-morning) ou *cuit-vapeur* 'steam cooker' (lit. steam-cook), in which the Ns refer to a temporal span and a cause respectively. See Villoing (2009, 2012), Desmets & Villoing (2009), Fradin (2009).

17 We thank the reviewer who brought this property to our attention.

18 We leave for future research the question whether these data deserve a conceptual or cognitive analysis.

(35), corresponding to the non-agentive value of the verbs described in (22), is not a verbal base available in normal cases of VN compounding.

(35) $[_{VP}\ V_{Cause}\ [_{VP}\ V]]$

8. Conclusion

In this article, we have shown that French exhibits VN compounds with a Means value. However, "pure" Means VNs are infrequent, and rely on a non-literal use of the base verb. Means VNs in fact regularly display an additional Instrument reading. The regularity of this double Means/Instrument value has led us to discard the analysis that formally similar lexemes occurring in several constructions are homonyms, which has been put forward by Fradin & Kerleroux (2003, 2009) in the framework of Lexematic Morphology. Even though we do not question the validity of this proposal when applied to other cases, we have seen that it cannot handle the data that we examined here. The notion of polysemous lexeme has proved a more appropriate manner to account for both the relationship between Means and Instrument readings of the VNs, and the stative / dynamic values of the corresponding base verbs. That is why we adopted Kratzer's (2000) and Rothmayr's (2009) analysis, which is fully consistent with such an approach. This analysis is recalled in (36=22a):

(36) $[_{vP}\ DP_{Agent}\ v_{DO}\ [_{VP}\ DP\ V_{CAUSE}\ [_{VP}\ DP\ V]]]$

By postulating the presence of both an agentive and a stative/causative component in the verbal bases, (36) accurately accounts for the double Means/Instrument value of the VNs.

As for the selection of the "pure" Instrument reading, also available for VNs built on the same verbal bases, we argued that it relies on the permanent state of the Patient described by the Ns in the compounds after the occurrence of the event described by the verbal base. Conversely, the state of the Patient is reversible when VNs have a Means/Instrument reading. To distinguish between these two types of states, we provided two tests. First, after Fábregas & Marín (2012), we showed that reversible states can only be measured by *pendant x temps* 'for x time'. Second, we put forward a new test, based on the use of *puis j'ai rangé* +Instr 'then I stored +Instr', which entails the termination of the state of N, and consequently its reversibility, when the VNs describe Means, but not if they describe "pure" Instruments.

These results raise further questions for future research, such as the availability of the Means value for instrumental nominals in *-eur* (cf. *aérateur* 'aérator') or *-oir* (*bouchoir* 'oven door').

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