12

Actions and Products Worldwide

Matthias Gerner

Author's note: I wish to express my gratitude and appreciation to Sunyoung Oh (City University of Hong Kong) who discussed with me in detail the properties of mental verbs and nouns in Korean. Warmest thanks also to Samnang Soeung (Royal University of Phnom Penh) who co-investigated with me action and product nominalizations in Khmer.

1. Introduction

Kazimierz Twardowski (1911, 108) distinguished between action and product nominalization (AN/PN) for three types of events: physical actions and products, mental actions and products, and speech actions and products. A jump is the physical product of jumping, a thought is the mental product of thinking, and a talk is the speech product of talking. Generally, the gerund form of the verb denotes an action, while verbal substantives encode the product (there are exceptions such as *a building*).

Twardowski noted two distinctive properties of actions and products: actions do not have satisfaction or fulfillment conditions attached to them, while products do.

(1) Satisfaction/fulfillment (Twardowski 1911, 108)

a.	*(John's action of) expecting was fulfilled.	Mental/speech act
b.	John's expectations were fulfilled.	Mental/speech product

Enduring mental products and speech products can be in sameness relations, if they happen to be identical in content, whereas mental acts or speech acts cannot enter sameness relations.

Gerner, M. (2017). "Actions and products worldwide." In *Act-based conceptions of propositional content: Contemporary and historical perspectives*, Moltmann, F. and M. Textor(eds.), pp. 325-370. Oxford: Oxford University Press.

(2) Sameness relations (Twardowski 1911, 124)

a. # John's thinking was the same as Mary's.	Mental/speech act
b. John's thought is the same as Mary's.	Mental/speech product

Moltmann (2003, 2004, 2007, this volume) noted an additional distinctive characteristic of actions and products, as exemplified in (3). She observed that the time of occurrence is accidental to mental products and speech products, but that it plays an essential role for mental acts and speech acts.

(3) Time of occurrence (Moltmann, this volume)

b. #Pierre's thinking might have occurred earlier than it did.	Mental/speech act
a. Pierre's thought might have occurred to him earlier than it did.	Mental/speech product

Actions and products also share certain properties. For example, actions and products can both be predicated by the predicate "unusual," though with a difference. The adjective "unusual" evaluates products as a whole, but it modifies only a temporal part of acts (adapted from Moltmann, this volume).

(4) Evaluative predicate

a. Mary's *thinking* was unusual (temporal part of thinking).	Mental/speech act
b. Mary's *thought* was unusual (thought as a whole).	Mental/speech product

Additionally, mental acts and mental products can both cause other events.

(5) Causation

a. *John's speaking* delighted Mary.	Mental/speech act
b. *John's speech* delighted Mary.	Mental/speech product

The best way of testing the cross-linguistic reflection of the notions of a mental act or speech act and of a mental product or speech act with their empirical properties would be

- to identify a representative sample of the world's languages with philosophically knowledgeable native speakers, and
- to send out questionnaires that help decide whether native terms for the philosophical notions do exist and what their empirical properties are.

Such endeavors might be feasible for small samples of languages, but they are unworkable for larger samples, even if we take advantage of electronic communication.

Another method would be to consult published grammars of the languages in the world. About 1,200 of the extant 7,000 languages have been described so far. The difficulty of this approach is the uneven quality standards of the grammars and the lack of relevant information in many grammars.

In this paper, I pursue a mixed approach. For a representative sample of 100 languages, I have accessed available grammars. Where the data were ambiguous but promising, I contacted native speakers for further information.

I broadened the investigation in order to match the purpose of this volume, which is to commemorate the Polish philosopher Twardowski. Twardowski was the first to distinguish between action and product nominalization, a difference made for physical and mental verbs. Action and product nominalization are processes whereby a verb is changed into an action noun (e.g., his walk-*ing*) or a product noun (e.g. his *walk*). We scrutinize action and product nominalizations at large in sections 2–3, and zoom in on *mental* actions and products in section 4.

In section 2, we position action/product nominalization with regard to other forms of nominalization. Action and product nominalization cluster around two different feature bundles, which we explore in section 3. Action nominalization tends to involve specialized and productive encoding, and, where applicable, it tends to correlate with unbounded nominal aspect and future nominal tense. Product nominalization tends to use unspecialized and unproductive encoding, and it tends to correlate with bounded nominal aspect and past nominal tense.

Fifty of the sample's languages mark actions and products consistently different, a lower number than the 75 languages that mark mental actions and products consistently different, as we discuss in section 4.

2. Actions and Products versus Other Types of Nominalization

Action and product nominalizations are morphosyntactically and semantically distinguished from other types of nominalizations.

Morphosyntactically, action and product nominalizations almost always target the *non*finite verb.[1] Polysynthetic[2] languages like Mapuche[3] provide useful illustrations. While the finite verb in these languages stacks up between five to nine affixes, the nominalized nonfinite verb reduces the number of co-occurring affixes to zero or one.

---

[1] Finite verbs are verbs marked for tense, aspect, and mood, while nonfinite verbs are unmarked for these categories.

[2] In polysynthetic languages, every word consists of many affixes stacked after each other. In these languages, the sentence is often made up of one word with many affixes.

[3] Mapuche is a language of the isolate Araucanian family and is spoken by 600,000 people in South-Central Chile.

Mapuche (Araucanian, Chile) (Smeets 2008, 194)

(6) a. monge-l-uw-küle-ke-fu-y-ng-ün — Finite verb clause
get.life-CAUS-REFL-ST-CF-IPD-IND-3.PL-PL
'They kept themselves alive.'

b. aku-tu-n — Nonfinite verb action nominalization
arrive-RE-NML
'act of arriving'

There are exceptions. In a few languages, the finite verb can be the input of a process of action nominalization (though not of product nominalization). In Rukai,[4] the action nominalizer **-anə-** takes nonfinite and finite verbs as input and can be further marked by possessive markers. The possible presence of nominal morphology distinguishes this marker from complementizers.

Budai Rukai (Austronesian, Taiwan) (Sung 2011, 548–49)

(7) malisi ka salabu ka ta-kan-**anə**-ŋa-li — Finite verb action nominalization
angry NOM name OBL NFUT-eat-NML-PFV-1.SG.GEN
'Salabu is angry at my having eaten already.'

Action and product nominalizations are nouns that take nominal inflections, sometimes with restrictions. In Basque,[5] action nominalizations with the two allomorphic suffixes **-tze** and **-te** can be declined as a definite singular noun but not for all cases (Hualde 2003, 173–74). The following table presents two common nouns and three nominalized verbs.

(8)

Noun Paradigm	azal 'skin'	hondartza 'beach'	ekarr 'bring'	ikus 'see'	egin 'make'
Absolutive	azal-a-ø	hondartz-Ø-a-Ø	ekar-tze-a-Ø	ikus-te-a-Ø	egi-te-a-Ø
Ergative	azal-a-k	hondartz-Ø-a-k	ekar-tze-a-k	ikus-te-a-k	egi-te-a-k
Dative	azal-a-ri	hondartz-Ø-a-ri	ekar-tze-a-ri	ikus-te-a-ri	egi-te-a-ri
Genitive	azal-a-ren	hondartz-Ø-a-ren	ekar-tze-a-ren	ikus-te-a-ren	egi-te-a-ren
Benefactive	azal-a-rentzat	hondartz-Ø-a-rentzat			
Comitative	azal-a-rekin	hondartz-Ø-a-rekin			
Instrumental	azal-a-z	hondartz-Ø-a-z			
Locative	azale-a-n	hondartz-Ø-a-n	ekar-tze-a-n	ikus-te-a-n	egi-te-a-n
Partitive	azal-ik	hondartza-*r*-ik	ekar-tze-*r*-ik	ikus-te-*r*-ik	egi-te-a-*r*-ik
Allative	azal-*e*-ra	hondartza-ra	ekar-tze-ra	ikus-te-ra	egi-te-ra
Ablative	azal-*e*-tik	hondartza-tik	ekar-tze-tik	ikus-te-tik	egi-te-tik
Relational	azal-*e*-ko	hondartza-ko	ekar-tze-ko	ikus-te-ko	egi-te-ko

[4] Budai Rukai is a Formosan (Austronesian) language spoken by 10,000 people in Taiwan.
[5] Basque is a language isolate spoken by 720,000 people in southern France and northern Spain.

Agent, patient, instrument, and location nominalizations also take nonfinite verbs as input, but differ in meaning from action/product nominalizations (Gerner 2012, 825–28). Only patient and product nominalizations convey similar meanings for creational verbs. This is the reason why product nominals tend to be lexicalized interpretations of patient nominalizations.

3. Actions versus Products

In this section we take note of the strategies that the languages of the world use for drawing a distinction between action and product nominalization (AN/PN).

We present the general encoding strategies of both in section 3.1; explore the correlation between AN/PN, specialized marking, and productive marking (section 3.2); list the functions from which AN/PN are derived (section 3.3); and illustrate the nominal features that are acquired and the verbal features that are retained by AN/PN (section 3.4). In some languages, AN/PN correlate with nominal aspect and nominal tense. Where these concepts are relevant, AN links to masses and PN to count objects (section 3.5), AN to parts and PN to wholes (section 3.6), AN to future nominal tense and PN to past nominal tense (section 3.7).

3.1 ENCODING STRATEGIES

Fifty percent of the sample's languages mark action and product nominalizations consistently differently. About 28% languages adopt the same marking. The nominalized verb is either ambiguous (AN/PN) or has lexicalized as AN or PN, with action nominalization being the predominant interpretation. In 22% of the sample's languages, there is no noticeable strategy to derive AN, PN, or both from verbs.

3.1.1 Phonological strategies

Few languages encode the distinction between actions and products by exclusively phonological means. Two phonological processes are attested: apophony (umlaut) and change in syllable stress.

In the four branches of the Afro-Asiatic family, verbal nouns are particular apophonic forms in the "root-and-pattern" paradigm of the verb. In languages of the Berber branch (but not of other branches), most verbal nouns exhibit two genders, male and female. The male verbal nouns are action nominalizations, while female verbal nouns are product nominalizations. This contrast is shown in the following minimal pair, which belongs to Tamashek (Heath 2005, 508–17).[6]

[6] Tamashek belongs to the Berber branch of the Afro-Asiatic family and is spoken by 280,000 people in Mali and Burkina Faso.

Tamashek (Berber, Mali) Heath (2005, 685)

(9) a. ɑ-jənnɑ i-ss-ənɑ **éwet.**
SG-rain 3.SG.M-CAUS-begin hit.NML.M.SG
'Rain began to fall' (*lit.* 'Rain began an act of hitting').

b. ɑ-jənnɑ i-ss-ənɑ **t-èwete.**
SG-rain 3.SG.M-CAUS-begin F-hit.NML.F.SG
'Rain began to fall' (*lit.* 'Rain began a blow').

More contrastive examples are presented in the following table (Heath 2005, 508–17).

(10)

Consonantal Root Morpheme	AN (male verbal noun)	PN (female verbal noun)
ɣ_r 'shout'	e**ɣæ**ri 'act of shouting'	t-e**ɣæ**re 'a shout'
z_j_r 'leave'	**ɑzæjo**r 'act of leaving'	t-**ɑzæjo**r 'a departure'
j_m_r 'treat'	**ɑjmu**r 'act of treating'	t-**ɑjmu**r 'a treatment'
šš_f 'swim'	é**ššɑf** 'act of swimming'	t-é**ššɑf** 'a swim'

English derives product nominalizations from bare infinitives by means of a prosodic change in syllable stress. More than 100 polysyllabic verbs place the stress on the last syllable, while the product nominals stress the first syllable, as shown in the following excerpt.

(11)

Verb	PN	Verb	PN	Verb	PN	Verb	PN
a**ccess**	**a**ccess	con**trast**	**con**trast	mis**match**	**mis**match	re**ject**	**re**ject
ad**dress**	**ad**dress	de**crease**	**de**crease	man**date**	**man**date	re**lay**	**re**lay
af**fect**	**af**fect	de**fault**	**de**fault	ob**ject**	**ob**ject	re**make**	**re**make
al**loy**	**al**loy	dis**count**	**dis**count	over**lap**	**o**verlap	re**port**	**re**port
an**nex**	**an**nex	es**cort**	**es**cort	per**mit**	**per**mit	re**search**	**re**search
aug**ment**	**aug**ment	es**say**	**es**say	pre**sent**	**pre**sent	re**serve**	**re**serve
be**lay**	**be**lay	ex**port**	**ex**port	pro**cess**	**pro**cess	seg**ment**	**seg**ment
com**bat**	**com**bat	fi**nance**	**fi**nance	pro**gress**	**pro**gress	sur**vey**	**sur**vey
com**bine**	**com**bine	fore**taste**	**fore**taste	pro**ject**	**pro**ject	sus**pect**	**sus**pect
com**pound**	**com**pound	im**pact**	**im**pact	re**call**	**re**call	tor**ment**	**tor**ment
con**cert**	**con**cert	im**plant**	**im**plant	re**cord**	**re**cord	trans**fer**	**trans**fer
con**duct**	**con**duct	im**port**	**im**port	re**do**	**re**do	trans**port**	**trans**port
con**serve**	**con**serve	in**crease**	**in**crease	re**fill**	**re**fill	re**fund**	**re**fund
con**struct**	**con**struct	in**sult**	**in**sult	pro**test**	**pro**test	up**date**	**up**date
con**test**	**con**test	in**trigue**	**in**trigue	re**fund**	**re**fund	up**grade**	**up**grade

3.1.2 Morphological strategies

In about 70% of the sample's languages, action and product nominalization are encoded by morphological strategies dedicated to that function. These strategies include zero-derivation from bound verb roots (about 5%), affixation (about 90%), and reduplication (about 5%). Languages with affixal strategies prefer suffixation (60%) over prefixation (25%), infixation (10%), circumfixation (4%) and confixation (1%).[7] I exemplify each strategy below.

A. ZERO-DERIVATION

In Warlpiri,[8] product nominalizations are lexicalized verb roots for a limited number of verbs. As the verb roots are bound, they do not serve any independent syntactic function other than providing the input of morphological processes (Simpson 1983, 207).

(12)

jarda-Ø 'a sleep', 'a nap'	warrki-Ø 'work'
kulu-Ø 'a fight', 'a combat'	wirlinyi-Ø 'hunt'
manjiki-Ø 'a holiday', 'camping-out'	wurna-Ø 'travel'
manyu-Ø 'a play'	yantarli-Ø 'camp'
wajili-Ø 'a chase'	yinka-Ø 'laughter'

B. SUFFIXATION

Action nominalizations are specialized suffixal forms in each of the five Warlpiri verb conjugations (Simpson 1983, 7–8). PNs involve zero morphemes (see previous subsection).

(13)

	Conjugation 1	Conjugation 2	Conjugation 3	Conjugation 4	Conjugation 5
Immediate Future	-ju	-ku	-ngku	-lku	-nku
Imperative	-ya	-ka	-ngka	-nja	-nta
Action Nominalization	**-nja**	**-rninja**	**-nja**	**-rninja**	**-ninja**
Irrealis	-ya-rla	-ka-rla	-ngka-rla	-nja-rla	-nta-rla
Nonpast	-mi, -Ø	-rni, -ni	-nyi	-rni, -ni	-ni
Past	-ja	-rnu	-ngu	-rnu	-nu

[7] The percentage figures are based on partial counts and extrapolations. Bybee, Pagliuca, and Perkins (1994) found that suffixation was more common than prefixation at the ratio of 3:1 (for verb-final languages the ratio is 5:1, for verb-initial languages it is 2:1). The preference for suffixing is explained in terms of grammaticalization and cognitive processing of the human mind (Whaley 1997).

[8] Warlpiri is a Pama-Nyungan language spoken by 2,500 people in the Northern Territory of Australia.

The following example is a coordination of an action nominalization and a product nominalization.

(14)

Warlpiri (Pama-Nyungan, Australia) Simpson (1983, 448)

tija-ngku	ka-jana	nya-nyi	**yirra-rninja**-kurra	manu	**manyu-Ø**-kurra
teacher-ERG	PRES-3.PL	see-NPAST	write-NML-OCOMP	and	play-NML-OCOMP

'The teacher watches their (act of) writing and their play.'

C. SUPPLETIVE SUFFIXATION

In Matsés,[9] 12 suppletive[10] action nominalizers encode tense, evidential, and polar distinctions of the event (Fleck 2003, 316). These co-associated senses are genuine nominal categories and must be distinguished from tense and evidential marking on the finite verb. I will further elaborate on this kind of marking in section 3.7.

(15)

	Remote Past	Distant Past	Recent Past	Present/Generic	Future
Observed	**-ampic**	**-nëdaic**	**-boc**	**-ac**	**-te**
Inferential	**-dennec**	**-ondaic**	**-ac**		
Negative		**-nëdacma**	**-acma**	**-tema**	**-tema**

Three of these nominalizers are illustrated with examples below.

Matsés (Panoan, Peru) (Fleck 2003: 313-317)

(16) a.

cues-**ac**	icsa-mbo	ic-e-c.
hit-NML.GNR/RPAST.INF	bad-AUG	be-NPAST-INDIC

'It is bad to hit something' (*lit.* 'The recent act of hitting is bad').

b.

nid-**boc**	icsa-mbo	ic-o-sh.
go-NML.RPAST.OBS	bad-AUG	be-PAST-3.SG

'The recent (witnessed) act of leaving was bad.'

c.

ta-dëd-**ondaic**	icsa-mbo	ic-o-sh.
foot-chop-NML.DPAST.INF	bad-AUG	be-PAST-3.SG

'The act of cutting on the foot (long time ago) was bad.' [Referring to someone with a limp]

[9] Matsés belongs to the Panoan language family and is spoken by 2,200 people in Peru and Brazil.

[10] Suppletive markers have unrelated forms but related minimally contrasting meanings (e.g., *go–went*).

D. PREFIXATION

The Thai[11] prefix **kaan-** transforms dynamic verbs into action nominals, while the prefix **khwaam-** changes verbs into product nominals (Iwasaki et al. 2005, 28–29).

(17)

Verb	AN (prefix)	PN (prefix)
khít 'to think'	**kaan**-khít 'act of thinking'	**khwaam**-khít 'thought'
chɯa 'to believe'	**kaan**-chɯa 'act of believing'	**khwaam**-chɯa 'belief'
rúu 'to know'	**kaan**-rúu 'act of knowing'	**khwaam**-rúu 'knowledge'
òtthon 'to bear'	**kaan**-òtthon 'act of patience'	**khwaam**-òtthon 'patience'
dínron 'to struggle'	**kaan**-dínron 'struggle'	**khwaam**-dínron 'struggle'
taay 'to die'	**kaan**-taay 'act of dying'	**khwaam**-taay 'death'

E. INFIXATION

In Khmer,[12] many verbs can be infixed by the morpheme **-n-**, which is a specialized product nominalizer (Huffman 1970, 314–316).

(18)

Verb	PN (infix)
cuəl 'to rent'	c-**n**-uəl 'a rent (n.)'
siət 'to insert'	s-**n**-iət 'an insert (n.)'
cam 'to wait'	c-**n**-am 'a year'
dam 'to plant'	d-**n**-am 'a plant'

F. CIRCUMFIXATION

Atayal[13] uses the productive circumfix **p-. . .-un** to mark product nominalizations (Rau 1992, 118).

(19)

Verb Root	PN (circumfix)
-syaq- 'to smile'	**p**-syaq-**un** 'happy contenance'
-qumah- 'to cultivate'	**p**-qumah-**un** 'farm work'
-yuwaw- 'to work'	**p**-tyuwaw-**un** 'task, work'

[11] Thai, the national language of Thailand, belongs to the Tai-Kadai family and is spoken by 60 million people.

[12] Khmer, the national language of Cambodia, is spoken by 16 million people and belongs to the Austro-Asiatic family.

[13] Atayal is a Formosan (Austronesian) language spoken by 84,000 people in Taiwan.

G. CONFIXATION

A confix is rare form of affixation whereby an infix is combined with a suffix. In Gayo,[14] product nominalization is unproductive and encoded by confixation on a limited set of verbs (Eades 2005, 69).

(20)

Verb Root	PN (confix)
-tiró- 'to request'	t-**en**-iró-**n** 'request; dowry'
-tuni- 'to hide'	t-**en**-uni-**n** 'savings'
-tasó- 'to store away'	t-**en**-aso-**n** 'storage'
-kunul- 'to sit'	k-**en**-unul-**en** 'house sitting area/session'

H. REDUPLICATION

In Tagalog,[15] action nominalization is encoded by a process of prothetic[16] partial reduplication, as exemplified in the following chart (Foley 1998, 30).

(21)

Verb Root	AN (prothetic reduplication)
-húli- 'to catch'	**pag-hu**~húli 'act of catching'
-dala- 'to bring'	**pag-da**~dala 'act of bringing'
-luto- 'to cook'	**pag-lu**~luto 'act of cooking'
-aral- 'to study'	**pag-ar**~aral 'act of studying'
-awit- 'to sing'	**pag-aw**~awit 'act of singing'
-bili- 'to buy'	**pag-bi**~bili 'act of buying'

3.2 SPECIALIZED MARKING AND PRODUCTIVITY

Two variables show the importance of AN/PN marking in the grammar: first, the use of specialized markers whose unique function it is to mark AN or PN, and second, the productivity of the marking as measured by the number of verbs that can be nominalized.

For AN and PN, the two nominal variables [± specialized] and [± productive] can be configured into 16 logical marking strategies. The 100 languages of the sample distribute over these strategies as shown in the following chart (the sum is 103 as several languages pursue double marking strategies).

[14] Gayo is a Malayo-Polynesian (Austronesian) language. Gayo is spoken by 300,000 people in Indonesia.

[15] Tagalog, the national language of the Philippines, belongs to the Austronesian family and is spoken as a first language by 28 million people.

[16] Prothetic partial reduplication is a mix of prefixation and partial reduplication.

(22)

AN	AN PN	productive productive	productive unproductive	unproductive productive	unproductive unproductive
specialized	specialized	4	5	0	11
specialized	nonspecialized	3	29	0	5
nonspecialized	specialized	2	6	2	2
nonspecialized	nonspecialized	2	10	1	21

On the basis of this distribution, we can involve standard statistical tests such as the χ^2-test to measure the degree up to which the kind of nominalization is correlated with specialized and productive marking.

For action nominalization, it is very likely (at the significance level of 1%) that the formal means by which it is encoded are productive in terms of being available for large portions of verbs. For product nominalization, it is likewise very probably (at 1%) that its formal means are unproductive in the sense of not applying to many verbs. Here are the figures.

(23)

	productive	unproductive	Total
AN	61	42	103
PN	14	89	103
Total	75	131	206

χ^2 =	46.30
Significance Level 5%	3.84
Significance Level 1%	6.64
Correlated:	Yes at 1%

The kind of nominalization also strongly correlates with specialized marking (at 1%). Action nominalization likely involves specialized marking, while product nominalization probably involves unspecialized marking derived from other functions.

(24)

	specialized	nonspecialized	Total
AN	57	46	103
PN	32	71	103
Total	89	117	206

χ^2 =	12.86
Significance Level 5%	3.84
Significance Level 1%	6.64
Correlated:	Yes at 1%

For action nominalization, specialized and productive marking are positively correlated (at 1%). If marking is specialized, it will likely be productive.

(25)

AN	productive	unproductive	Total
specialized	41	16	57
nonspecialized	20	26	46
Total	61	42	103

χ^2 =	8.53
Significance Level 5%	3.84
Significance Level 1%	6.64
Correlated:	Yes at 1%

For product nominalization, specialized and productive marking are negatively correlated (at 5%). If marking is specialized, it will probably be unproductive.

(26)

PN	productive	unproductive	Total
specialized	8	24	32
nonspecialized	6	65	71
Total	14	89	103

χ^2 =	5.15
Significance Level 5%	3.84
Significance Level 1%	6.64
Correlated:	Yes at 5%

Except for the last correlation, all correlations are strong. We might summarize them as universal tendencies, which play the role of probabilistic implicational universals.

(27) Universal Tendency #1: Action nominalizations will likely be productive; product nominalization will likely be unproductive.

Universal Tendency #2: Action nominalizations will likely involve specialized marking; product nominalizations will likely involve unspecialized marking.

Universal Tendency #3: For action nominalization, if marking is specialized, it will probably be productive. For product nominalization, if marking is specialized, it will probably be unproductive.

3.3 SOURCES FOR UNSPECIALIZED MARKING

A large portion of action/product nominalizations are not encoded by specialized marking, but are modeled on different forms of the verb (section 3.3.1) and on other kinds of nominalization (section 3.3.2).

3.3.1 Forms of the verb

Worldwide, action and product nominalizations are lexicalized interpretations derived from verb roots (section A), uninflected verbs (section B), infinitives (section C), participles (section D), passive voice (section E) and even iterative aspect marking (section F).

A. VERB ROOTS

In several languages, morphemes with an otherwise nominal function are affixed on the verb root to provide action or product nominalizations.

In Mamaindê,[17] there are 24 noun classifiers that categorize nouns for shape properties. One of these classifiers, the general noun classifier **-tʰã-**, is not only nested in nouns, as illustrated in (28a), but can be suffixed to a verb root to encode action nominalization. The AN function is shown in (28b).

[17] Mamaindê belongs to the Nambiquaran family, a small isolate group of Amazonian languages, spoken in western Central Brazil. Mamaindê has 250 monolingual speakers (2009).

(28)

Mamaindê (Nambiquaran, Brazil) (Eberhard 2009, 543)

a.	na-juk-**t^{h}ã**-tu	ã-jejeis-hãn-k^{h}ijãnsi?	Noun classifier
	3.SG-foot-NCL.THING-FNS	CAUS-ugly-MAN.CMP-CN.NEG.PURP	
	ha?fin	tasihna-Ø-ten-a-nha-wa	
	quickly	send-3.O-DES-1.S-PRES.NVIS-DECL	

'So that her foot doesn't get completely bad, I'll send her quickly (to the city).'

b.	wa-onka-**t^{h}ã**-tu	c. na-eu-**t^{h}ã**-tu	AN
	2.SG-do-NCL.THING-FNS	3.SG-see-NCL.THING-FNS	
	'your doing'	'his seeing'	

In Nama Hottentot,[18] action nominalization is derived from verb roots to which the noun inflection **-s** is suffixed. This suffix encodes the 3rd-person singular female form of a 24-item paradigm inflected for person (1st, 2nd, 3rd), gender (male, female, neuter), and number (singular, dual, plural). These noun inflections mark agreement of the nominal predicate with the subject in an array of constructions. Example (29a) shows the suffix **-s** as agreement marker and example (29b) as action nominalizer.

Nama Hottentot (Khoisan, Namibia) (Hagman 1973, 83–95)

(29)	a.	ǃîis ke	kxòe-**s**-a	Nominal agreement suffix
		3.SG.F ART	person-3.SG.F-EQU	

'She is the person.'

b.	naú-**s**	c.	=ǃaĩ-**s**	d.	tóá-**s**	AN
	hear-NML		think-NML		finish-NML	
	'hearing'		'thinking'		'finishing'	

A number of nominalized verbs have further been lexicalized into product nominals, which are listed as entries in the dictionary (Hagman 1973: 233-235).

c.	miĩ-**s**	c.	mũu-**s**	d.	ða-**s**	PN
	say-NML		see-NML		brighten-NML	
	'utterance'		'sight'		'dawn'	

B. UNINFLECTED VERBS

In the isolating languages of East Asia, the verb is a free form that can, but need not, take clitics. Product nominalizations are homophonous to the verb and can be

[18] Nama Hottentot is a Khoison language spoken by 200,000 people in Namibia and Botswana.

modified by numerals and quantifiers. These product nominalizations are called "cognate objects" or "auto-classifiers" in the local grammar tradition.

In Hani,[19] for example, this process is productive and most verbs can form product nominalizations, whereas action nominalizations are almost nonexistent.

Hani (Tibeto-Burman, China) (Gerner, 2014)

(30) a. ni^{21} **χu^{33}** χu^{33}
NUM.2 NML.watch watch
'watch two (instantiations of) watch(es)'

b. ni^{21} **nɔ^{21}** nɔ^{21}
NUM.2 NML.stamp stamp
'stamp two times'

c. ʈɕʰi^{21} **kʉ^{33}** kʉ^{33}
NUM.1 NML.fear fear
'fear once'

C. INFINITIVES

Infinitives are nonfinite verb forms used in constructions that can be finite or nonfinite. Infinitives are verbal not nominal forms. A number of languages derive action nominalizations (though never product nominalizations) from infinitives.

Malayalam[20] employs two productive verb suffixes to derive action and product nominals. The infinitive suffix **-uka** (allomorphs **-a**, **-ka**, **-ika**) is used in a number of verb constructions and encodes action nominalizations. The derived nominal can be further affixed by case morphemes.

(31)

Malayalam (Dravidian, India)

a. ʃabdam | sahik-**ka** | vayya. — Verb infinitive
noise | bear-INFIN | cannot
'I cannot stand the noise.' (Asher and Kumari 1997, 106)

b. kaɭɭam | paɽay-**uka**-yaal | ʃikʂa | kiʈ-ʈi. — Case-marked AN
lie | tell-NML(INFIN)-INSTR | punishment | get-PAST
'He was punished for telling a lie.' (Asher and Kumari 1997, 322)

In Breton,[21] action nominalizations are productively derived from the infinitive form of the verb and co-occur with the definite article **an** 'the' (Press 1986, 60, 76, 125).

[19] Hani belongs to the Tibeto-Burman family and is spoken by about 760,000 people in Yunnan Province of China.

[20] Malayalam is a Dravidian language spoken in southern India by about 38 million people.

[21] Breton is a Celtic (Indo-European) language spoken by about 80,000 people in northwestern France.

(32)

Verb Root	AN (definite article and infinitive)
troc'h- 'to cut'	**an** troc'h-**añ** 'the act of cutting'
debr- 'to eat'	**an** debr-**iñ** 'the act of eating'
kan- 'to sing'	**an** kan-**añ** 'the act of singing'
c'hoarzh- 'to laugh'	**an** c'hoarzh-**in** 'the act of laughing'
gerv- 'to call'	**an** gerv-**el** 'the act of calling'
red- 'run'	**an** red-**ek** 'the act of running'
embreg- 'undertake'	**an** embreg-**er** 'the act of undertaking'

Hindi (Kachru 2006, 115)[22] and German use the same morphological strategy as Breton to derive action nominalization. The productivity of the process is similar to Breton.

D. PARTICIPLES

Participles (also called *converbs*) are nonfinite verb forms that are subordinate to the main predicate. See Haspelmath (1995) for a cross-linguistic definition. Participles can be active (agent) or passive (patient) oriented. Many European languages encode this distinction in *active participle* and *passive participle* forms, while some languages employ only one invariant participle form.

English exhibits both kinds of participles. Active participles or gerunds are derived from the nonfinite verb form by using the suffix **-ing**. Action nominalizations are productive lexicalizations of the gerund that can be further modified by the definite article.

In Fongbe,[23] partially reduplicated verb roots encode active participles or gerunds, from which together with the definite article action and product nominalizations are derived.

(33)

Meaning	Verb Root	Reduplicated Root
'to split'	zè	zì-zè
'to build'	gbá	gbì-gbá
'to buy'	xò	xì-xò
'to flatten'	kpábá	kpí-kpábá
'to prepare'	ɖà	ɖì-ɖà
'to draw'	ɖè	ɖì-ɖè
'to write'	wlán	wì-wlán

[22] Hindi is an Indo-Iranian language spoken by about 180 million native speakers in India.

[23] Fongbe or Fon is a Niger-Congo language spoken by 2.2 Million people in Benin and Togo.

The gerund in Fongbe is mainly used in complement clauses, as illustrated in (34).

Fongbe (Niger-Congo, Benin) (Lefebvre et al. 2002: 196)

(34)

wémâ	ó	wì-wlán	yì	tàn.
book	ART	write.GER	go	time

'Writing the book took some time' (gerund)

The distinctive mark of ANs and PNs is the postposition of the definite article **ó**. Most verbal nouns formed in this way have ambiguous action and product interpretations.

(35) a.

wémá	ó	wì-wlán	yíyá	**ó.**
book	ART	write.NML	rapid	ART

'the rapid writing of the book' (sense of PN eliminated because of 'rapid')

b.

Kòkú	sín	ɖì-ɖè	ɖàgbé	**ó**	lé.
Koku	OBJ	draw.NML	good	ART	PL

'the good sketches of Koku' (sense of AN eliminated because of 'good')

In Albanian,[24] each verb generates exactly one participle form which is either derived from the past tense or from the present tense form by means of a suffix: **-ur**, **-r**, **-rë**, **-në** (Hubbard et al. 1982, 62–63). Action and product nominalizations are lexicalized participle forms to which the neuter definite article (AN) or the feminine definite article (PN) is preposed.

(36)

Past Tense	Participle
Conjugation I	
la-va 'I washed'	la-**rë** 'washed'
fshi-va 'I swept'	fshi-**rë** 'swept'
bër-a 'I made'	bër-**ë** 'made'
gjet-a 'I found'	gjet-**ur** 'found'
mbajt-a 'I held'	mbajt-**ur** 'held'
punua-m 'we worked'	punua-**r** 'worked'
shukrua-m 'we wrote'	shukrua-**r** 'written'
rrëfye-m 'we told'	rrëfye-**r** 'told'
lye-m 'we painted'	lye-**r** 'painted'
Conjugation II	
hap-a 'I opened'	hap-**ur** 'opened'
mat-a 'I measured'	mat-**ur** 'measured'
bërtit-a 'I yelled'	bërtit-**ur** 'yelled'
fol-a 'I spoke'	fol-**ur** 'spoke'
shit-a 'I sold'	shit-**ur** 'sold'

Past Tense	Present Tense	Participle
Conjugation II		
vra-va 'I killed'		vra-**ur** 'killed'
	heq 'I pull'	heq-**ur** 'pulled'
	vjel 'I harvest'	vjel-**ë** 'harvested'
	pjek 'I bake'	pjek-**ur** 'baked'
	nxjerr 'I take out'	nxjerr-**ë** 'taken out'
Conjugation III		
dit-a 'I knew'		dit-**ur** 'knew'
fjet-a 'I slept'		fjet-**ur** 'slept'
ngrit-a 'I raised'		ngrit-**ur** 'raised'
	vë 'I put'	vë-**në** 'put'
	zë 'I catch'	zë-**në** 'caught'
	përzë 'I dismiss'	përzë-**në** 'put'
	nxë 'I learn'	nxë-**në** 'learned'
	lë 'I leave'	lë-**në** 'left'

[24] Albanian, with its two main dialects, makes up an independent group within the Indo-European language family and is spoken by 7.4 million people in southeastern Europe.

Action nominalizations are productively formed by the participle to which the nominative singular case marker is suffixed and by the neuter definite article. The neuter gender is almost obsolete in Albanian and has only survived as the gender of abstract nouns. Product nominalizations, on the other hand, are formed by the participle, the nominative singular case, and the female definite article. Product nominalizations are less productive than action nominalizations (Hubbard et al. 1982, 133–134).

(37)

Participle	AN	PN
ardh-**ur** 'arrived'	**të** ardh-**ur**-**it** 'the act of arriving'	**e** ardh-**ur** 'arrival'
ec-**ur** 'walked'	**të** ec-**ur**-**it** 'the act of walking'	**e** ec-**ur** 'walk'
fol-**ur** 'spoken'	**të** fol-**ur**-**it** 'the act of speaking'	**e** fol-**ur** 'utterance'
mendua-**r** 'thought'	**të** mendua-**r**-**it** 'act of thinking'	**e** mendua-**r** 'thought'
ngrë-**në** 'eat'	**të** ngrë-**në**-**t** 'act of eating'	
bertit-**ur** 'shouted'	**të** bertit-**ur**-**it** 'act of shouting'	**e** bertit-**ur** 'a shout'
qesh-**ur** 'laugh'	**të** qesh-**ur**-**it** 'act of laughing'	**e** qesh-**ur** 'act of laughter'

E. PASSIVE VOICE

Passive participle forms often contribute to the encoding of passive voice, but they can be involved in other constructions, too. Some languages derive action and product nominalizations from verb markers with the only function of marking passive voice.

Atayal[25] uses two productive passive verb suffixes: **-an** (benefactive/locative promoted to subject) and **-un** (object promoted to subject).

(38) Atayal (Formosan, Taiwan)

a.

thk-**an**	nha'	balay	htg-an	na'	wagi'.
arrive-PASS.LOC	3.SG.GEN	really	come.out-PASS.LOC	GEN	sun

'They really arrived at the place where the sun rises' (*lit.* 'the place of sun-rising was really arrived at by them.). (Rau 1992, 43)

b.

skita'	qu'	gal-**un**	nha'	payih	qani
suddenly	PART	take-PASS.O	3.SG.GEN	hoe	DEM.PROX

'Suddenly the hoe was taken by her.' (Rau (1992: 42)

The suffix **-an** is lexicalized after a few verbs into a marker of action nominalization. The suffix **-un**, on the other hand, is part of a circumfix **p-. . .-un**, which is specialized and productive in marking product nominalizations (Rau 1992, 118–119).

[25] Atayal is a Formosan (Austronesian) language spoken by 84,000 people in Taiwan.

(39)

Verb Root	AN (suffix)	PN (circumfix)
-pnet- 'to fish'	pnet-**an** 'act of fishing'	?
-syaq- 'to smile'	syaq-**an** 'act of smiling'	**p**-syaq-**un** 'happy contenance'
-qumah- 'cultivate'	qumah-**an** 'act of cultivating'	**p**-qumah-**un** 'farm work'
-yuwaw- 'thing, work'	yuwaw-**an** 'act of working'	**p**-tyuwaw-**un** 'task, work'

Tagalog[26] has a complex voice syntax that is well recognized in the typological literature. A verbal predicate must take the passive voice suffix **-in** if the patient noun is "focused" (which is the term used by Austronesian linguists), as in (40a). Products or instantiations of actions are lexicalized nouns derived from passive voice forms of creational verbs, as illustrated in (40b).

Tagalog (Austronesian, Philippines)

(40) a.

bi-bilih-**in**	ng	lalake	sa	tindahan	ang=	isda.
IRR-buy-PV	CORE	man	OBL	store	ART	fish

'The fish the man will buy in the store.' (Foley 1998, 2)

b.

bilih-**in**
buy-NML

'a purchase' (Foley 1998, 30)

Further examples are presented in the following table.

(41)

Verb Root	Passive Voice (suffix)	PN (suffix)
-gawa- 'produce'	-gawa-**in** 'be produced'	gawa-**in** 'a product'
-luto- 'cook'	-luto-**in** 'be cooked'	luto-**in** 'a dish'
-aral- 'study'	-aral-**in** 'be studied'	aral-**in** 'a lesson'
-awit- 'sing'	-awit-**in** 'be sung'	awit-**in** 'a song'
-bili- 'buy'	-bilih-**in** 'be bought'	bilih-**in** 'a purchase'

F. ITERATIVE ASPECT

In one language, action nominalization is derived from iterative aspect. In Berbice Dutch Creole,[27] verbs are reduplicated to encode the sense of iterative aspect, as illustrated in (42a). Action nominalizations are zero-derived from the reduplicated form by preposing the definite article, as shown in (42b).

[26] Tagalog, the national language of the Philippines, belongs to the Austronesian family and is spoken as a first language by 28 million people.

[27] Berbice Dutch Creole is a creole language spoken in Guyana and extinct since 2005.

Berbice Dutch Creole (Creole, Guyana)

(42) a.

di	topak	furfur-tɛk	buku.	Iterative aspect
ART	child-PL	ITER~steal-1.SG	book	

'The children stole my books (repeatedly over a period of time).' (Kouwenberg 1994, 63)

b.

o	izapa	beki,	di	kosokoso-Ø	Action nominalization
3SG	ease up	little	ART	NML~cough-NML	

'It is easing up a little, the coughing.' (Kouwenberg 1994, 248–50)

3.3.2 Other types of nominalizations

Action and product nominalizations might be lexicalized interpretations of affixes whose main function is patient nominalization (section A) or oblique nominalization (section B). ANs and PNs can also be derived from each other (section C and section D).

A. FROM PATIENT NOMINALIZERS

The direct object of a creational verb can be interpreted as the product of the event. In some languages, product nominalizations are therefore lexicalized from patient nominalizations applied to creational verbs. In Babungo,[28] patient nominalizations are productively formed by zero-derivation from the verb root. Product nominalizations are derived from patient nominalizations (Schaub 1985, 244).

(43)

Verb Root	Patient Nominalizations	Product Nominalization (zero)
sii- 'to peel'	sii-Ø 'soft shells of cocoyams'	
bi- 'to carry'	bi-Ø 'a load'	
fa- 'to work'		fa-Ø 'a work'
bəŋ- 'to dance'		bəŋ-Ø 'a dance'

B. FROM OBLIQUE NOMINALIZERS

In several languages, action and product nominalizations are derived from oblique nominalizers that denote the instrument or place of an activity.

In Fijian,[29] the prefix **i-** nominalizes verbs as instrumental nouns, locative nouns, action nominals, and product nominals. The prefix **i-** is sometimes co-associated with verbal reduplication. Since these derivations are lexicalized, it is not possible *à priori* to predict the nominalization function of each individual verb. A non-exhaustive list is provided below (Dixon 1988, 191–95).

[28] Babungo is a Bantu language spoken by 27,000 natives in Cameroon.

[29] Fijian, the national language of Fiji Island, is an Austronesian language spoken by 340,000 people.

(44)	Verb	Instrumental, Locative (prefix)	AN/PN (prefix & reduplication)
	-sele 'cut'	**i**-sele 'knife' (INSTR)	
	-'aba 'climb'	**i**-'aba 'ladder' (INSTR)	
	-ti'o 'reside'	**i**-ti'o 'place of residence' (PLACE)	
	-moce 'sleep'	**i**-moce 'bed' (PLACE)	
	valu-ta 'make war'		**i**-valu 'act of fighting' (AN)
	ca'a 'work, make'		**i**-**ca'a**~ca'a 'act of working' (AN)
	vola-a 'write'		**i**-vola 'letter, book' (PN)
	talanoa 'tell'		**i**-talanoa 'story' (PN)
	wase 'divide'		**i**-**wase**~wase 'portion' (PN)
	taba-'a 'take photo'		**i**-taba-'a 'photo, picture' (PN)

In Tiriyó,[30] the suffix **-to** is a versatile nominalizer for instruments and locations (Meira 1999, 183). For a limited number of verbs, **-to** lexicalizes the verb as a product nominal.

(45)	Verb	Instrumental, Locative (suffix)	PN (suffix)
	ene 'see'	ene-**to** 'instrument for seeing; glasses'	
	apëi 'catch'	apëih-**to** 'instrument for catching; trap'	
	rï 'do'	tïrï-**to** 'instrument for doing; a plan'	
	ëenpa 'learn'	wëenpa-**to** 'place for learning; school'	
	enuru 'be born'	enuh-**to** 'place of birth'	enuh-**to** 'birth'
	ëturu 'talk'		w-ëturu-**to** 'speech'
	ei 'COP'		w-eh-**to** 'state of being'
	tunta 'arrive'		tunta-**to** 'arrival'

C. FROM ACTION NOMINALIZERS

In many languages, action and product nominalizations are encoded in the same form. Action nominalizations are often the predominant and product nominalization the secondary interpretation. In some languages, action nominalizations have been supplanted by product nominalizations.

In three branches of the Afro-Asiatic family (except for Berber), verbal nouns are unique apophonic forms of the verb. They generally name the action of the verb, but they sometimes refer to product nominals. Examples are provided in the following table.[31]

[30] Tiriyó is a Cariban language spoken in Suriname and Brazil by about 2,100 native speakers.

[31] For Arabic, see Ryding (2005, 466); for Hausa, see Newman (2000, 157, 207); for Somali, see Saeed (1993, 154–157).

(46)

Language	Consonantal Root Morpheme	Verbal Noun (AN/PN)
Arabic (Semitic, Saudi-Arabia)	**k_t_b** 'write'	**kitaaba** 'act of writing' (AN)
	m_ʿr_f 'know'	**maʿrifa** 'act of knowing' (AN); 'knowledge' (PN)
Hausa (Chadic, Nigeria)	**k_r_f̂** 'manufacture'	**kìràf̂** 'act of manufacturing' (AN)
	z_r_g 'accuse'	**zàrgi** 'accusation' (PN)
	g_d 'hasten'	**gudàwā** 'diarrhea' (the runs) (PN)
Somali (Cushitic, Somalia)	**d_h_c** 'loot'	**dhác** 'act of looting' (AN)
	d_q 'graze'	**dàaq** 'act of grazing' (AN)
	t_l_ 'decide'	**táli-s** 'decision' (PN)

Blackfoot[32] employs a productive action nominalization suffix (with two allomorphs, **-n** and **-hsiN**). Some of these action nominalizations are supplanted by product nominalizations.[33]

Blackfoot (Algic, USA/Canada) (Frantz 1991, 117–19)

(47)

a. o'kaa-**n**-yi
sleep-NML-INANIM.SG
'act of sleeping' (AN)

b. passkaa-**n**-yi
sleep-NML-INANIM.SG
'act of dancing' (AN)/'a dance (n.)' (PN)

c. sootaa-**n**-yi
rain-NML-INANIM.SG
'rain (n.)' (PN)

d. okstaki-**hsiN**-yi
read-NML-INANIM.SG
'act of reading' (AN)

e. sinaaki-**hsiN**-iksi
make.image-NML-3PL
'photos/pictures' (PN)

f. ihkiitaa-**n**-istsi
bake-nom-INANIM.PL
'baked goods' (PN)

D. FROM PRODUCT NOMINALIZERS

More rarely, action nominalizations can be derived from productive product nominalizations. I observed this case in one language of the sample.

Misantla Totonac[34] uses a productive product nominalization suffix (**-t**) but has no derivation process for action nominals. Some names for actions are expressed as alternative interpretations of product nouns (MacKay 1999, 389–90).

[32] Blackfoot is a polysynthetic Algic language spoken by 3,300 people in reservations of Montana (USA) and Alberta (Canada).

[33] The Turkish AN suffix **-me** seems to have a similar distribution with several lexicalized PNs (Lewis 1967, 170–71).

[34] Misantla Totonac belongs to the isolate Totonacan family and is spoken by about 500 people in Mexico.

(48)

Verb Root	PN (suffix)	AN (suffix)
-šáṇa- 'blossom'	šáṇa-**t** 'flower'	
-pulí- 'sweat' (v.)	puli̱-**t** 'sweat' (n.)	
-ɬtata- 'sleep' (v.)	ɬtata-**t** 'sleep' (n.)	
-ạɕii- 'know'	ạɕii-**t** 'knowledge'	
-yɔh- 'fall' (v.)	yɔh-**ɔt** 'downfall' (n.)	
-máašanạn- 'be ashamed'	máašáṇa-**t** 'shame' (n.)	
-ʔíi̱wạ- 'buy'	ʔíi̱wạ-**t** 'purchase' (n.)	ʔíi̱wạ-**t** 'act of buying'
-ɕi̱yạn- 'laugh'	ɕi̱yạ-**t** 'laughter'	ɕi̱yạ-**t** 'act of laughing'
-ʔạn- 'go'	ʔạn-**at** 'outing'	ʔạn-**at** 'act of going'

3.4 NOMINAL AND VERBAL DIFFERENCES

Action and product nominalizations are both morphological nouns derived from nonfinite verbs. Yet in the languages of the sample, action nominalizations tend to preserve more verbal and acquire fewer nominal features than product nominalizations. This point is illustrated for two languages below.

In Lavukaleve,[35] action and product nominalizations contrast for a range of verbal and nominal properties (Terrill 2003, 350–54).

(49)

	Grammatical Properties	AN (**-e/-i**)	PN (**-io**)
Verbal	Take arguments	Yes	No
	Subject/Object agreement	Yes	No
	Reciprocal affix	Yes	No
	Tense, aspect, mood affixes	No	No
	Negation	No	No
Nominal	Gender	Neuter	Feminine
	Singular/Plural	Singular	Singular/Dual/Plural
	Person	3rd	3rd
	Be argument	Yes	Yes
	Definite article	Yes	Yes
	Number suffixes	No	?
	Possessive Prefixes	No	?

In Warlpiri,[36] verbs and nouns reduplicate differently. Verbs only reduplicate the first two syllables (ABC → ABABC); nouns are always wholly reduplicated (ABC → ABCABC). Product nominalizations are more nominal in the sense that

[35] Lavukaleve is a Papuan language spoken on the Solomon Islands by about 1,800 natives.

[36] Warlpiri is a Pama-Nyungan language spoken by 2,500 people in the Northern Territory of Australia.

they can only be reduplicated wholly, whereas action nominalizations can be reduplicated partially and wholly (Simpson 1983, 449).

(50) a. **parnta~parnta**rri-nja — Verbal reduplication of AN
INTENS~crouch-NML
'act of repeatedly crouching'

b. **parntarri**-nja~**parnta**rri-nja — Nominal reduplication of AN
INTENS~crouch-NML
'many acts of crouching'

(51) a. * **wirli~wirlinyi** — *Verbal reduplication of PN
INTENS~hunt.PN
'act of repeatedly hunting'

b. **wirlinyi~wirlinyi** — Nominal reduplication of PN
INTENS~hunt.PN
'a lot of hunts'

If a language has two genders (male, female), action nominalizations are almost always assigned to the male gender, product nominalization to the female gender. The Tamashek data in (10) provide an illustration for this case. In languages with three genders (male, female, neuter), action nominalizations belong to the neuter gender, and product nominalizations to the male or female gender. Albanian (Hubbard et al. 1982, 134) and German illustrate this second case. The German data are presented in (52).[37]

(52)

Verb	AN (infinitive + neuter article)	PN (male/female article)
trinken 'drink'	**das** Trinken 'act of drinking'	**der** Trank 'the drink' (m.)
denken 'think'	**das** Denken 'act of thinking'	**der** Gedanke 'the thought' (m.)
laufen 'run'	**das** Laufen 'act of runing'	**der** Lauf 'the run' (m.)
gehen 'go'	**das** Gehen 'act of going'	**der** Gang 'the walk' (m.)
kommen 'come'	**das** Kommen 'act of coming'	
arbeiten 'work'	**das** Arbeiten 'act of working'	**die** Arbeit 'the labor' (f.)
schlafen 'sleep'	**das** Schlafen 'act of sleeping'	**der** Schlaf 'the sleep' (m.)
reisen 'travel'	**das** Reisen 'act of traveling'	**die** Reise 'the travel' (f.)
schlagen 'hit'	**das** Schlagen 'act of hitting'	**der** Schlag 'the hit' (m.)
danken 'thank'	**das** Danken 'act of thanking'	**der** Dank 'thank; gratitude' (m.)
werfen 'throw'	**das** Werfen 'act of throwing'	**der** Wurf 'the throw' (m.)
fliegen 'fly'	**das** Fliegen 'act of flying'	**der** Flug 'the flight' (m.)

[37] The German product nominals, strictly speaking, are not the result of nominalization. The verbs are rather morphologically derived from the product nominals (Erben 1975, 73), a situation we will further elaborate upon in section 4.1.B.

The marking of grammatical number is another feature that distinguishes action and product nominalizations. I will elaborate on this property in the next section.

3.5 MASSES AND COUNT OBJECTS

Moltmann (this volume) points out a distinctive trait between action and product nominalization not noticed by Twardowski. She observes that action nominalization in English takes the form of mass nouns, while product nominalizations take the form of count nouns. In the languages of my sample, action and product nominalization tend to show properties of mass/count nouns, too. The mass/count distinction is implemented in the grammar in different ways, though.

In languages with grammatical number, mass nouns have singular number, count nouns have singular and plural number. In these languages, ANs tend to have singular number, PNs have singular and plural number. This situation holds in many number-marking languages, such as Lezgian (Haspelmath 1993, 153–54).[38] In Lezgian, ANs are formed by the suffix **-un** and PNs are lexicalized ANs.

(53)

Verb Root	AN (singular)	PN (singular)	AN/PN (plural)
atu- 'to come'	atu-**n** 'coming'		* atu-**n**-**ar** 'coming'
raqur- 'to send'	raqur-**un** 'sending'		* raqur-**un**-**ar** 'sending'
k'walax- 'to work'	k'walax-**un** 'working'		*k'walax-**un**-**ar** 'working'
agalq'- 'achieve'		agalq'-**un** 'achievement'	agalq'-**un**-**ar** 'achievements'
jaratmiš- 'to create'		jaratmiš-**un** 'work'	jaratmiš-**un**-**ar** 'works'
t'alab- 'to request'		t'alab-**un** 'request'	t'alab-**un**-**ar** 'requests'
aq'u- 'to clash'		aq'u-**n** 'conflict'	aq'u-**n**-**ar** 'conflicts'

In Lavukaleve, action nominalizations only appear in the singular, product nominalizations appear in the singular, dual, and plural number. Action and product nominalizations are marked by **-e/-i** and **-io**, dual and plural number by **-l** and **-ul/-vil**.

[38] Lezgian is a Northern Caucasian language spoken by about 790,000 people in Dagestan, Russia.

(54)

Verb Root	AN/PN (singular)	AN/PN (dual)	AN/PN (plural)
vo- 'to come'	vo-**e** 'coming' (AN)	* vo-**e-l**	* vo-**e-ul**
ko- 'to throw'	ko-**e** 'throwing' (AN)	* ko-**e-l**	* ko-**e-ul**
lo- 'to finish'	lo-**e** 'finishing' (AN)	* lo-**e-l**	* lo-**e-ul**
iru- 'to sleep'	iru-**i** 'sleeping' (AN)	* iru-**i-l**	* iru-**i-ul**
lik- 'to want'	lik-**io** 'desire' (PN)	lik-**io-l** 'two desires'	lik-**io-vil** 'desires'
lau'rar- 'to praise'	lau'rar-**io** 'praise' (PN)	lau'rar-**io-l** 'two praises'	lau'rar-**io-vil** 'praises'
lugu- 'to think'	lugu-**io** 'thought' (PN)	lugu-**io-l** 'two thoughts'	lugu-**io-vil** 'thoughts'
sevor- 'to bless'	sevor-**io** 'blessing' (PN)	sevor-**io-l** 'two blessings'	sevor-**io-vil** 'blessings'

Some number-marking languages, however, treat both ANs and PNs as mass nouns. In Albanian, for example, ANs and PNs are marked differently but can only occur in the singular number like mass nouns (Hubbard et al. 1982, 128–29).

Weenhayek[39] treats both ANs and PNs as count nouns. Both types of nominalizations are ambiguously encoded by the same specialized suffix **-yaj** (singular act/product) or **-yajai** (plurality of acts/products), which is attached to the same verb root (Hunt 1940, 105–6).

(55)

Verb	Act/Product (singular)	Act/Product (plural)
chot- 'help'	chot-**yaj** 'act of helping'; 'a help'	chot-**yajai** 'acts of helping'
chufwen- 'teach'	chufwen-**yaj** 'act of teaching'; 'a teaching'	chufwen-**yajai** 'acts of teaching'; teachings'
kan- 'deceive'	kan-**yaj** 'act of deceiving'; 'a deceit'	kan-**yajai** 'acts of deceiving'
chum- 'work'	chum-**yaj** 'act of working'; 'a work'	chum-**yajai** 'acts of working'; 'works'
ma- 'sleep'	ma-**yaj** 'act of sleeping'; 'a sleep'	ma-**yajai** 'acts of sleeping'; 'sleep'
fwain- 'save'	fwain-**yaj** 'act of saving'; 'salvation'	fwain-**yajai** 'acts of saving'; 'salvation'
nom- 'walk'	nom-**yaj** 'act of walking'; 'a walk'	nom-**yajai** 'acts of walking'; 'walks'
tăn- 'cry'	tăn-**yaj** 'act of crying'; 'a cry'	tăn-**yajai** 'acts of crying'; 'cries'
theth'tsha- 'tempt'	theth'tsha-**yaj** 'act tempting'; 'temptation'	theth'tsha-**yajai** 'acts tempting'; 'temptations'
kachuhuan- 'doubt'	kachuhuan-**yaj** 'act of doubting'; 'a doubt'	kachuhuan-**yajai** 'acts of doubting'; 'doubts'
selta- 'surpise'	selta-**yaj** 'act of surpising'; 'a suprise'	selta-**yajai** 'acts of surpising'; 'suprises'

[39] Weenhayek, or Wichí Lhamtés Nocten, is a Matacoan language spoken by 2,000 people in Bolivia and Argentina. Weenhayek exhibits a rare system of split-ergative verb agreement based on number. The verb agreement suffix **-(h)en** occurs on the verb, only if the S/O participant is a plural noun phrase. The category of number occupies a prominent place in the grammar.

3.6 PARTS AND WHOLES

One language of the sample, Imonda,[40] uses an AN/PN suffix that also marks part-whole relations of the noun.

The suffix **-l** is required after nouns denoting parts. It marks the property of being part of something. For certain fruit and liquid nouns, the presence and absence of this suffix imposes part/whole interpretations. For nouns with no obvious partitive semantics, it is forbidden.

(56)

with **-l** (partitive semantics)	without **-l** (nonpartitive semantics)
kël**a-l** 'branch'	*kël**a**
pëk**a-l** 'root'	*pëk**a**
mõfo**-l** 'fruit'	*mõfo
ag**a-l** 'handle'	*ag**a**
sa**-l** 'coconut meat'	sa 'coconut'
fo**-l** 'edible part of banana'	fo 'banana'
po**-l** 'wound water; fruit water'	po 'water as in rain or in creeks'
*mën**a-l**	mën**a** 'road'
*ath**a-l**	ath**a** 'sugarcane'
*ièf**-l**	ièf 'house'
*pafeia**-l**	pafeia 'rock'

The suffix **-l** also occurs after possessive noun phrases in which the possessor is interpreted as a whole and the possessee as a part. The possessee is "bounded" by the possessor.

Imonda (Border Papuan, Papua New Guinea) (Seiler 1985, 186)

(57) a.

tetoad-na	ta	-l
bird-POSS	feather	NML

'feathers of the bird'

b.

ka-na	di	-l
1.SG.POSS	younger brother	NML

'my younger brother'

The marker **-l** is further suffixed to intransitive verbs with the sense of action nominalization, and to transitive verbs with the sense of patient nominalizations (ON). The sense of patient nominalization is inferred by the presence of the direct object, which functions as an event boundary.

Imonda (Border Papuan, Papua New Guinea) (Seiler 1985, 190)

(58) a.

ha-pia	-l	-m	õ-fan.	Action nominalization
MOTION-come	NML	GOAL	say-3.SG	

'He was talking of coming.' (Intransitive verb)

[40] Imonda belongs to the Border Papuan family and is spoken by 250 people in Papua New Guinea.

b.	uisafõ	uõl	-l	-ia	po	feha-lõh-f	Patient
	crocodile	shoot	NML	CAUSE	water	fall-PROG-PRES	nominalization

'It keeps raining because of the shot crocodile.' (Transitive verb)

When a transitive verb denotes a creational event, the suffix **-l** encodes product nominalizations. Examples are provided in the following table (Seiler 1985, 189–90).

(59)	Intransitive Verbs (AN)	Transitive Verbs (ON/PN)
	laha-**l** 'act of dying'	tëta puis-**l** 'the cut meat' (ON)
	tagla-**l** 'act of walking'	ti he-**l** 'the chopped down tree' (ON)
	taglasaihõ-**l** 'act of toddling'	sapoh këklfe-**l** 'the rolled smoke' (ON)
		nõ ulõ-**l** 'the seed-planting' (PN)
		põl nëhe-**l** 'the fence-construction' (PN)

The function of **-l** as action/product nominalizer is a mirror of its function as part/whole marker of noun phrases. The association of action nominalizations with parts and of product nominalizations with wholes is reminiscent of the predication by evaluative adjectives; see (4) in section 1.

3.7 FUTURE-ACTIONS AND EX-PRODUCTS

In languages with nominal tense (Nordlinger and Sadler 2004),[41] action nominalizations seem to stand in correlation with future tense, and product nominalization with past tense. Data from more languages are needed to substantiate this claim. This correlation holds in Movima[42] and possibly in Tariana.[43] Movima has a nominal tense system with three values encoded in definite articles and demonstrative pronouns. The temporal values are nonpast tense, recent past tense, and past tense (Haude 2006, 159).

(60)	Articles	Nonpast (present/future)	Immediate Past	Past
	Male singular	us	kus	usos
	Female Singular	i'nes	kinos	isnos
	Neuter Singular	as	kos	os
	Plural	is	kis	is(os)

[41] The expressions *future-president* and *ex-president* illustrate the phenomenon of nominal tense, though the prefixes *future-* and *ex-* would not count as tense markers because of their limited productivity. We cannot say, for example, **ex-dog*. In languages with nominal tense, most nouns can be tense-marked.

[42] Movima is a language isolate spoken by 1,600 people in the Bolivian Amazonas.

[43] Tariana is an Arawakan language spoken by 100 people in the Brazilian Amazonas. An additional 1,500 people are ethnic Tariana but do not speak the language anymore. Aikhenvald's (2003) grammar contains examples with PNs and nominal past tense, but there are no examples with ANs and future tense marking.

The following minimal pair illustrates the nonpast and past tense article modifying a common noun.

(61)

Movima (Language Isolate, Bolivia) (Haude 2006, 161)

a. la' iń jo'yaj **n-as** as-na.
ANT 1.INTR arrive OBL-ART.NE.SG.NPAST home-DR

'Some time ago I arrived at home (which exists and will exist).'

b. la' iń jo'yaj **n-os** as-na.
ANT 1.INTR arrive OBL-ART.NE.SG.PAST home-DR

'Some time ago I arrived at home' (which doesn't exist anymore).

Action and product nominalizations are formed by the same nominalizer, **-wa**. The interpretation of AN is co-associated with nonpast tense, the interpretation of PN is co-associated with past tense.

(62) a. ji;-poj-kay **as** chukul-ni-**wa=as** woro'.
cry-CAUS-INV ART.NE.SG.NPAST itch-PRC-NML=ART.NE.SG.NPAST throat

'The itching of my throat makes me cry (the itching still goes on).' (AN) (Haude 2006, 468)

b. is-na=y'ɬi bo **os** kay-**wa=is** pa;ko.
roast-DR=1.PL PURP ART.NE.SG.PAST eat-NML=ART.PL.PAST dog

'We roasted it for the feed of the dogs (the feed has disappeared).' (PN) (Haude 2006, 468)

In English, according to (3) in section 1, product nominalizations can, but action nominalizations cannot, occur in tense-marked clauses. In Movima, tense and nominalization are connected differently: past nominalizations are interpreted as PNs and nonpast nominalizations as ANs. The Movima correlation is also reminiscent of the connection of AN with masses and of PN with count objects (section 3.5).

4. Mental Actions and Speech Acts and Their Products

Similar to physical actions, mental actions have products. In addition, attitudes are mental states, sometimes called "attitudinal objects," which mirror the properties of products.

There are two ways by which languages distinguish between actions and products: morphologically and lexically.[44]

1. **Morphological prioritization:** Attitudinal verbs are derived from attitudinal nouns (*products have priority over actions*), or nouns are derived from verbs (*actions have priority over products*).
2. **Lexical prioritization:** An attitudinal concept is lexicalized only as a noun (*products have priority over actions*), or only as a verb (*actions have priority over products*).

We examine both possibilities in sections 4.1 and 4.2. Attitudinal nouns exist and are morphologically different from attitudinal verbs in about 70–80% of the sample's languages. Most of these languages exhibit a non-zero-derivation process between attitudinal nouns and verbs. A small number (i.e. 10–20% of the languages in the sample) of languages consistently lexicalizes attitudinal nouns and derives the corresponding attitudinal verbs by incorporating the attitudinal nouns in light verbs (e.g., *have a wish*). Many more languages use this strategy for small sets of nouns. French, for example, uses several attitudinal nouns, such as **peur** 'fear', **besoin** 'need', **foi** 'belief'.

Between 70% and 80% of the world's languages thus support the idea of independent ontologies of mental products/objects. The reason why a sizable portion of languages (20–30%) do not come out in support of independent ontologies might be related to the general lack of recursive structures in these languages. In lieu of a detailed account, which is beyond the scope of this paper, I wish to mention the extreme case of Pirahã.[45] According to Everett (2005, 2009), Pirahã culture constrains communication to non-abstract subjects that fall within the immediate experience of interlocutors. As a result, its grammar is regular without recursive rules of any sort. Pirahã lacks mental verbs and nouns altogether. Attitudes can only be ascribed *de re* to the speaker by means of verb suffixes. *De dicto* attitudes held by third parties cannot be expressed in this language (Everett 2009, 407).

4.1 MORPHOLOGICAL DERIVATION

Nouns are derived from verbs in about 63% of the sample's languages; verbs are derived from nouns in 7% of the languages. A process of zero-derivation with no prioritization exists in about 20% of the languages. Each case is illustrated below.

---

[44] A language does not distinguish between actions and products, when mental verbs and mental nouns have the same form (zero-derivation) or when a mental concept is lexicalized neither as verb nor as noun.

[45] Pirahã is a language of the Mura family spoken by 380 hunters and gatherers in the Amazonian rain forest of Brazil.

A. Nouns derived from verbs

In Thai, the product nominalizer **khwaam-** (see section 3.1.2.D) changes attitudinal verbs into attitudinal product nouns (Iwasaki et al. 2005, 28–29), a clear instance of attitudinal nouns derived from attitudinal verbs.

(63)

Attitudinal Verb	Attitudinal Noun
khít 'to think'	**khwaam**-khít 'a thought'
chɯa 'to believe'	**khwaam**-chɯa 'a belief'
rák 'to love'	**khwaam**-rák 'love'
rúu 'to know'	**khwaam**-rúu 'knowledge'
òtthon 'to bear'	**khwaam**-òtthon 'patience'

In the same vein, the Lavukaleve suffix **-io** is a product nominalizer (sections 3.4, 3.5) and also derives attitudinal products from attitudinal verbs (Terrill 2003, 353).

(64)

Attitudinal Verb	Attitudinal Noun
lugu- 'to think'	lugu-**io** 'a thought'
liki- 'to want'	lik-**io** 'a desire'
luluri- 'to straighten'	lulur-**io** 'a rule, a principle'
sevori- 'to bless'	sevor-**io** 'a blessing'
laurari- 'to praise'	laurar-**io** 'a praise'
vei- 'to call'	ve-**io** 'a call'

The Khmer infix **-ɑmn-** (with allomorphic changes) encodes the sense of product nominalization (see section 3.1.2.E). For attitudinal verbs, this process names different kinds of attitudinal product and objects. The nominalized attitudinal verbs can further occur as direct objects of the light verb **miən** 'exist, have'. (Huffman 1970, 316; Samnang Soeung, personal communication).

(65)

Attitudinal Verb	Attitudinal Noun	Light Verb + Attitudinal Noun
dəŋ 'to know'	d<**ɑmn**>əŋ 'information'	**miən** dɑmnəŋ 'have information'
suə 'to ask'	s<**ɑmn**>uə 'a question'	**miən** sɑmnuə 'have a question'
pɑɑŋ 'to hope'	b<**ɑmn**>ɑɑŋ 'a hope'	**miən** bɑmnɑɑŋ 'have a hope'
kɨt 'to think'	k<**umn**>ɨt 'a thought'	**miən** kumnɨt 'have a thought'
cɨə 'to believe'	c<**umn**>ɨə 'a belief'	**miən** cumnɨə 'have a belief'
cham 'to remember'	ch<**omn**>am 'a notice'	**miən** chomnam 'have a notice'
ches 'to learn'	ch<**omn**>es 'knowledge'	**miən** chomnes 'have knowledge'
chang 'to want'	ch<**omn**>ang 'desire, interest'	**miən** chomnang 'have a desire'
koeng 'to be angry'	k<**omh**>oeng 'anger'	**miən** komhoeng 'have anger'

The difference between the plain verbal construction and the light verb construction is roughly that of an unbounded (uncontrolled) versus bounded (controlled) state of affairs. The light verb construction represents a higher level of abstraction. In communication, it creates distance and encodes "negative politeness" (Brown and Levinson 1987; Grundy 2000).

		Khmer (Austro-Asiatic, Cambodia)			Samnang Soeung (p.c.)		
(66)	a.	kñom	koeng.	b.	kñom	miən	komhoeng.
		1.SG	angry		1.SG	have	anger
		'I'm angry (uncontrolled).'			'I have anger (controlled).'		

Korean manifests a hybrid picture, as half of the attitudinal terms are Chinese loanwords. Native attitudinal nouns are derived from attitudinal verbs by means of the nominalizer -(**u**)**m**. Chinese loanwords, regardless of their category membership in Chinese, are always treated as attitudinal nouns in Korean. No morphological verbal derivation exists for these loanwords. Furthermore, Korean uses a productive light verb construction with **ha** 'make' in which a verb root is nominalized by case suffixes (-**ul** or -**lo**). Chinese loanwords must occur in the light verb construction. By contrast, Korean attitudinal nouns cannot be used in this construction, only their attitudinal verb counterparts can (often by using the transitivizer -**e**).

(67)

Attitudinal Noun	Attitudinal Noun/ Verb + Light Verb	Attitudinal Verb
mit-**um** 'a belief'	*mitum(-ul) **ha** 'make a belief'	mit- 'to believe'
twulye-**um** 'a fear'	*twulyeum(-ul) **ha** 'make a fear'	
	twulyew-e **ha** (tr.) 'to frighten'	twulyep- (intr.) 'to fear'
mwuse-**um** 'a fear'	*mwuseum(-ul) **ha** 'make a fear'	
	mwusew-e **ha** (tr.) 'to frighten'	mwusep- (intr.) 'be afraid'
kippu-**m** 'gladness'	*kippum(-ul) **ha** 'make gladness'	
	kippu-e **ha** (tr.) 'make glad'	kippu- (intr.) 'glad'
swulphu-**m** 'grief'	*swulphum(-ul) **ha** 'grief'	
	swulphu-e **ha** (tr.) 'grieve'	swulphu (intr.) 'to grieve'
mal 'utterance'	mal **ha** 'make utterance'	—
wen (願) 'a wish'	wen **ha** 'make a wish'	—
sowen (所願) 'a wish'	sowen **ha** 'make a wish'	—
	sowen-ul **ha** 'make a wish'	
philyo (必要) 'a need'	philyo **ha** 'have need'	—
	philyo-lo **ha** 'be in need'	
hwaksin (確信) 'trust'	hwaksin **ha** 'put trust'	—
	hwaksin-ul **ha** 'put trust'	
hwuhway (后悔) 'a regret'	hwuhway **ha** 'show a regret'	—
hayngpok(幸福) 'happiness'	hayngpok **ha** 'make happiness'	—

B. Verbs derived from nouns

In German, product and state nominals are not nominalizations of the verb. The verb is instead derived from the product nominal in case it exists (Erben 1975, 73). The product nominal sometimes undergoes a process of apophony (umlaut) and suffixes then verb inflections like the infinitive -(**e**)**n**.[46] A table of physical verbs is presented above in (52) and of attitudinal verbs below in (69). Some exceptions exist, for example, the pair **Gedanke** 'thought'/**denken** 'to think'.

(68)

Attitudinal Noun	Attitudinal Verb	Attitudinal Noun + Light Verb
Gedanke (male) 'a thought'	denke-**n** 'to think'	Gedanke **haben** 'have a thought'
Angst (female) 'a fear'	ängst-**igen** 'to fear'	Angst **haben** 'have fear'
Furcht (female) 'a fear'	fürcht-**en** 'to fear'	Furcht **haben** 'have fear'
Lob (neuter) 'a praise'	lob-**en** 'to praise'	Lob **haben** 'have praise'
Wunsch (male) 'a wish'	wünsch-**en** 'to wish'	Wunsch **haben** 'have a wish'
Urteil (neuter) 'a judgment'	urteil-**en** 'to judge'	Urteil **machen** 'make a judgment'
Spruch (male) 'saying'	sprech-**en** 'say'	Spruch **machen** 'saying'
Fluch (male) 'a curse'	fluch-**en** 'to curse'	Fluch **haben** = 'be under a curse'
Bedarf (male) 'a need'	bedürf-**en** 'to need'	Bedarf **haben** 'have a need'
Glaube (male) 'a belief'	glaube-**n** 'believe'	Glauben **haben** 'have a belief'
Reue (female) 'repentance'	(be)reue-**n** 'to repent'	Reue **haben** 'have repentance'
Trauer (female) 'grief'	trauer-**n** 'grieve'	(Trauer **empfinden** 'feel grief')
Aussage (female) 'utterance'	aussage-**n** 'to utter'	Aussage **machen** 'make an utterance'
Liebe (female) 'love'	liebe-**n** 'to love'	Liebe **haben** 'have love'

The attitudinal nouns can occur with the light verb **haben** 'have' or, marginally, **machen** 'make'. Attitudinal verb constructions and light verb constructions

[46] In Warlpiri, illustrated above in (15), a small set of product nominals are homophonous to bound verb roots. Since these nouns are limited in number, it is appropriate to view them as lexicalizations of the verb roots and thus as derivations from verbs. In German, the relative productivity of the process and the existence of apophony in many cases supports the hypothesis that we are faced here with a case of verbalization and not with lexicalization as in Warlpiri.

are used with similar frequency. In a few cases, the attitudinal verb construction is slightly dispreferred.

(69) a. Er ängstigt sich.
3.SG fear.3.S REFL
'He is afraid (slightly dispreferred).'

b. Er hat Angst.
3.SG have.3.S fear
'He is afraid (slightly preferred).'

C. Zero-derivation

A number of languages use the same form for attitudinal nouns and verbs, sometimes in parallel with a light verb construction. English exhibits a range of attitudinal verbs/nouns such as *hope, wish, fear, need, believe.*

Chinese employs a variety of strategies, with zero-derivation being the predominant strategy. The light verb construction with **yǒu** 'have' is available for attitudinal terms that can be involved as nouns.

(70)

Attitudinal Noun	Light Verb + Attitudinal Noun	Attitudinal Verb
xī wàng 'wish' (n.)	**yǒu** xī wàng 'have a wish'	xī wàng 'to wish'
pàn wàng 'hope' (n.)	**yǒu** pàn wàng 'have a hope'	pàn wàng 'to hope'
xū yào 'need'	**yǒu** xū yào 'have a need'	xū yào 'to need'
hài pà 'fear' (n.)	**yǒu** hài pà 'have fear'	hài pà 'to fear'
gǎn jué 'feeling' (n.)	**yǒu** gǎn jué 'have a feeling'	gǎn jué 'to feel'
jiàn yì 'suggestion' (n.)	**yǒu** jiàn yì 'have a suggestion'	jiàn yì 'to suggest'
yù wàng 'desire' (n.)	**yǒu** yù wàng 'have a desire'	—
mèng xiǎng 'dream' (n.)	**yǒu** mèng xiǎng 'have a dream'	—
—	—	xìn 'believe'
—	—	shēng qì 'angry'
—	—	gāo xìng 'happy'
xiǎng **fǎ** 'thought'	**yǒu** xiǎng **fǎ** 'have a thought'	xiǎng 'to think'
shūo **fǎ** 'saying; explanation'	**yǒu** shūo **fǎ** 'have an explanation'	shūo 'to say'

4.2 ONLY ATTITUDINAL NOUNS OR ONLY ATTITUDINAL VERBS ARE LEXICALIZED

For individual attitudes, languages may lack the corresponding attitudinal noun or verb. We say that a language gives priority to the existing strategy. A few languages show consistent lack of a nominal or verbal strategy.

In Hindi, no primitive verb is available for the following attitudes, but attitudinal verbs can be derived from attitudinal nouns by means of the light verb **kərna** 'make' (Kachru 2006, 217).

(71)	Attitudinal Noun	Attitudinal Noun + Light Verb
	dava 'a wish'	dava **kərna** 'to wish'
	prəʃn 'a question'	prəʃn **kərna** 'to question'
	irada 'an intention'	irada **kərna** 'to intend'
	vicar 'a thought'	vicar **kərna** 'to think'
	aʃa 'a hope'	aʃa **kərna** 'to hope'
	ʃək 'a doubt'	ʃək **kərna** 'to doubt'
	viʃvas 'confidence'	viʃvas **kərna** 'to trust'
	təy 'decision'	təy **kərna** 'decision'
	svīkar 'acceptation'	svīkar **kərna** 'to accept'
	malūm 'discovery'	malūm **kərna** 'to discover'

In Tukang Besi,[47] certain attitudes are only encoded as nouns, others only as verbs, and still others as nouns and verbs.

(72)	Attitudinal Noun Only	Attitudinal Nouns/Verbs	Attitudinal Verbs Only
	gau 'desire'	hada 'desire (n.); want (v.)'	ned'u 'not want'
	hempo 'wish'	molinga 'oblivion (n.); forget (v.)'	ma'eka 'fear'
			dahani 'believe'
			namisi 'feel, think'
			roda 'remember'
			jandi 'promise'
			putusu 'decide'

Each of these categories is illustrated below. An attitudinal noun together with its complement can make up an independent clause in Tukang Besi, a construction not available in English. Attitudinal nouns are, thus, not incorporated in a light verb in Tukang Besi.

Tukang Besi (Malayo-Polynesian, Indonesia) Donohue (1999, 389–408)

(73) a. te **hempo**-no te wila-a.
ART wish-3PL.POSS ART go-NML
Nominal complement

'They want to go' (*lit.* 'Their wish of the act of going').

[47] Tukang Besi is an Austronesian language spoken in Indonesia.

b. te **gau**-su ku-wil(a) i Matanouwe ilange.
ART desire-1SG.POSS 1SG-go ART place name tomorrow
[Verbal complement]
'I want to go to Matanouwe tomorrow' (*lit.* 'My desire to go to Matanouwe tomorrow').

(74) a. te **molinga**-su balu te gara i waru.
ART oblivion-1SG.POSS buy ART salt ART shop
[Verbal complement]
'I forgot to get salt from the store' (*lit.* 'My oblivion of getting salt from the store').

b. ku-**molinga**-'e na- helo-'a u ndawu-ndawu.
1.SG-forget-3.O NOM cook-NML GEN special soup
[Nominal complement]
'I forgot to cook the ndawu-ndawu.'

(75) ku-**ma'eka** Kua mondo-mo no-wila ga.
1SG-fear COMP already-PF 3SG-go ILLOC
[Verbal complement]
'I'm afraid that she's already gone.'

In the next section, we elaborate on a hypothesis of Harves and Kayne (2012), according to which the verb *need* is a surface realization of the light verb construction *have a need.*

4.3 HAVE AND NEED

Harves and Kayne (2012), in a study on *need* and *have*, suggested that nouns denoting mental products or speech products have primitive status, and that verbs denoting mental acts and speech acts are formally derived from these nouns. They illustrated this idea for the mental noun *need* which Moltmann (this volume) calls *modal product.* They proposed an implicational universal on the existence of the transitive verbs *need* and *have.*

(76) All languages with a transitive verb corresponding to *need* also have a transitive verb corresponding to *have.*

According to the authors, languages that lack a transitive verb corresponding to *have* are B-languages, languages in which the possessor is encoded as the subject of an intransitive verb *be* and the possessee as NP marked by oblique case. The authors justify the universal (76) by using a sample of 55 languages that distribute over the four logical types as follows (Harves and Kayne 2012, 126).

(77)

	Have-languages	*Be*-languages
Languages with *need*	Czech, Slovak, Polish, Slovenian, Croatian, Serbian (dialects), Belorussian, English, German, Yiddish, Luxemburgish, Dutch, Swedish, Norwegian, Icelandic, Spanish, Catalan, Basque, Paraguayan Guaraní, Purépecha (Tarascan), Mapudungun	—
Languages without *need*	Bulgarian, Serbian (standard), Lithuanian, French, Italian, Bellinzonese, Portuguese, Romanian, Farsi, Armenian, Albanian, Latin, Ancient Greek	Russian, Latvian, Sakha, Bhojpuri, Bengali, Hindi, Marathi, Irish, Welsh, Scots Gaelic, Georgian, Hungarian, Turkish, Korean, Peruvian Quechua (Cuzco, Cajamarca, Huallaga), Bolivian Quechua, Yucatec Maya, Tamil, Mohawk, Amharic

Harves and Kayne depend on the presence of *have* in order to model *need* as a surface incorporation into a covert verb HAVE whereby *need* is raised and incorporated into HAVE, and whereby it further acquires the accusative-case-licensing properties of HAVE. Kayne (p.c. via Moltmann) even supports the generalization that all attitudinal verbs (e.g., *think, claim, advise*) are derived from incorporated attitudinal nouns (e.g., *have a thought, make a claim, give an advice*).

In a response, Antonov and Jacques (2014) point out problems with the empirical basis of Harves and Kayne's paper. They mention Estonian,[48] Moroccan Arabic,[49] several Bantu languages (e.g., Suaheli),[50] Ayacucho Quechua[51] and Ewe[52] as counterexamples to the universal (76). These languages are *be*-languages with a transitive verb *need*. Antonov and Jacques (2014, 156) further find the universal (76) in contradiction with Tsunoda's (1985) verb hierarchy, itself based on a sizable sample of languages.

[48] Estonian is a Finno-Ugrian (Uralic) language spoken by 1.3 million people in Estonia.

[49] Moroccan Arabic is a Semitic (Afro-Asiatic) language spoken by 30 million people in Morocco.

[50] Swahili is a Bantu (Niger-Congo) language spoken by 15 million people in several sub-Saharan countries.

[51] Ayacucho Quechua is a Quechuan language spoken by 900,000 speakers in Peru.

[52] Ewe is a Gbe (Niger-Congo) language spoken by 3.6 million people in Ghana and Togo.

(78)

1	2	3	4	5	6	7
Action	Perception	Pursuit	Knowledge	Feeling	Relation	Ability
hit, kill, break	see, hear, smell	search, wait	know, forget	want, fear, **need**	**have**, lack	capable

Tsunoda predicted that if a verb of a certain rank is transitive and licenses the nominative and accusative cases, then any verb ranking lower tends to be of the same type. For the verbs *have* and *need*, the universal (76) states the contrary of Tsunoda's prediction.

I would like to point out two other problems. First, certain languages are in large supply of possessive and existential verbs, blurring the conceptual boundaries between possessive and existential verbs. Tibeto-Burman languages exhibit up to 15 different possessive/existential verbs. Examples are taken from Nuosu (Gerner 2013, 455).[53]

(79)

Verb	Description
jjo 'have'	location, existence, possession for animate, inanimate
jjip 'located'	existence for landmarks in landscape
ndit 'attached'	possession of (certain) body parts
qo 'contain'	animate, inanimate entities included in larger groups
rryp 'stick to'	possession of (certain) inanimate entities and body parts
it 'lie'	posture/existence for animate and some inanimate entities
nyi 'sit'	posture/existence for animate and some inanimate entities
hxit 'stand'	posture/existence only for animate entities
zzur 'stick up'	existence for a few mainly inanimate entities
ke 'nest'	existence for nests of birds and bees

The following examples illustrate two of these ambitransitive verbs, which represent the only way to express the meaning of the English translations.

(80) a. cyp lot go bbu shy ji **rryp.**
3.SG.POSS hand LOC snake CL stick to
'There is a snake stuck to his hand.' (Intransitive existential verb)

[53] Nuosu is a Tibeto-Burman language spoken by more than 2 million people in Sichuan province (southwestern China).

b. le o ho nyip pot **rryp.**
ox horn NUM.2 CL stick to
'The ox has two horns.' (Transitive possessive verb)

(81) a. gop po go sy **nyi.**
body LOC blood sit
'There is life in the body.' (Intransitive existential verb)

b. bbu shy ddut **nyi.**
snake poison sit
'The snake has poison.' (Transitive possessive verb)

A second problem is the emphasis on the verb *have*, which invites empirical counterexamples from typologists in spite of the fact that the deeper intuition expressed in Harves and Kayne's paper might be on the right track. A certain number of languages do not use verbs corresponding to *have* for incorporating attitudes but employ other light verbs such as *do, make*, etc.

Korean, for example, involves obligatorily the light verb **ha** 'do' with attitudinal nouns that were borrowed from Chinese a long time ago; see (67) above. In the same vein, Hindi employs the light verb **kərna** 'make' to incorporate attitudinal nouns in Hindi (Kachru 2006, 217); see (71) above.

4.4 COMPLEMENT-TAKING ATTITUDINAL NOUNS

In this section, I evaluate factors that influence the widespread use of complement-taking attitudinal nouns.

Attitudinal nouns appear to frequently take complement clauses only if the language in question exhibits a process of complementation that differs morpho-syntactically from the process of relativization. In German and English, for example, the process of complementation is distinct from the process of relativization, and complement-taking attitudinal nouns are widespread.

(82) a. Die Behauptung, **die** du machtest Ø
b. The claim **which** you made Ø

Coordinate relative clause

(83) a. Die Behauptung, **daß** (/*die) du einen Fehler machtest
b. The claim **that** (/*which) you made a mistake

Subordinate complement clause

On the other hand, Chinese attitudinal nouns, in spite of their abundant supply, do not often involve complement clauses, which are perceived as clumsy. The reason seems to be that relative clauses and complement clauses are both encoded by the same nominalizer *de-*.

(84) a. Women anzhao [ni gei Ø]-**de** jianyi qu zuo
b. We will do according to the advice [**which** you gave Ø].

Coordinate relative clause

(85) a. [hui jia qu]-**de** jianyi shi dui-de.
b. The advice [to return home] was right.

Subordinate complement clause

The existence of two independent constructions for relative clauses and complement clauses thus influences the availability of complement-taking nouns. As complement-taking nouns denote mental products rather than mental actions, we might view the possibility of taking complements as an additional characteristic that distinguishes mental products from mental actions.

Conclusion

Twardowski's distinction between action and product nominalization can be validated in the sample of 100 languages considered in this study. Action and product nominalization cluster around two different feature bundles. Action nominalization tends to involve specialized and productive encoding, and, where applicable, it tends to correlate with unbounded nominal aspect and future nominal tense. Product nominalization tends to use unspecialized and unproductive encoding, and it tends to correlate with bounded nominal aspect and past nominal tense.

In particular, the distinction between nouns for mental or speech actions and nouns for mental or speech products has universal importance. More than 70% of the world's languages use a range of techniques to systematically distinguish between these two kinds of nouns.

List of Abbreviations

~	Reduplication
-	Morpheme boundary
=	Clitic boundary
1	First person
1.PL	First-person plural
1.S	First-person subject
1.SG	First-person singular
2.SG	Second-person singular
3	Third person
3.O	Third-person object
3.PL	Third-person plural
3.SG	Third-person singular
A	Agent
ACL	Auto-classifier
ADMON	Admonitive complementizer suffix
AFF	Affirmative
AN	Action nominalization
ANT	Anterior
ART	Article
AUG	Augmentative
CAUS	Causative
CAUSE	Thematic role of cause
CF	Constant feature
CL	Classifier
CMP	Completive
CN	Connective
COMP	Complementizer
COP	Copular
CORE	Core case
CTY	Certainty
DECL	Declarative
DES	Desirative
DEM	Demonstrative
DEM.PROX	Proximal demonstrative
DIM	Diminutive
DPAST	Distant Past
DR	Bivalent direct
EQU	Equative clauses
ERG	Ergative
F	Feminine
FNS	Final nominal suffix
GEN	Genitive
GER	Gerund
GOAL	Thematic role of goal
GNR	Generic
INANIM	Inanimate
IND	Indicative
INDIC	Indicative
INF	Inferential
INFIN	Infinitive
INSTR	Instrument
INTENS	Intensification
INTER	Interrogative
INTR	Intransitive
INV	Bivalent inverse
IPD	Impeditive
IRR	Irrealis mood
ITER	Iterative
LOC	Locative
M	Masculine
MAN	Manner
NCL	Noun classifier
NE	Neuter
NEG	Negation
NML	Nominalization
NOM	Nominaltive
NUM.2	Numeral 'two'
NFUT	Non-future
NPAST	Non-past
NVIS	Non-visual evidential
O	Object
OBJ	Objective
OBL	Oblique case
OBS	Observed
OCOMP	Object complementizer suffix
PART	Particle
PASS	Passive voice
PAST	Past
PFV	Perfective
PL	Plural
PN	Product nominalization
POSS	Possessive
PRC	Process verbalization
PRES	Present
PROG	Progressive
PROP	Proprietive nominal suffix
PURP	Purpose
PV	Passive voice
RE	Restorative/iterative
REAS	Reason
REFL	Reflexive
RPAST	Recent past
SG	Singular
ST	Stative

References

Antonov, A., and G. Jacques. 2014. "Transitive NEED Does Not Imply Transitive HAVE: Response to Harves and Kayne 2012." *Linguistic Inquiry* 45: 147–58.

Brown, P., and S. Levinson. 1987. *Politeness: Some Universals in Language Use*. Cambridge: Cambridge University Press.

Bybee, J., R. Perkins, and W. Pagliuca. 1994. *The Evolution of Grammar: Tense, Aspect, and Modality in the Languages of the World*. Chicago: University of Chicago Press.

Erben, J. 1975. *Einführung in die deutsche Wortbildungslehre*. Berlin: Erich Schmidt Verlag.

Everett, D. 2005. "Cultural Constraints on Grammar and Cognition in Pirahã: Another Look at the Design Features of Human Language. "*Current Anthropology* 46: 621–46.

———. 2009. "Pirahã Culture and Grammar: A Response to Some Criticisms." *Language* 85: 405–42.

Foley, W. A. 1998. *Symmetrical Voice Systems and Precategoriality*. Draft Paper. University of Sydney.

Gerner, M. 2012. "The Typology of Mominalization." *Language and Linguistics* 13 (4): 803–44.

———. 2013. *Grammar of Nuosu*. Berlin: Mouton.

———. 2014. "Verb Classifiers in East Asia." *Functions of Language* 21 (3): 267–96.

Grundy, P. 2000. *Doing Pragmatics*. London: Arnold.

Harves, S., and R. Kayne (2012). "Having *Need* and Needing *Have*." *Linguistic Inquiry* 43: 120–32.

Haspelmath, M. 1995. The Converb as a Cross-Linguistically Valid Category. In *Converbs in Cross-Linguistic Perspective*, edited by M. Haspelmath and E. König, 1–55. Berlin and New York: Mouton de Gruyter.

Lewis, D. K. 1973 (2001). *Counterfactuals*. Cambridge, MA: Harvard University Press.

Moltmann, F. 2003. "Propositional Attitudes without Propositions." *Synthese* 135: 70–118.

———. 2004. "Nonreferential Complements, Derived Objects, and Nominalizations." *Journal of Semantics* 13: 1–43.

———. 2007. "Events, Tropes, and Truthmaking." *Philosophical Studies* 134: 363–403.

———. 2013. "Propositions, Attitudinal Objects, and the Distinction between Actions and Products." In "Essays on the Nature of Propositions," edited by G. Rattan and D. Hunter. Special issue, *Canadian Journal of Philosophy* 5–6: 679–701.

Nordlinger, R., and L. Sadler. 2004. "Nominal Tense in Crosslinguistic Perspective." *Language* 80: 776–806.

———. 2010. *What is Meaning?* Princeton, NJ: Princeton University Press.

Sung, L.-M. 2011." Clausal Nominalization in Budai Rukai." In *Nominalization in Asian Languages: Diachronic and Typological Perspectives*, edited by F. H. Yap, K. Grunow-Hårsta, and J. Wrona, 523–59. Amsterdam and Philadelphia: Benjamins.

Tsunoda, T. 1985. "Remarks on Transitivity." *Journal of Linguistics* 21: 385–96.

Twardowski, K. 1911. "Actions and Products: Some Remarks on the Borderline of Psychology, Grammar, and Logic." Reprinted in *On Actions, Products, and Other Topics in the Philosophy*, edited by J. Brandl and J. Wolenski (Amsterdam and Atlanta: Rodopi, 1999), 103–32.

Whaley, L. J. 1997. *Introduction to Typology: The Unity and Diversity of Language*. Thousand Oaks, CA: SAGE.

Sample of 100 Languages

Language	Family
Tamashek	Afro-Asiatic
Arabic	Afro-Asiatic
Hausa	Afro-Asiatic
Somali	Afro-Asiatic
Hdi	Afro-Asiatic
Blackfoot	Algic
Wiyot	Algic
Udihe	Altaic
Mangghuer	Altaic
Turkish	Altaic
Turkmen	Altaic
Mongolian	Altaic
Paumarí	Arauan
Mapuche	Araucanian
Tariana	Arawakan
Nunggubuyu	Australian
Nunggubuyu	Australian
Maung	Australian
Gooniyandi	Australian
Kayardild	Australian
Wambaya	Australian
Wardaman	Australian
Khmer	Austro-Asiatic
Semelai	Austro-Asiatic
Vietnamese	Austro-Asiatic
Khasi	Austro-Asiatic
Jahai	Austro-Asiatic
Tukang Besi	Austronesian
Tinrin	Austronesian
Fijian	Austronesian
Gayo	Austronesian
Tagalog	Austronesian
Atayal	Austronesian
Ponapean	Austronesian
Basque	Basque
Imonda	Border
Tiriyó	Carib
Lavukaleve	Central Solomons
Ika	Chibchan
Itelmen	Chukotko-Kamchatkan
Berbice Dutch Creole	Creole
Kannada	Dravidian
Malayalam	Dravidian
Brahui	Dravidian
Yup'ik Eskimo	Eskimo-Aleut
Qanao	Hmong-Mien
Munro	Hokan
Spanish	Indo-European
Dutch	Indo-European
English	Indo-European
German	Indo-European
Breton	Indo-European
Swedish	Indo-European
Hindi	Indo-European
Rumanian	Indo-European
Albanian	Indo-European
Aguaruna	Jivaroan
Georgian	Kartvelian
Nama Hottentot	Khoisan
Movima	Isolate
Korean	Isolate
Hup	Maku
Weenhayek	Mataco-Guaicuru
Mam	Mayan
Pirahã	Mura
Mamaindê	Nambiquaran
Swahili	Niger-Congo
Eton	Niger-Congo
Babungo	Niger-Congo
Fongbe	Niger-Congo
Ma'di	Nilo-Saharan
Songhay	Nilo-Saharan
Lezgian	North Caucasian
Sochiapan Chinatec	Oto-Manguean
Matsés	Panoan
Huallaga Quechua	Quechuan
Yimas	Ramu-Lower Sepik
Shuswap	Salishan
Awtuw	Sepik
Mandarin Chinese	Sino-Tibetan
Nuosu	Sino-Tibetan
Qiang	Sino-Tibetan
Limbu	Sino-Tibetan
Hani	Sino-Tibetan
Zaiwa	Sino-Tibetan
Crow	Siouan
Cavineña	Tacanan
Dong	Tai-Kadai
Thai	Tai-Kadai
Misantla Totonac	Totonacan
Tauya	Trans-New Guinea
Hua	Trans-New Guinea
Hungarian	Uralic
Finnish	Uralic
Pipil	Uto-Aztecan
Abun	West Papuan
Ket	Yeniseian
Kolyma Yukaghir	Yukaghir

Quoted Grammars

Aikhenvald, A. 2003. *A Grammar of Tariana, from Northwest Amazonia*. Cambridge: Cambridge University Press.

Asher, R. E., and T. C. Kumari. 1997. *Malayalam*. London: Routledge.

Dixon, R. M. W. 1988. *A Grammar of Boumaa Fijian*. Chicago: University of Chicago Press.

Donohue, M. 1999. *A Grammar of Tukang Besi*. Berlin: Mouton de Gruyter.

Eades, D. 2005. *A Grammar of Gayo: A Language of Aceh, Sumatra*. Canberra: Pacific Linguistics.

Eberhard, D. M. 2009. "Mamaindê Grammar." PhD diss., Vrije Universiteit.

Fleck, D. W. 2003. *A Grammar of Matsés*. PhD Diss., Rice University.

Frantz, D. 1991. *Blackfoot Grammar*. Toronto: Toronto University Press.

Gerner, M. 2013. *Grammar of Nuosu*. Berlin: Mouton de Gruyter.

Hagman, R. S. 1973. "Nama Hottentot Grammar." PhD diss., Colombia University.

Haspelmath, M. 1993. *A Grammar of Lezgian*. Berlin: Mouton de Gruyter.

Haude, K. 2006. "A Grammar of Movima." PhD diss., University of Nijmegen.

Heath, J. 2005. *A Grammar of Tamashek (Tuareg of Mali)*. Berlin: Mouton de Gruyter.

Hualde, J., and J. Ortiz de Urbina. 2003. *A Grammar of Basque*. Berlin: Mouton de Gruyter.

Hubbard, P., L. Newmark., and P. Prifti. 1982. *Standard Albanian: A Reference Grammar for Students*. Stanford, CA: Stanford University Press.

Huffman, F. E. 1970. *Modern Spoken Cambodian*. New Haven, CT: Yale University Press.

Hunt, R. J. 1940. *Mataco Grammar*. Tucuman, Argentina: Institute of Anthropolgy.

Iwasaki, S., and P. Ingkaphirom. 2005. *A Reference Grammar of Thai*. Cambridge: Cambridge University Press.

Kachru, Y. 2006. *Hindi*. Amsterdam: Benjamins.

Kouwenberg, S. 1994. *A Grammar of Berbice Dutch Creole*. Berlin: Mouton de Gruyter.

Lefebvre, C., and A.-M. Brousseau. 2002. *A Grammar of Fongbe*. Berlin: Mouton de Gruyter.

Lewis, G. L. 1967. *Turkish Grammar*. Oxford: Oxford University Press.

MacKay, C. J. 1999. *A Grammar of Misantla Totanac*. Studies in Indigenous Languages of the Americas. Salt Lake City: University of Utah Press.

Meira, S. 1999. "A Grammar of Tiriyó." PhD diss., Rice University.

Newman, P. 2000. *The Hausa Language: An Encyclopedic Reference Grammar*. New Haven, CT: Yale University Press.

Press, I. 1986. *A Grammar of Modern Breton*. Berlin. Mouton de Gruyter.

Rau, D.-H. 1992. "A Grammar of Atayal." PhD diss., Cornell University.

Ryding, K. 2005. *A Reference Grammar of Modern Standard Arabic*. Cambridge: Cambridge University Press.

Saeed, J. 1993. *Somali Reference Grammar*. 2nd rev. ed. Kensington, MD: Dunwoody Press.

Schaub, W. 1985. *Babungo*. Croom Helm Descriptive Grammars. Beckenham, UK: Croom Helm.

Seiler, W. 1985. *Imonda: A Papuan language*. Canberra: Pacific Linguistics.

Simpson, J. H. 1983. *Aspects of Warlpiri Morphology and Syntax*. 2 vols. PhD diss., Massachusetts Institute of Technology.

Smeets, I. 2008. *A Grammar of Mapuche*. Berlin: Mouton de Gruyter.

Terrill, A. 2003. *A Grammar of Lavukaleve*. Berlin: Mouton de Gruyter.