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**Extending the Verb Classifier Hypothesis:
Aspectual Prefixes as Sortal Classifiers in Slavic
and Procedural Prefixes as Mensural Classifiers in
East Slavic and Bulgarian**

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Overview

BACKGROUND

- Review Verb Classifier Hypothesis for Russian Natural Perfectives
  - Sortal Classifiers and Verb Classifiers

PART ONE

- Extension of Hypothesis to All Slavic Natural Perfectives and Specialized Perfectives as Sortal Classifiers

PART TWO

- Extension of Hypothesis to Procedural Perfectives as Mensural Classifiers

PART THREE

- Foregrounding and Definiteness Effects of Classifiers and Slavic Prefixes

BACKGROUND
Verb Classifier Hypothesis Version 1.0
(Janda 2012 & Janda et al. 2013)

- Limited to Natural Perfectives in Russian
- Main Idea:
  - so-called "empty" prefixes in Russian, e.g., **на**писать, **с**варить are sortal classifiers on a par with sortal numeral classifiers in languages like Yucatec Maya
  - prefixes are not "empty"; they overlap in meaning with verbs and sort verbs into semantic groups
- Follows criteria for verb classifier systems established by McGregor 2002 and suggestions by Majsak 2005 and Plungjan 2011
- Based on comprehensive data from Exploring Emptiness database, http://emptyprefixes.uit.no/; results available at http://emptyprefixes.uit.no/methodology_eng.htm

Numeral Classifier Systems Worldwide
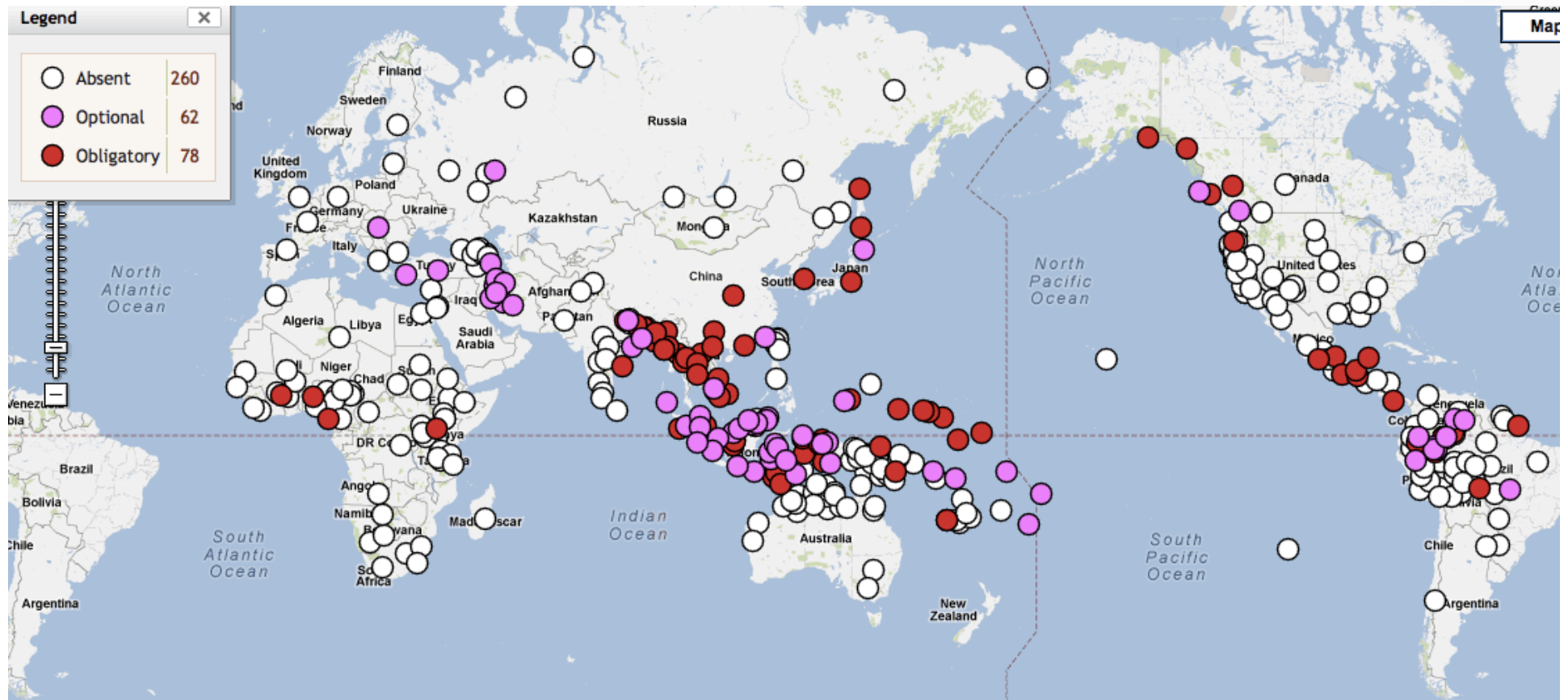
Source: The World Atlas of Language Structures Online, wals.info

Verb Classifier Systems

- Linguists have only recently begun to describe verb classifier systems

- Verb classifiers have been identified in Chinese and in several Australian languages (McGregor 2002, Gerner 2009)

- McGregor (2002) on verb classification: "[d]oubtless it is not confined to the relatively few languages in which it has been hitherto described, though the extent of its distribution across the world's languages remains to be charted."

The function of sortal numeral classifiers

- Despite the name, numeral classifiers are actually a type of **noun classifiers**
- Numeral classifiers are "unitizers" that construe the referents of mass nouns as countable units, i.e., count nouns.
- **Sortal** numeral classifiers "sort" the nouns of the language into groups according to the units that the substances typically form, usually according to their shape, e.g.,
  - long objects
  - flat objects
  - etc.

Yucatec Maya examples of sortal numeral classifiers (Lucy 2000: 329)

*'un-**tz'íit** kib'*	[one **long-thin** wax]	'one candle'
*'un-**tz'íit** che'*	[one **long-thin** wood]	'one stick'
*'un-**tz'íit** nal*	[one **long-thin** corn]	'one ear of corn'
*'un-**tz'íit** há'as*	[one **long-thin** banana]	'one fruit of the banana'
*'un-**wáal** há'as*	[one **flat** banana]	'one banana leaf'
*'un-**kúul** há'as*	[one **planted** banana]	'one banana tree'

Numeral classifiers are obligatory in contexts where discrete units are referred to, as in constructions with numerals

Why Prefixes in Russian Natural Perfectives are Sortal Verb Classifiers

- **Russian prefixes** are "unitizers" that designate discrete events
- **Russian prefixes** are associated with quantification by perfective aspect
- **Russian prefixes** "sort" the verbs of the language according to the parameters of actions; **classification by outcome**:
  - EXPANDING with *раз-* as in *пухнуть > распухнуть*
  - MOVEMENT AWAY with *у-* as in *красть > украсть*
  - ATTACHMENT with *при-* as in *липнуть > прилипнуть*, etc.
- **Russian prefixes** fulfill all distributional criteria for classifiers
  - overlapping groups are characteristic of classifier systems
  - the classifiers also "show different behaviours" (McGregor 2002: 17)

How prefixes sort verbs in Russian:
- 1429 simplex verbs
- form 1981 Natural Perfectives
- using 16 prefixes

Distribution of prefixes in Russian Natural Perfectives

Evidence of "different behaviours" for Russian prefixes in Natural Perfectives (Janda et al. 2013)

- Each prefix is associated with a specific semantic group of verbs
  - **radial category profiling**
- Each prefix has a specific semantic profile
  - **semantic profiling**
- Prefixes behave differently with respect to the grammatical profiles they appear in
  - **constructional profiling**
- Prefixes can contrast even when they are associated with the same verbs
  - **prefix variation**
- Some prefixes are more likely to motivate the formation of secondary imperfectives than others
  - **aspectual triplets**

All data and analyses are available at: http://emptyprefixes.uit.no/book.htm

Comparison of Numeral Classifiers with Aspectual Prefixes

	Nouns	Verbs
Unitizer Type:	Numeral Classifier	Aspectual Prefix
Spatial Profile:	Bounded/shaped region in space	Trajector-Landmark relation
Etymological Source:	Stem from nouns	Stem from prepositions/ particles

Preview of Extension of Verb Classifier Hypothesis

Stephen Dickey: "That idea has legs!"

Verb Classifier Hypothesis is also relevant for:
- Specialized Perfectives in Russian
  - *переписать, списать, записать, вписать*...
- Natural Perfectives and Specialized Perfectives in other Slavic languages
  - Czech, Polish, BCS, Bulgarian, etc.

- Procedural Perfectives (most prominent in East Slavic and Bulgarian)
  - *зачихать, почихать, чихнуть*

Parallel to **sortal** numeral classifiers

Parallel to **mensural** numeral classifiers

PART ONE
Extension to All Slavic Natural and Specialized Perfectives

Further Comparison of Numeral Classifiers
 with Slavic Verbal Prefixes

1. Overlap Principle

2. Classifier Variation and Prefix Variation

3. General Classifiers and General Prefixes

4. Polysemy and Radial Category Structure for Classifiers and Prefixes

All Slavic Languages have both Natural and Specialized Perfectives
Difference between Natural and Specialized Perfectives
is a matter of degree

1. Overlap Principle:
A given classifier can have different functions with different nouns

- If **HIGH** semantic overlap between classifier and noun => default classifier
- If **LOW** semantic overlap between classifier and noun => other classifier

Mandarin Chinese classifier *pian* expresses flatness (Zha... ...

a. *san*   *pian*   *shuye*   (individual/sortal cla...

    three   CL:slice   leaf

    'three leaves'

> Parallel: prefixes in **Natural Perfectives**

b. *yi pian*   *qiche*   (collective/mensural classifier)

    one CL:slice   car

    'one group of cars'

> Parallel: prefixes in **Other Perfectives**

c. *san*   *pian*   *mutou*   (individuating/mens...

    three   CL:slice   wood

    'three pieces of wood'

d. *she pian*   *luobo*   (partitive/mensural classifier)

    ten CL:slice   carrot

    'ten slices of carrot'

A given prefix can have different functions with different verbs:
Natural Perfectives and Specialized Perfectives

Natural Perfectives	**Specialized Perfectives**
пухнуть 'swell' > **рас**пухнуть 'swell'	дуть 'blow' >> **раз**дуть 'inflate'
красть 'steal' > **у**красть 'steal'	бежать 'run' >> **у**бежать 'run away'
липнуть 'stick' > **при**липнуть 'stick'	вязать 'tie' >> **при**вязать 'tie onto'
ночевать 'spend the night' > **пер**еночевать 'spend the night'	ждать 'wait' >> **пере**ждать 'wait through something'

HIGH DEGREE OF OVERLAP:
Natural Perfectives only change the aspect

LOW DEGREE OF OVERLAP:
Specialized Perfectives change the aspect and the meaning

Natural Perfectives ... Specialized Perfectives as a Continuum

- There is no crisp division between Natural Perfectives and Specialized Perfectives

- Natural Perfectives are the perfectives for which the meaning of the base verb and the meaning of the prefix overlap most -- the combinations that are the "best match"

- Natural Perfectives are also the most frequent -- on average 10x more frequent than Specialized Perfectives

Natural Perfectives

разгрызть 'gnaw'
разбить 'break'
разрезать 'slice'
рассечь 'cut'
распилить 'saw'
раскусить 'bite'
растолкать 'push'
разметать 'sweep'

Dictionaries tend to draw the line here

Specialized Perfectives
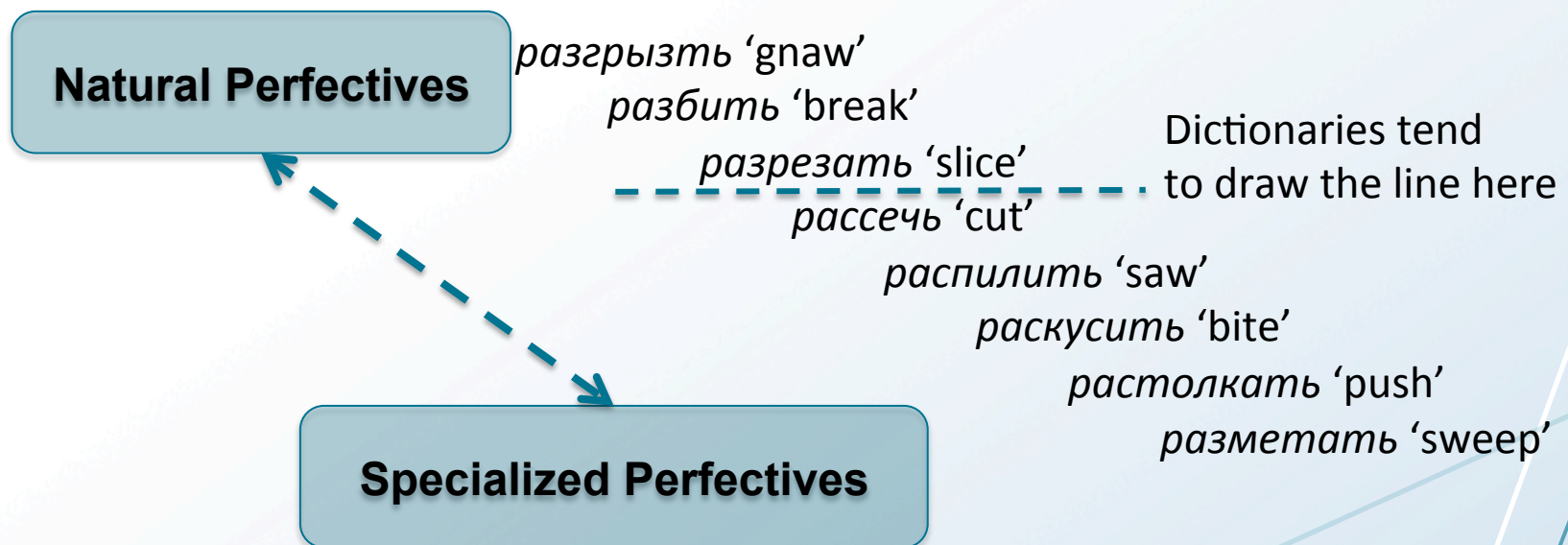
Natural Perfectives and Specialized Perfectives in Other Slavic Languages

Late Common Slavic:

рьsati 'write'

>	*na-рьsati* 'write'	**Natural** Perfective
>>	*vъ-рьsati* 'write in, insert'	**Specialized** Perfective
>>	*za-рьsati* 'record, register'	**Specialized** Perfective

Czech:

psát

> *napsat*
>> *vepsat*
>> *zapsat*

Polish:

pisać

> *napisać*
>> *wpisać*
>> *zapisać*

BCS:

pisati

> *napisati*
>> *upisati*
>> *zapisati*

Bulgarian:

пиша

> *напиша*
>> *впиша*
>> *запиша*

2. Classifier Variation and Prefix Variation
First: Classifier Variation

Some nouns can have several different classifiers

Burmese *myiʔ* 'river' (Goral 1978: 32):

a. *myiʔtə   myiʔ*
   river one CL:river
   'a river [default case]'

b. *myiʔtə   yaʔ*
   river one CL:place
   'a river as site [for a picnic, etc.]'

c. *myiʔtə   tan*
   river one CL:line
   'a river [on a map]'

d. *myiʔtə   hmwa*
   river one CL:section
   'a river section [for fishing, etc.]'

e. *myiʔtə   'sin*
   river one CL:distant arc
   'a river as path to the sea'

f. *myiʔtə   ϑwe*
   river one CL:connection
   'a river as a connection
   [linking two villages, etc.]'

Compare: Prefix Variation
Example: *грузить*

Some base verbs can have several aspectual prefixes

Russian *грузить* 'load' has three different Natural Perfectives (Sokolova, Lyashevskaya and Janda 2012):

a.   ***нагрузить*** 'on-load' focuses on accumulation of loaded objects, e.g., *нагрузить сумку арбатским породистым товаром* 'load a bag with fine goods from the Arbat'

b.   ***погрузить*** 'PO-load' most neutral, can also be used for things that don't ordinarily get loaded, e.g., *погрузить раненых в фургон* 'load the wounded into a van'.

c.   ***загрузить*** 'behind-load' focuses on states resulting from loading, e.g. *загрузить пароход провизией* 'load a steamship with provisions'; default in professional contexts.

3. General Classifiers and General Prefixes First: General Classifiers

- There are usually some very general classifiers that can be applied in place of other classifiers in a numeral classifier system (Greenberg 1972, Lucy 1992, Gao & Malt 2009)
- Some examples of general classifiers:
  - **Yucatec Maya *-p'éel*** [3-dimensional] and ***-túul*** [animate]
  - **Mandarin Chinese *ge*** "used for any noun that does not fall into a more specialized category and can substitute for the more specialized classifiers ... and often does so in casual conversation"
  - **Persian *ta*** used as general classifier for both sortals and mensurals

Compare: Generalized "Purely Perfectivizing" Prefixes in Slavic Languages

Russian *по*- is most common prefix: 21% of Natural Perfectives, as in *построить*

Russian *с*- is expanding

    productive with loan verbs: *сорганизовать, скомпромитировать*

    used with many different predicate types

        ordinary telic: *сорганизовать, сконденсировать*

        factitives: *сблизить*   semelfactives: *сглупить*

    replaces other prefixes colloquially:

        спечь instead of *испечь*   *сготовить* instead of *приготовить*

Bulgarian *из*- is most common prefix: 9% of Natural Perfectives, as in *изпия*

    and *из*- is expanding

    productive with loan verbs: *изкоригирам*

    used with many different predicate types

        ordinary telic: *изядам*   inchoatives: *избелея*

        factitives: *избеля*   distributives: *изкрада*
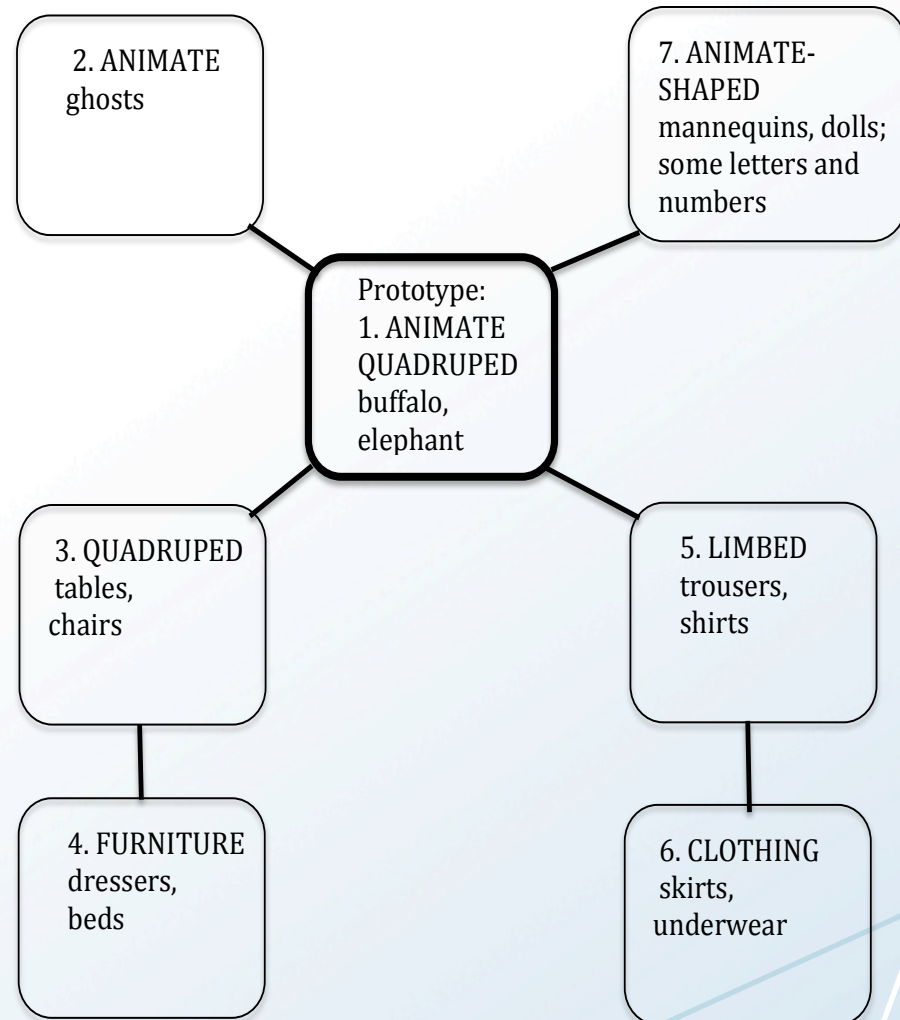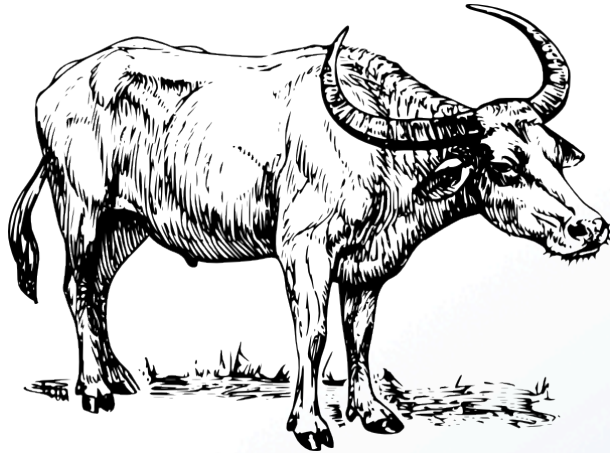
        semelfactives: *изгрухтя*

Czech, Slovak, Slovene, Polish *s-/z*- is generalized prefix and competes with other prefixes

    Czech *zemřít* instead of *umřít*

4. Polysemy and Radial Category Structure for Classifiers and Prefixes
First: Numeral Classifiers

Radial category structure for Thai Classifier *tua* (Deepadung 1997)

2. ANIMATE ghosts

7. ANIMATE-SHAPED mannequins, dolls; some letters and numbers

Prototype:
1. ANIMATE QUADRUPED buffalo, elephant

3. QUADRUPED tables, chairs

5. LIMBED trousers, shirts

4. FURNITURE dressers, beds
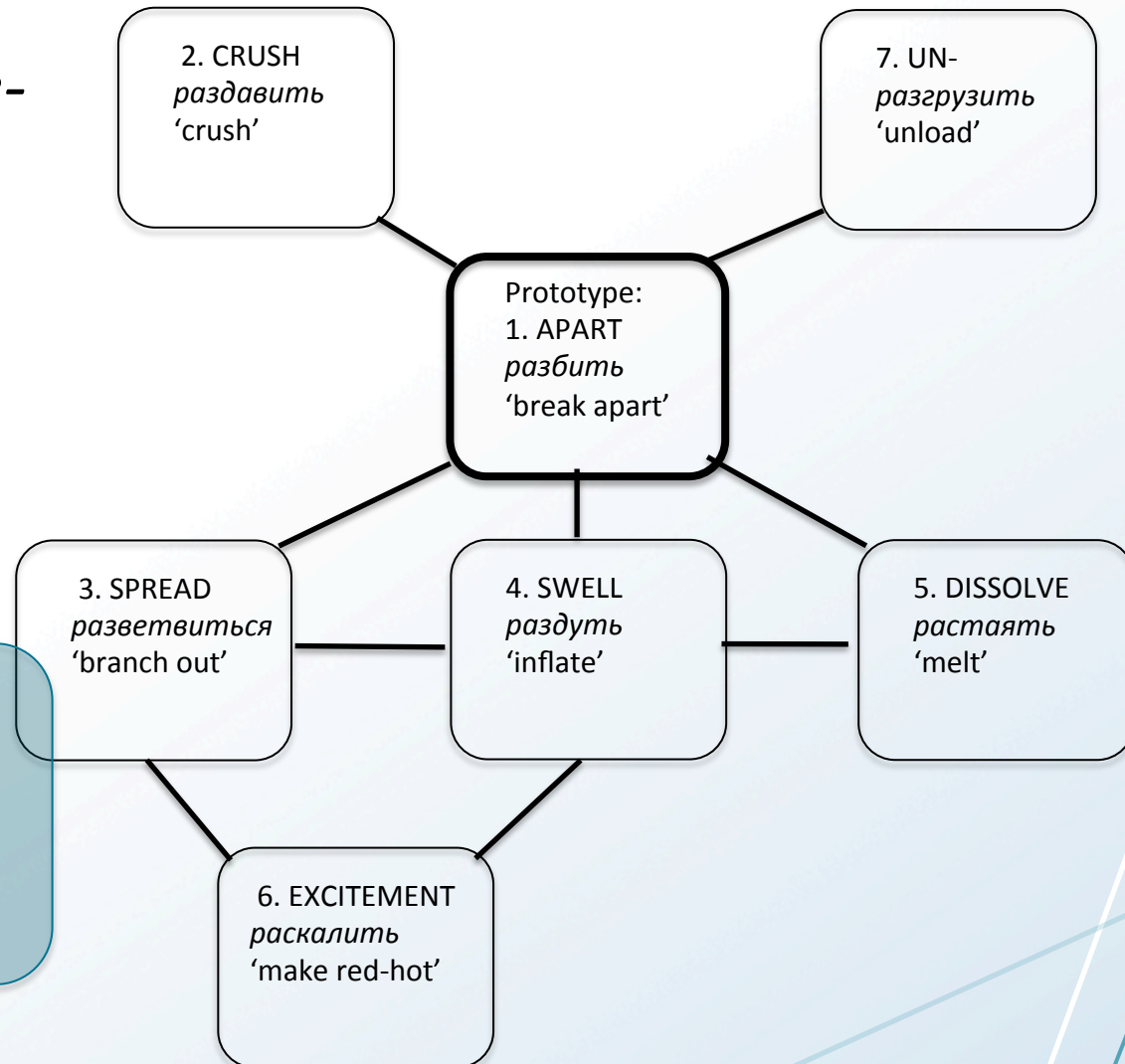
6. CLOTHING skirts, underwear

Compare: Slavic Prefixes in Natural and Specialized Perfectives

Example: Russian *раз-*

Natural and Specialized Perfectives share **the same radial categories** (Janda et al. 2013)

2. CRUSH
раздавить
'crush'

7. UN-
разгрузить
'unload'

Prototype:
1. APART
разбить
'break apart'

3. SPREAD
разветвиться
'branch out'

4. SWELL
раздуть
'inflate'

5. DISSOLVE
растаять
'melt'

6. EXCITEMENT
раскалить
'make red-hot'

Summary PART ONE

- Prefixes that form Natural and Specialized Perfectives in Slavic Languages behave like classifiers
  - High semantic overlap of prefix and verb => Natural Perfective
  - Less semantic overlap of prefix and verb => Specialized Perfective
- Parallels in terms of
  - Classifier variation => a given base can take multiple classifiers
  - Productivity of general classifiers
  - Radial category semantic structure

PART TWO
Extension to Procedural Perfectives as Mensural Classifiers

- Sortal vs. Mensural Classifiers
- Procedural Prefixes as Mensural Classifiers
  - Procedural Prefixes Primarily in East Slavic + Bulgarian
- Comparison of Types of Sortal and Mensural Classifiers with Slavic Prefixes

Sortal vs. Mensural Classifiers

The Numeral Classifier Construction in Mandarin Chinese

Classifier Type	Numeral	Classifier	Noun
Sortal	*yi* 'one'	*tiao* cl: long-thin	*shengzi* rope
Mensural	*yi* 'one'	*bei* cl: glass	*pijiu* beer

(Gao & Malt 2009)

- Morpho-syntactic behavior is identical
- Both types signal units
  - **Sortal**: refer to inherent units
  - **Mensural**: create units, individuate in terms of quantity
- A single classifier can serve both sortal and mensural functions
- General classifiers often serve both functions

Sortal vs. Mensural Classifiers for Nouns and Verbs

Unitizer Type:	NOUNS Numeral Classifier	VERBS Aspectual Prefix
Reference to **inherent** boundaries:	Sortal Classifiers	Lexical + purely perfectivizing prefixes (Natural Perfectives and Specialized Perfectives)
Imposition of **external** boundaries:	Mensural Classifiers	Procedural prefixes, a.k.a. Superlexical, Aktionsart prefixes (Complex Act Perfectives and Single Act Perfectives)

Procedural Prefixes as Mensural Classifiers

(1) a. *yi   bei pijiu*   (Mandarin Chinese: Gao and Malt 2009: 1129)
one cl:glass beer
'a glass of beer'

(1) b. *'um-p'íit há'as*   (Yucatec Maya; Lucy 1992: 74)
a   cl:little-bit/some   banana
'a little bit of/some banana'

(2) a. *по- сидеть*   (Russian)
for-a-while-   sit
'sit for a while'

(2) b. *по- седна*   (Bulgarian)
for-a-while-   sit
'sit for a while'

Comparison of Types of Sortal and Mensural Classifiers with Slavic Prefixes (and suffix *-nǫ*)

Type of Mandarin Chinese Numeral classifier	Analogue Among Russian Perfectivizing Prefixes	Analogue Among Bulgarian Perfectivizing Prefixes
(1) INDIVIDUAL CLASSIFIERS (SORTAL) *i jy bii* 'a writing pen' *i-g jyutz* 'an orange'	NATURAL *по-, с-, за-*, etc. SPECIALIZED *до-, с-, за-*, etc.	NATURAL *из-, на-, по-*, etc. SPECIALIZED *до-, с-, за-*, etc.
(2) COLLECTIVE CLASSIFIERS (MENSURAL) *yi qun mianyang* 'a flock of sheep'	DISTRIBUTIVE *пере-, по-* CUMULATIVE *на-*	DISTRIBUTIVE *из-* CUMULATIVE *на-*
(3) INDIVIDUATING CLASSIFIERS (MENSURAL) *yi bei pijiu* 'a glass of beer'	DELIMITATIVE *по-* PERDURATIVE *про-* ATTENUATIVE *при-, под-* INGRESSIVE *за-* FINITIVE *от-* INTENSIVE-RESULTATIVE *до-…-ся, за-…-ся*, etc.	DELIMITATIVE *по-* INGRESSIVE *за-* ATTENUATIVE *по-, под-*
(4) PARTITIVE CLASSIFIERS (MENSURAL) *shi pian luobo* 'ten slices of carrot'	SEMELFACTIVE *с-, -ну-*	SEMELFACTIVE *из-, про-, -на-*

Russian Examples for the Types of Sortal and Mensural Classifiers

Type of Classifier	Russian Perfectivizing Prefixes	Russian Examples
(1) INDIVIDUAL CLASSIFIERS (SORTAL)	NATURAL *по-, с-, за-*, etc. SPECIALIZED *до-, с-, за-*, etc.	*построить, сварить, закрепить* *дописать, собрать, записать*
(2) COLLECTIVE CLASSIFIERS (MENSURAL)	DISTRIBUTIVE *пере-, по-* CUMULATIVE *на-*	*перебить* *накупить*
(3) INDIVIDUATING CLASSIFIERS (MENSURAL)	DELIMITATIVE *по-* PERDURATIVE *про-* ATTENUATIVE *при-, под-* INGRESSIVE *за-* FINITIVE *от-* INTENSIVE-RESULTATIVE *до-…-ся, за-…-ся*, etc.	*посидеть* *проплакать* *притормозить, подкрасить* *заговорить* *отсидеть* *доплясаться, зачитаться*
(4) PARTITIVE CLASSIFIERS (MENSURAL)	SEMELFACTIVE *с-, -ну-*	*сглупить, чихнуть*

Summary PART TWO

- Procedural Prefixes in Russian (East Slavic) and Bulgarian serve as mensural verb classifiers
- Morpho-syntactic behavior of sortal and mensural classifiers is identical
- Both types signal units **=> events**
  - **Sortal**: refer to inherent units **=> results of events**
  - **Mensural**: create units, individuate in terms of quantity **=> phases of events and quantities of action**
- A single classifier can serve both sortal and mensural functions
- General classifiers often serve both functions

PART THREE
Foregrounding and Definiteness Effects of Classifiers and Slavic Prefixes

- **Foregrounding Effects** of Numeral Classifiers and Slavic Aspectual Prefixes

- **Weak Definiteness Effects** of Numeral Classifiers and Slavic Aspectual Prefixes

Foregrounding Effects of Numeral Classifiers Statistics from Mandarin Chinese (Sun 1988)

In narratives

- **80% of nouns** referring to entities **thematically important** to narratives (subsequently mentioned) are **introduced with a numeral classifier**
- 18% of nouns referring to entities **not** thematically important to narratives (not subsequently mentioned) are **not** introduced with a numeral classifier

See examples from myth about the giant Kuafu on next slides...

Foregrounding Effects of Numeral Classifiers
Example from Mandarin Chinese (Li 2000: 1121-1122)

Chuan	shuo	zai	hen	gu	de	shihou,	you	**yi-ge**	**jiao**	**Youdu**
Legend	say	be	very	old	MOD	time,	there-be	one-CL	called	Youdu

de	**defang**	zhongnian		bu	jian	taiyang,	daochu		yipian	qihei.
MOD	place	all year		not	see	sun,	everywhere		all	pitch dark

Zai	nar	you	**yi-zuo**	**da**	**hei**	**shan**,	shan	shang	zhu
In	there	there-be	one-CL	big	dark	mountain	mountain	top	live

zhe	xuduo	kepa	de	guaishou.	Neixie	guaishou	jingchang		xia
PF	many	scary	MOD	monster.	Those	monsters	often		descend

shan	weihai		renmen.	You	**yi-ge**	**juren**	**jiao**	**Kuafu**,	ta
mountain	endanger		people	there-be	one-CL	giant	named	Kuafu,	he

yong	guaizhang	he	guaishou	bodou	le	jiu	tian	jiu	yie	zhongyu
use	cane	with	monster	fight	PF	9	day	9	night	finally

ba	ta		da	si	le.
BA	them		beat	dead	PF

'Once upon a time, in **a place called Youdu**, people lived in darkness all year round. There was **a big black mountain** where many terrible beasts lived. The beasts often went out to harm people. There was **a giant called Kuafu**. He fought with the beasts with a stick for nine days and nine nights. Finally, he killed them all...'

Foregrounding Effects of Numeral Classifiers
More Examples from Mandarin Chinese (Li 2000: 1122)

a. *Kuafu   si   le. Tade   guanzhang   dunshi   bian   cheng   le*
   Kuafu   die PF His   walking stick immediately change   into   PF
   yi-ke   xianhua   shenghai   de   da   taoshu.
   one-CL   flowers   blooming   MOD   big peach tree

'Kuafu died. His walking stick immediately changed into **a [CL] large peach tree with blooming flowers**.'

b. *Pangu   si   hou,   tade   zhiti   bian   cheng   le   **shan.***
   Pangu   die after   his   body   change   into   PF   mountain

'After Pangu died, his body changed into **a [Ø] mountain**.'

Li: Mandarin Chinese **numeral classifiers** are employed to mark noun phrases as **salient** for the purpose of "vivifying or intensifying the description without [an] implication of significance in the thematic development of the narrative." Example (a) with a numeral classifier presents a relatively vivid image; example (b) presents a rather flat image.

Foregrounding Effects of Slavic Aspectual Prefixes

- Foregrounding is understood in terms of narrative sequencing via main plotline events

- Prefixes are associated with perfective aspect, which tends to mark sequenced plotline events

*Когда **началась** первая мировая война, вся семья **уехала** в деревню Поминово в Тверской области, на родину бабушки. Дом, где они жили, стоит, кстати, до сих пор. Там же, в Поминове, отец **познакомился** с моей мамой. Они **поженились**, когда им было по 17 лет.*

Weak Definiteness Effects of Numeral Classifiers

- Bare classifier constructions (lacking numerals) signal specific or definite reference

Hmong example (Li & Bisang 2012: 353)

Thaum ub		*muaj*		*ob*	*tug*	*niam*		*txiv.*		**Tus txiv**		*tuag lawm.*
Long.ago		there.are	two	CL		wife		husband	CL	husband	die	PF

Tus niam		*quaj quaj*	*nrhiav*		*nrhiav*		*tsis tau*	**tus**	**txiv**.
CL	wife	cry cry	look.for		look.for	NEG get	CL	husband	

'Long ago there was a wife and a husband. **The husband** died. **The wife** kept crying but no matter how she looked, she couldn't find **the/her husband**.'

Vietnamese example (Simpson et al. 2011: 185-186)

Thư viện	*vừa*	*có*		*thêm*		*một*	*kế toán*		*và*	*một*	*luật sư.*
library	just	have		add		one	accountant		and	one	lawyer

Ngời		**kế toán**		*rất*	*chăm chỉ,*		*nhưng*	**ngời**		**luật sư**	*rất*	*lười.*
CL		accountant		very	diligent		but	CL		lawyer	very	lazy.

'The library has a new accountant and a new lawyer. **The accountant** is hard-working, but **the lawyer** is quite lazy.'

Definiteness Effects of Slavic Prefixes are Strongest in Russian (Leinonen 1982, Dickey 2000)

a. Кто **прочитал** Войну и мир?

b. Кто читал Войну и мир?

a. Ты **прочитал** мою книгу?

b. Ты читал мою книгу? Ты не видел там записку?

Perfective sentences reflect shared information, focus on specific event. Imperfective sentences lack this implication.

Summary PART THREE

- Numeral Classifiers and Slavic Aspectual Prefixes show some parallel effects in terms of Narrative Foregrounding and Definiteness

Conclusions
Verb Classifier Hypothesis Version 2.0

- Prefixes that form Natural and Specialized Perfectives in Slavic languages parallel sortal numeral classifiers
- Prefixes that form Procedural Perfectives in Slavic languages (mainly East Slavic and Bulgarian) parallel mensural numeral classifiers
- Shared traits of numeral classifiers and Slavic aspectual prefixes
  - Overlap produces default classifiers
  - Variation produces choices among multiple classifiers
  - Generalized productive classifiers
  - Radial category structure
  - Foregrounding, discourse prominence in narrative
  - Weak definiteness effects
- Recognition of Slavic aspectual prefixes as verb classifiers facilitates typological comparison