CHARACTERIZING GENERICITY AND EPISTEMIC COMMITMENTS

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THE PLOT

Generics

Generic statements convey generalizations.

- Generalizations: non-accidental, principled characteristics of some (type of) individuals/situations.

⇒ Essential to express the ways in which we view the world and how we reason about it.

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  - CGs with *kind* denoting NPs (e.g., Dahl 1995, Pelletier and Asher 1997): the regularity holds of the kind **and** across individual instances of that kind.

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b. Birds fly.

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  - "Habituals": CGs with object-denoting subjects, express a generalization over situations that are specified by the corresponding episodic predicate.

(2) a. Liz smokes after dinner.
    b. The sun rises in the East.

The problem

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It is far from clear (i) what their truth-conditions are, and (ii) whether it is possible to provide a uniform analysis of all CG sentences, given the variety of conditions under which they are judged to be true.

- What counts as “non-accidental”? What counts as “principled”?
- What is “exceptional”?
- How do we form such generalizations?

...

Today

Question

Is it possible to provide a single unified semantics for CGs?

PROPERTIES OF CGS

1. Exceptions

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(3) Birds fly. ⇝*in the general case...*

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  (3) Birds fly. ⇝*in the general case…*

- Others don't:

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- Some CGs "integrate" the exception:

  (5) Mosquitoes carry West Nile virus. ⇝*in the general case…*

2. Not about majorities

- Not any property that is true of a majority of a population guarantees the truthfulness of its corresponding generic statement.

(6) Germans are right-handed.
FALSE, even if it turns out to be the case that most Germans are right handed.

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  FALSE, even if it turns out to be the case that most Germans are right handed.

- Being a minority does not preempt CGs (as in the 'mosquitoes' example above); being a majority is not sufficient for forming CGs.

3. Intensionality

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- Some generalizations have never been, or may never be, actualized:

  (7) This machine crushes oranges.
  TRUE, even if the machine has never been used.

- Co-extension does not guarantee truth:

  (8) a. Lions have manes.
  TRUE even if only male lions have manes.

  b. Lions are male.
  FALSE even if the all and only the lions that are male have manes.

So...

- The problem is that the truth of a generic statement does not (solely) depend on quantity, i.e., they do not (just) depend on knowing **how many cases verify it**.

- There is a tension:
  - We have clear intuitions about what CG-statements are.
  - We do not know what the necessary conditions to form CGs are.

⊕ We seem to understand generic statements, but we don't understand why we understand them.

TWO THEORIES

Question

Is it possible to provide a single unified semantics for CGs?

- **Null hypothesis**
  CGs form a single class of sentence types constituting a unified phenomenon, for which a unified semantic analysis is possible and desirable.

Carlson (1995): two perspectives for a unified analysis

- The Rules & Regulations (R&R) perspective:
  The truth of CGs depends on some causal structure or forces that are behind episodic instances in the world.

(9) a. Bishops move diagonally. game rules
b. Tab A fits in slot B. operating instructions
c. The Vice-President succeeds the President. parliamentary rules

Carlson (1995): two perspectives for a unified analysis

- The Induction perspective:
  CGs express inductive generalizations whose base is some observed set of instances. They are **inferential** generalizations based on patterns, as such they must be backed up by evidence.

(10) a. Birds fly.

b. Liz smokes after dinner.

- Carlson (1995) favors the R&R approach, with reservations wrt. unification:

(11) a. Rule descriptions: ✓R&R; ✘Ind.
Bishops move diagonally, In the UK one drives on the left…

b. Non-actuality: ✓R&R; ✘Ind.
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John is a bachelor/murderer…

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c. ILPs: ✓R&R; ✘Ind.
John is a bachelor/murderer...

d. Habituals: ✘R&R; ✓Ind.
John smokes after dinner, Liz drives to work

e. Inferential generalizations: ✘R&R; ✓Ind.
Crows are smaller than ravens....

f. Gradability: ✘R&R; ✓Ind.
Dutchmen are good sailors, African marathoners run fast...

g. Exceptions: ✘R&R; ✓Ind.
(Categorically excluded from R&R.)

A NEW PERSPECTIVE

Overview

Question

Is it possible to provide a single unified semantics for CGs?

- Some linguistic expressions are dedicated (morphological) markers of certain type of inductive generalizations.
- Our focus: the stance that the cognitive agent takes on exceptions to the generically predicated property, which in turn correlates with different types of generalizations.

Focus on exceptions

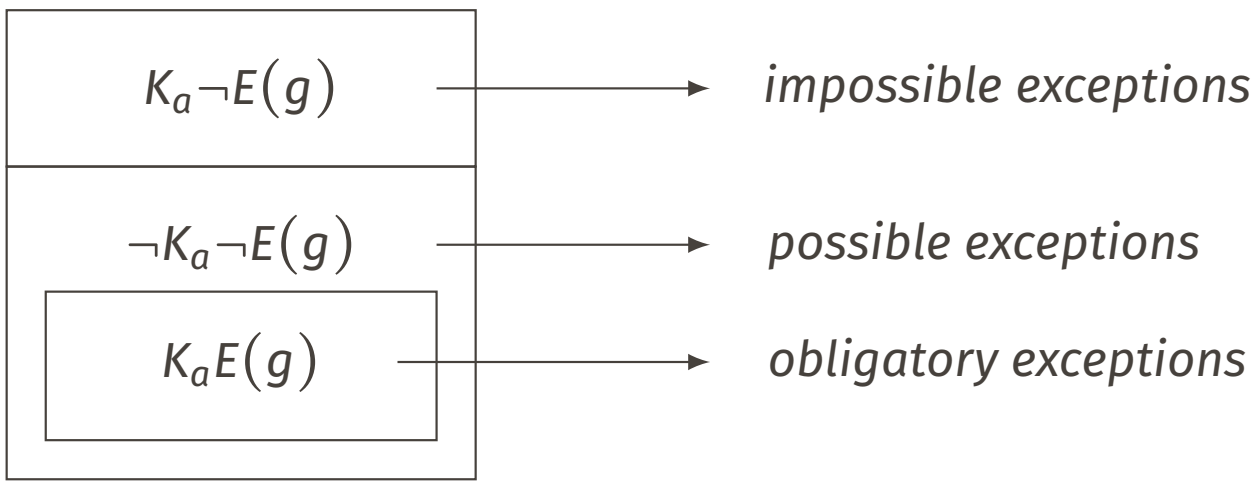
- **Fact**

  For some generalization *g*, either there are exceptions to *g*, or there aren't; *E* ("has exceptions") induces a bipartition of the space of all *g*.

$\neg E$	g_1 g_2 g_3
E	g_4 g_5 g_6

Focus on exceptions

- Given that for any g, either $E(g)$ or $\neg E(g)$, a cognitive agent a may contend three hypotheses as to what a knows concerning the supporting evidence for g are: either a knows that g has exceptions, a knows that g hasn't exceptions, or a does not know.



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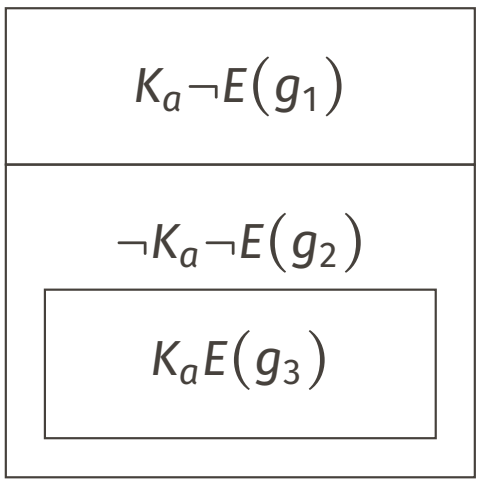

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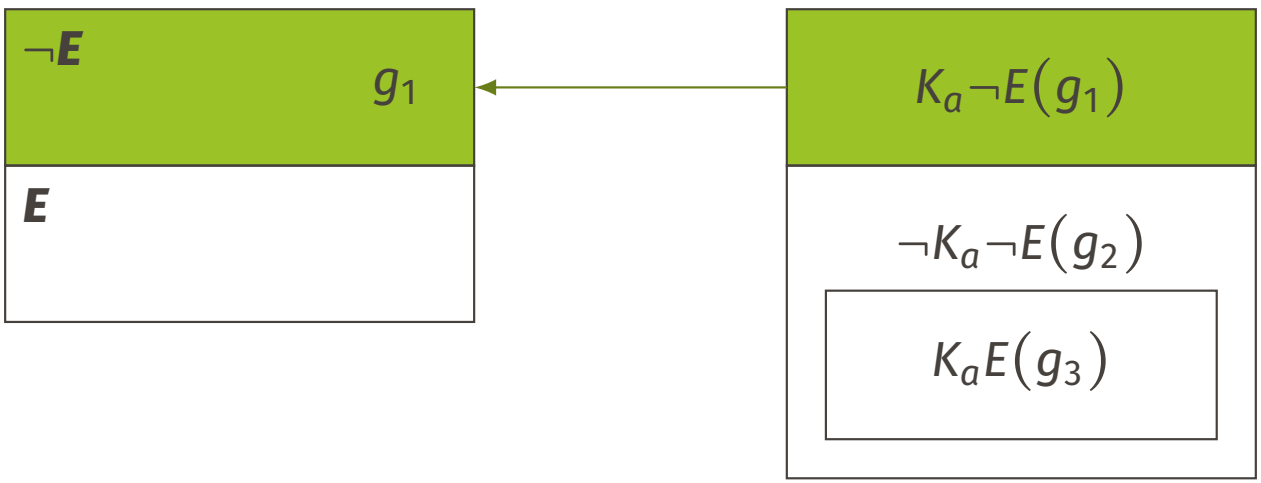

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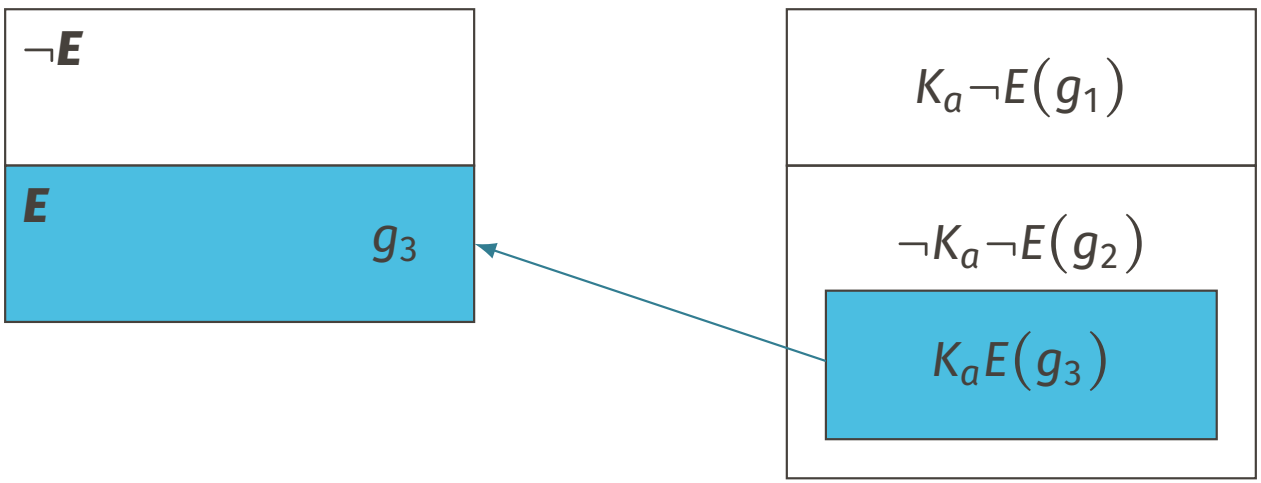

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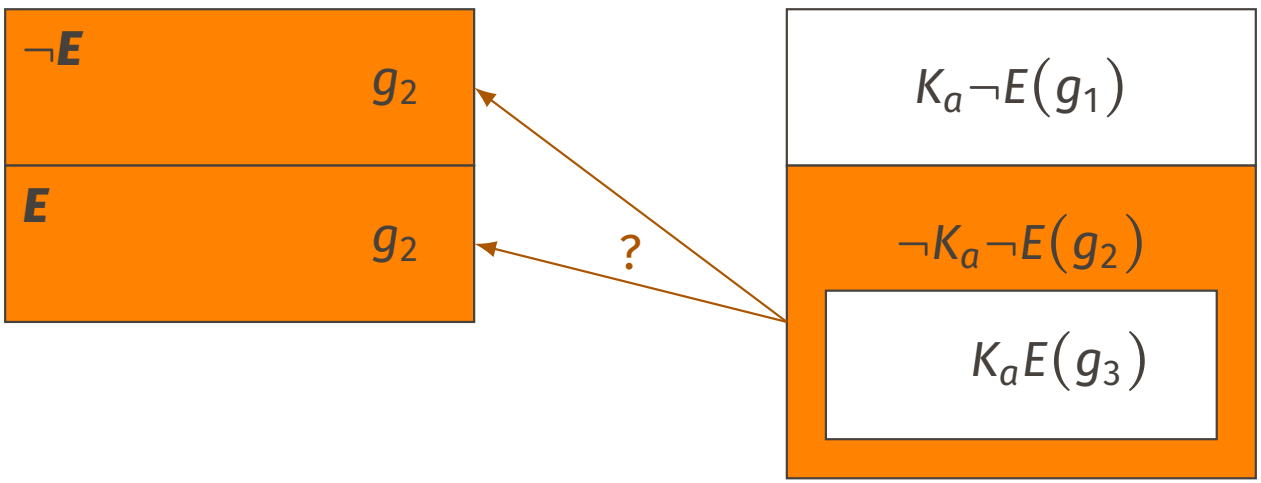

Focus on exceptions

- **General Hypothesis**
  Learning of generalizations proceeds by either learning some R&Rs or by Induction.
- Different types of generalizations are amenable to one or other by virtue of the properties the relevant generalization is about; i.e. on its *base* (*sensu* Carlson 2008).

Cf. Cohen (1999), Greenberg (2003), Pelletier (2010), Krifka (2013), Doron and Boneh (2013), a.o.

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❓ Where do R&R/Inductive CGs fall wrt. *E*?

Cf. Cohen (1999), Greenberg (2003), Pelletier (2010), Krifka (2013), Doron and Boneh (2013), a.o.

R&R Generalizations

- R&R generalizations permit no exceptions, no counter-instances; they live in $\neg E$.
- They convey dispositions whose defining properties/conditions do not change, are taken to be tendentially stable.
- For a cognitive agent *a*, the issue of exceptions with SG wrt. some episode *p* to does not meaningfully arise; call these ***Strong Generalizations*** (SG).

(12) a. Triangles have three sides.

b. Cats are mammals.

c. This machine crushes oranges.

d. John is a bachelor.

Inductive Generalizations

- Inductive generalizations are **inferential**: by repeated observation of episodes $p_1 \ldots p_n$, a pattern emerges.
- They are *ceteris paribus*.

(13) a. Birds fly.

b. John smokes after dinner.

c. Dutchmen are good sailors.

d. Typically books are paperback.

- Unlike SGs, these are ***Weak Generalizations*** (WG); the cognitive agent *a* cannot rule out the possibility of exceptions.

Caution

- There is no one-to-one correspondence between the presence/absence of exceptions and R&R/Induction:

(14) a. R&R ⇒ no exceptions

b. No exceptions ⇏ R&R

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- There is no one-to-one correspondence between the presence/absence of exceptions and R&R/Induction:

(14) a. R&R $\Rightarrow$ no exceptions

b. No exceptions $\not\Rightarrow$ R&R

- Some "inductive" generalizations do not have exceptions:

(15) The sun rises in the East.

- Although *ceteris paribus*, these generalizations *behave* as Strong Generalizations: they are not inferential anymore; *linguistically*, they pattern with Strong Generalizations.

A clarification

(16) a. Triangles have three sides.

b. The sun rises in the East.

c. John smokes after dinner.

d. Typically books are paperbacks.

Process	**Generalization**	**Attitude wrt. *E***	
R&R	Strong	$K_a \neg E(g)$	(16a)
Induction	Strong	$K_a \neg E(g)$	(16b)
Induction	Weak	$\neg K_a \neg E(g)$	(16c)
Induction	Weak	$K_a E(g)$	(16d)

Overt markers of Weak Generalizations

- **Concrete Hypothesis**
  The weak/strong distinction is not just notional. The *linguistic reality* of such division is supported by the existence of expressions that pick out one sub-type.
- Up next: Czech verbal suffix *va*, which we take to be a generic marker of Weak Generalizations

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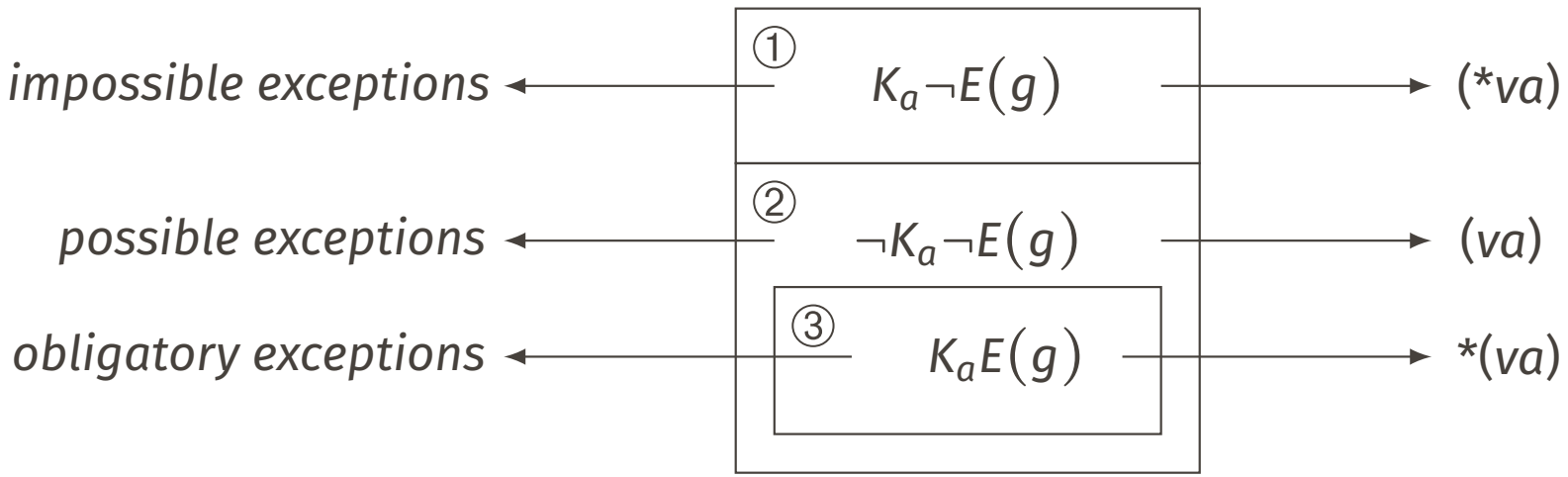
We will not defend here that *va* is neither an IMPF nor HABITUAL marker; see earlier work by Hana Filip.

THE CZECH SUFFIX *VA*

Va and epistemic commitments to exceptions



- *Va*-generics stand for weak generalizations that require compatibility with exceptions; ② and ③: they signal that *a* is denying the existence of a relevant *SG*, thereby committing herself to either the knowledge of exceptions (③) or explicitly signaling her ignorance concerning the absence/presence of exceptions (②).

The Czech suffix *va*

- *Va* (and its allomorphic variants) is a verbal suffix that previous literature has labeled as a frequentative or iterative marker (e.g. Dahl 1995, where *va* is treated as a marker of imperfective aspect).
- Here we will take for granted that *va* is not just a marker of imperfectivity (*pace* Dahl 1995; see the critic in Filip and Carlson 1997 and Filip 2018).
- Generic-*va*: a verbal suffix conveying genericity not to be confused with its homonymous imperfective suffix *va*.

The Czech suffix *va*

(17) **Imperfective *vs.* generic *va***

a. psát
write.INF
episodic: to write/be writing
generic: to write as a habit

b. psá**va**t
write.VA.INF
episodic: -
generic: to write as a habit

c. přepisovat
ITER.write.IMPF.INF
episodic: to rewrite/be rewriting
generic: to rewrite as a habit

d. přepisová**va**t
ITER.write.IMPF.VA.INF
episodic: -
generic: to rewrite as a habit

e. dávat
give.IMPF.INF
episodic: to give/be giving
generic: to give as a habit

f. dává**va**t
give.IMPF.VA.INF
episodic: -
generic: to give as a habit

1. Obligatorily generic

- Unlike formally unmarked generic statements (e.g. with imperfective aspect) *va* is unambiguously generic (Filip and Carlson 1997).

(18) a. *Honza sedí v hospdě.*
Jon sit.IMPF in pub
'Jon {is sitting / (usually) sits} in a bar.'

b. *Honza sedá**vá** v hospdě.*
Jon sit.VA in pub
'Jon {#is sitting / (usually) sits} in a bar.'

- Formally unmarked imperfectives behave as in English.

⊕ Generic-*va* is *sufficient* but not *necessary* for CG.

2. Obligatory verifying instances

- *Va*-generics require that there be at least one verifying instance of the generically-predicated property in the actual world.

(19) a. *Tento stroj drtí pomeranče.*
this machine crushes oranges
'This machine crushes oranges.'
...✓'although we haven't used it yet.'

b. *Tento stroj drtí**vá** pomeranče.*
this machine crush.VA oranges
'This machine crushes-*va* oranges.'
...✗'although we haven't used it yet.'

➔ Generic-*va* is ungrammatical in the absence of evidence.

3. Incompatibility with exceptionless CGs

- *Va*-generics are infelicitous with exceptionless generalizations such as analytical truths, constitutive and regulative rules, etc.

(20) a. *Trojuhelník* { *má* / *#mí**vá*** } *tři* *strany.*
triangle has has.VA three sides
'Triangles have three sides.'

b. *V* *Anglii* *se* { *jezdí* / *#jezdí**vá*** } *po* *levé* *straně.*
in England REFL drive drive.VA on left side
'In England one drives on the left.'

c. *Velryba* { *je* / *#bý**vá*** } *savec.*
whale is is.VA mammal
'A whale is a mammal.'

This makes generic-*va* different with Q-adverbs like *usually*, etc., which are oftentimes compatible with exceptions.

3. Incompatibility with universal-Q

- Similarly, *va*-generics are incompatible with universal quantification that uses up the same situation variable.

(21) #*Každou sobotu Honza sedá**vá** v hospodě*
each Saturday John sits.VA in pub
'Every Saturday John usually sits in the pub.'

4. Obligatory with positive-counterinstances

- Generic-*va* **must** be used to express generalizations that concern generic properties to which there are known *positive counterinstances* (Leslie 2008).

(22) a. Books are paperbacks. FALSE

b. Typically, books are paperbacks. TRUE

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b. Typically, books are paperbacks. TRUE

(23) a. *Knihy* *jsou* *brožované.*
book.PL.NOM be.IMPF paperback
'Books are paperback.' FALSE

b. *Knihy* *bý**va**jí* *brožované.*
book.PL.NOM be.VA paperback
'Books tend to be paperback.' TRUE

5. No frequency conveyed

- The semantic contribution of the suffix *va* cannot be reduced to an ordinary quantifier over situations (e.g. *most*, *usually*).

i. *va* marks generic sentences that are true even if most instances do not satisfy the generically-predicated property.

(24) a. *Žraloci napadá**va**jí plavce.*
shark attack.VA bather
'Sharks may attack bathers.' TRUE

b. *Žraloci obyčejně napadá**va**jí plavce.*
shark usually attack.VA bather
'Sharks tend to attack bathers.' FALSE

5. No frequency conveyed

- The semantic contribution of the suffix *va* cannot be reduced to an ordinary quantifier over situations (e.g. *most*, *usually*).

ii. *va* may freely occur with quantificational adverbs denoting low frequency, such as *rarely*.

(25) a. *Ten šuplík bý**vá** jen velmi zřídka zamčený.*
that drawer is.VA only very rarely locked
'That drawer used to be locked only very rarely.'

b. # Usually the drawer is very rarelay locked.

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6. Epistemic effects

- In cases where exceptions to the generically predicated property are not known, *va*-generics convey an additional epistemic meaning that the speaker is uncertain as to the extent to which the generality expressed by the proposition holds.

(26) *U každého domu bý**vá** zahrada.*
at each house is.VA garden
'At each house, there tends to be a garden.'
↛ *in most situations, there is a garden next to each house*

(27) Felicity conditions of (26): Speaker *S* is commited to the following...
a. at least one house has a garden.
b. at least one house does not have a garden.
c. there is a house~garden pattern.
↝ *S* cannot commit herself to a stronger statement.

Summary

	Strong	Weak	*va*
Verifying instances	✘	✓	✓
Obligatory exceptions	✘	✓	✓
Positive counterinstances	✘	✓	✓
Low frequency	✘	✓	✓
Epistemic effect	✘	✓	✓

CONCLUSION

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- The key factor to understand the distinction between marked (*va*) and unmarked (*va*-less) CGs (and SG *vs* WG) is essentially modal (epistemic): they signal speaker's commitment to (the possibility of) exceptions.

- No unification for all CGs.

Marked *vs.* unmarked forms

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(28) The generically-predicated property FLY is understood as being true...

a. of the kind BIRD (on the basis of individual birds to which the property of flying is attributed), and

b. of individual birds (on the basis of particular situations of flying by a stage of an individual bird).

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- The formally **unmarked** Czech generic sentence *Ptáci létají* highlights (28a).
- The formally **marked** generic sentence *Ptáci létávají* conveys (28b).

Other languages

- A number of languages have morphological devices available to signal CGs (often called “habituals”; Dahl 1995).
- Some examples (for more see Dahl 1995, 421).
  - Affixes on verbs: Swahili prefix *hu-*, Czech suffix *-va-*, West Greenlandic suffix *-sar-*/*-tar-*.
  - Reduplication of imperfective morphemes: Wolof.
  - Free forms in the verb’s auxiliary cluster: Georgian particle *xolme*, Swedish auxiliary verb *bruka*.

⊜ It is a open question whether these too can be taken to signal Weak Generalizations and are not just mere “habituals” (in the more common frequency related sense).

About Gen

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  - We have not said anything about the semantics of unmarked CGs.
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- **Notice that**:
  - We have not said anything about the semantics of unmarked CGs.
  - Not knowing the *actual* semantics of unmarked CGs greatly complicates any competition-based account of the epistemic effects of marked CGs.
- What is the relation of *va* (and similar markers) to GEN?
- Assuming all R&R generics involve GEN, it is clear that *va* cannot be GEN; rather, it behaves like a "vanilla" Q-adverb specifically tailored to express Weak Generalizations.

Thank you!

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