

P-to-Q Entailment

(in Slovakian)

Roadmap

- Intro to semantic universals (5 min)
- Intro to P-to-Q Entailment (3 min)
- Empirical findings from Slovakian (2 min)

Semantic universals

- Quantifiers?

Semantic universals

- Quantifiers?
- Connectives?

Semantic universals

- Quantifiers?
- Connectives?
- Clause-embedding predicates

Semantic universals

- Quantifiers?
- Connectives?
- **Clause-embedding predicates**

Clause-embedding predicates

= predicates which embed full clauses.

Clause-embedding predicates

= predicates which embed full clauses.

Declarative clauses (P)

I believe *that she did that.*
I promise *that she did that.*

Clause-embedding predicates

= predicates which embed full clauses.

Declarative clauses (P)

I believe *that she did that.*
I promise *that she did that.*

Interrogative clauses (Q)

I ask *why she did that.*
I wonder *who did that.*

Clause-embedding predicates

= predicates which embed full clauses.

Declarative clauses (P)

I believe *that she did that.*
I promise *that she did that.*

Interrogative clauses (Q)

I ask *why she did that.*
I wonder *who did that.*

Responsive predicates (Lahiri 2002):

embed both *declarative*
AND *interrogative* clauses

I know *that she did it.*
I know *who did it.*

Semantic universals in *responsive* predicates

Veridicality Universal (Spector & Egré, 2015)

V is veridical w.r.t. Q iff V is veridical w.r.t. P

Semantic universals in *responsive* predicates

Veridicality Universal (Spector & Egré, 2015)

V is veridical w.r.t. Q iff V is veridical w.r.t. P

- (1) I know that $2+2$ is 4.
- (2) I know whether $2+2$ is 4.

Semantic universals in *responsive* predicates

Veridicality Universal (Spector & Egré, 2015)

V is veridical w.r.t. Q iff V is veridical w.r.t. P

- (1) I know that $2+2$ is 4.
- (2) I know whether $2+2$ is 4.

If I know *whether* $2+2$ is 4 (Q), then I know *that* $2+2$ is 4 (P).

If I know *that* $2+2$ is 4 (P), then I know *whether* $2+2$ is 4 (Q).

Semantic universals in *responsive* predicates

Veridicality Universal (Spector & Egré, 2015)

V is veridical w.r.t. Q iff V is veridical w.r.t. P

Problem: **communication verbs**

(3) I told Max that Tilly stole his money.

(4) I told Max whether Tilly stole his money.

Semantic universals in *responsive* predicates

Veridicality Universal (Spector & Egré, 2015)

V is veridical w.r.t. Q iff V is veridical w.r.t. P

Problem: **communication verbs**

(3) I told Max that Tilly stole his money.

(4) I told Max whether Tilly stole his money.

(3) doesn't follow from (4) — i.e. **Q-to-P direction doesn't work**

Semantic universals in *responsive* predicates

Veridicality Universal (Spector & Egré, 2015)

V is veridical w.r.t. Q iff V is veridical w.r.t. P

Evidence in favor:

Steinert-Threlkeld (2020) showed that verbs which satisfy VU are **easier to learn** than those that do not

Semantic universals in *responsive* predicates

Clausal distributivity (Theiler et al. 2018)

$x \text{ Vs } Q$ iff there is an answer p to Q such that $x \text{ Vs } p$

Semantic universals in *responsive* predicates

Clausal distributivity (Theiler et al. 2018)

$x \text{ Vs } Q$ iff there is an answer p to Q such that $x \text{ Vs } p$

Problem: **predicates of relevance**

(5a) It matters to Max who stole his tobacco.

(5b) Iona stole Max's tobacco.

(5c) It matters to Max that Iona stole his tobacco.

(5c) doesn't follow from (5a)

Semantic universals in *responsive* predicates

Veridicality Universal (Spector & Egré, 2015)

- problem: communication verbs

Clausal distributivity (Theiler et al. 2018)

- problem: predicates of relevance

Semantic universals in *responsive* predicates

Veridicality Universal (Spector & Egré, 2015)

- problem: communication verbs

Clausal distributivity (Theiler et al. 2018)

- problem: predicates of relevance

P-to-Q Entailment (Roelofsen & Uegaki, 2020)

P-to-Q Entailment

VU: $x \text{ Vs that } P \Leftrightarrow x \text{ Vs that } Q$

P-to-Q Entailment

VU: $x \text{ Vs that } P \Leftrightarrow x \text{ Vs that } Q$

PQE: $x \text{ Vs that } P \Rightarrow x \text{ Vs that } Q$ (one-directional)

P-to-Q Entailment

Can handle **communication verbs**:

(6a) Max told us that Iona stole his tobacco.

(6b) Max told us whether Iona stole his tobacco.

P-to-Q Entailment

Can handle **communication verbs**:

(6a) Max told us that Iona stole his tobacco.

(6b) Max told us whether Iona stole his tobacco.

Can handle **predicates of relevance**:

(7a) It matters to Max that Iona stole his tobacco.

(7b) It matters to Max whether Iona stole his tobacco.

P-to-Q Entailment

PQE is robust, but there are some seeming **exceptions**:

P-to-Q Entailment

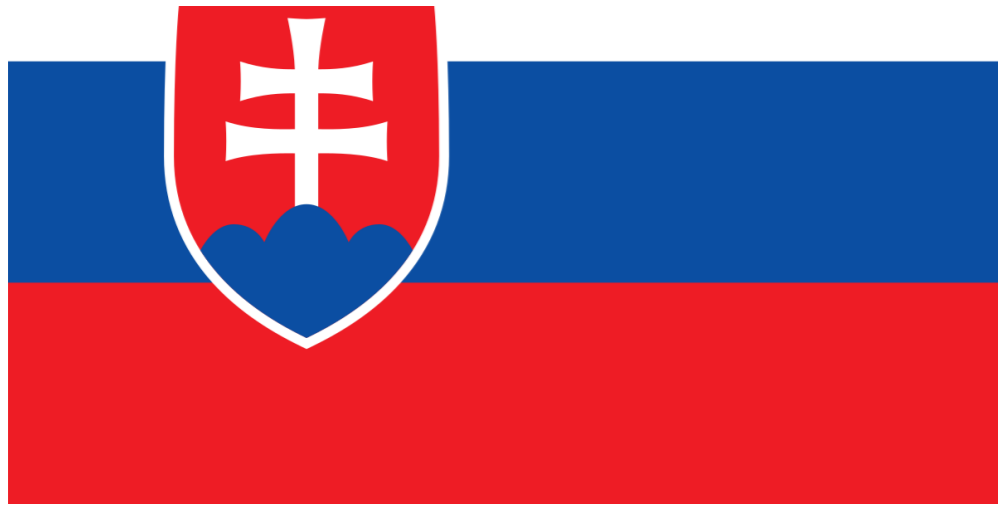
PQE is robust, but there are some seeming **exceptions**:

Buryat *hanaxa*

Turkish *bil*

Tagalog *magtaka*

PQE in Slovakian



PQE in Slovakian: **Method**

Category of predicate	Predicate V in English	Predicate V in Slovakian	x Vs P	x Vs Q	Does "x Vs P" entail "x Vs Q"?	Notes/reason for judgement in previous column
assessment	accept	<i>prijat'</i>	Prijímajú, že prišiel domov.	Prijímajú, či prišiel domov.	1	
doxastic	agree with X [stative: to be in agreement]	<i>súhlasit'</i>	Súhlasia, že prišiel domov.	Súhlasia, či prišiel domov.	1	
communication	announce	<i>vyhlásiť</i>	Vyhlasuje, že prišiel domov.	Vyhlasuje, či prišiel domov.	1	
communication	argue	<i>tvrdiť (?)</i>	Tvrdí, že prišiel domov.	*Tvrdí, či prišiel domov.	NA	V is not responsive
inquisitive	ask	<i>pýtať sa</i>	*Pýta sa, že prišiel domov.	Pýta sa, či prišiel domov.	NA	V is not responsive
communication	assert	<i>vyhlásiť</i>	Vyhlasuje, že prišiel domov.	Vyhlasuje, či prišiel domov.	1	
doxastic	assume	<i>predpokladať</i>	Predpokladá, že prišiel domov.	*Predpokladá, či prišiel domov.	NA	V is not responsive

PQE in Slovakian: **Results**

PQE judgement is difficult (due to complementizer):

modliť sa (pray)

navrhnúť (propose)

PQE in Slovakian: **Results**

PQE judgement is difficult (due to complementizer):

modliť sa (pray)

navrhnúť (propose)

Certain predicates need further words to be responsive:

myslieť (think)

PQE in Slovakian: Results

PQE judgement is difficult (due to complementizer):

modliť sa (pray)

navrhnúť (propose)

Certain predicates need further words to be responsive:

myslieť (think)

	Declarative	Interrogative
Old version	<i>Myslí, že prišiel domov.</i>	<i>*Myslí, či prišiel domov.</i>
New version with "už"	<i>Myslí, že už prišiel domov.</i> (She thinks that he already came home.)	<i>Myslí, či už prišiel domov.</i> (She thinks whether he already came home.)

PQE in Slovakian: **Results**

PQE judgement is difficult (due to complementizer):

modliť sa (pray)

navrhnúť (propose)

Certain predicates need further words to be responsive:

myslieť (think)

Issues with presuppositions:

mať obavy (be worried)

PQE in Slovakian: Results

PQE judgement is difficult (due to complementizer):

modliť sa (pray)

navrhnúť (propose)

Certain predicates need further words to be responsive:

myslieť (think)

Issues with presuppositions:

mať obavy (be worried)

Performative vs. backwards-looking force:

rozhodnúť sa (decide)

What next?

Two possible ways forward:

1. re-examine P-to-Q Entailment

- revise/finesse > abandon

What next?

Two possible ways forward:

1. re-examine P-to-Q Entailment

- revise/finesse > abandon

2. re-examine the putative counterexamples

- expand on their semantics

What next?

Two possible ways forward:

1. re-examine P-to-Q Entailment

- revise/finesse > abandon

2. re-examine the putative counterexamples

- expand on their semantics

$GS(\llbracket ?x P(x) \rrbracket)(w) =$

$exh_{?xP(x)}(T) =$

$\lambda v. (\llbracket ?x P(x) \rrbracket^v = T) =$

$\lambda v. \llbracket P \rrbracket^v = \emptyset$ [i.e., the proposition that states that P has an empty extension]

Thank you!

Over to you now... Can you **think of any responsive predicates** in a language you know which seem to **violate P-to-Q?**

References:

Lahiri, Utpal. 2002. Questions and Answers in Embedded Contexts. Oxford University Press.

Spector, Benjamin & Paul Egré. 2015. A uniform semantics for embedded interrogatives: An answer, not necessarily the answer. *Synthese* 192(6). 1729–1784.

Steinert-Threlkeld, Shane. 2020. An explanation of the veridical uniformity universal. *Journal of Semantics* 37. 129–144.

Theiler, Nadine, Floris Roelofsen & Maria Aloni. 2018. A uniform semantics for declarative and interrogative complements. *Journal of Semantics* 35(3). 409–466.

Roelofsen, Floris and Wataru Uegaki. To appear. Searching for a universal constraint on the possible denotations of clause-embedding predicates. *Proceedings of SALT 30*.