Constructionist approaches to cross-linguistic generalizations

Problem:
• In constructionist approaches, categories and constructions are language-specific. There are no cross-linguistic categories or constructions. How do we account for cross-linguistic generalizations?

Three solutions:
• 1. All languages have the same conceptual-semantic prototypes, resulting in implicational universals and patterns of typological markedness (Croft on categories)
• 2. All languages share the same pragmatic mapping generalization (Goldberg on argument realization).
• 3. All languages are affected by the same processing constraints, resulting in patterns of word order typology, constraints on filler-gap dependencies, and patterns of markedness (Hawkins on grammar-performance correspondence).
Some issues:

• The ‘same’ category must be defined by different grammatical properties (inflections, syntactic distribution, etc.) in each language.
• Translational equivalents may be categorized differently in different languages.
• It seems there is no principled basis to distinguish categories from subcategories in some cases.
• Different languages appear to have different inventories of lexical and functional categories.
• But: there is a tendency to distinguish categories ‘noun’, ‘verb’ and ‘adjective’ across most languages, centered around semantic prototypes for object, action, and property.
Does Thai have adjectives as distinct from verbs?

Both action words (‘verbs’) and property words (‘adjectives’ or ‘adjectival verbs’) can be used directly as predicates, with no copula, and can be directly negated:

1. khaw (may) dii
   she not good
   ‘She is (not) good’

2. khaw (may) yim
   she not smile
   ‘She smiles’ / ‘She does not smile’

3. khaw (may) phuut phasaa-ciin
   she not speak Chinese
   ‘She speaks Chinese.’ / ‘She does not speak Chinese’

Does Thai have adjectives as distinct from verbs?

Both action words and property words can be used as modifiers of a noun, with or without the relative clause marker *thii*:

4. khon (thii) dii
   person that good
   ‘a person who is good’ or ‘a good person’

5. khon (thii) yim
   person that smile
   ‘a person who is smiling’ or ‘a smiling person’

6. khon (thii) phuut phasaa-ciin
   person that speak Chinese
   ‘a person who speaks Chinese’ or ‘a Chinese-speaking person’

Does Thai have adjectives as distinct from verbs?

Both action words and property words can be intensified in the same way, by reduplication:

- dii dii 'very good'
- klay klay 'very fat'
- phuut phuut 'talk a lot'
- kin kin 'eat a lot'

Does Thai have adjectives as distinct from verbs?

Words describing properties or states are normally nominalized with the morpheme *hkwaam*, while action words are normally nominalized with the morpheme *kaan*:

- **khwaam dii** ‘goodness’ (property)
- **khwaam suk** ‘happiness’
- **khwaam rak** ‘love’ (state)
- **khwaam-khaw-cay** ‘understanding’
- **kaan phuut** ‘speaking’ (action)
- **kaan chokmuay** ‘boxing’

Does Thai have adjectives as distinct from verbs?

But there are some words that can take either nominalization marker.

- khwaam taay ‘death’
- kaan taay ‘dying’
- khwaam ruam-mii ‘cooperation’
- kaan ruam-mii ‘cooperating’

Does Thai have adjectives as distinct from verbs?

Action words behave differently than properties with respect to comparison.

rot-yon  rew  (maak)  kwaa  rot-fay  (property)
car  fast  (more)  than  train
‘Cars are faster than trains.’

*khaw  tham-naan  kwaa  phuu-cat-kaan  (action)
she  work  than  manager
Intended: ‘She works more than the manager.’

khaw  tham-naan  maak  kwaa  phuu-cat-kaan
she  work  more  than  manager
‘She works more than the manager.’

Some “unanswerable” questions

• Action words and property words overlap in their distributions but are not exactly the same.

• Do these differences (nominalizations, comparative forms) justify a separate category of adjectives in Thai? Or should adjectives be classified as a subcategory of verbs?

• In what sense is an adjective in one language the same as an adjective in another language? Do all languages have adjectives?

• Croft’s answers are in his 2001 book, Radical Construction Grammar
Croft’s critique of previous approaches to categories

**Generative approaches**

• Innately-given universal categories are assumed but not linked to distributional criteria

  \[
  \begin{array}{ccc}
  \text{Verb:} & [+V \ -N] & \text{Adjective:} & [+V \ +N] \\
  \text{Noun:} & [-V \ +N] & \text{Preposition:} & [-V \ -N] \\
  \end{array}
  \]

• It’s not clear what distributional criteria *could* be used, given the wide range of variation among languages

• Similarities among words belonging to the “same” category are highlighted and differences are ignored as a matter of convenience

• Generative theories have not been particularly concerned with distinguishing between lexical categories

Croft’s critique of previous approaches to categories

Typological approaches

Lumpers

Hengeveld and others have argued that some languages lack one or more of the major lexical categories.

• For example, Tongan (shown here) is claimed to lack a noun/verb/adjective distinction.

Such analyses focus only on distributional overlap and ignore differences

Such analyses ignore the conventional semantic shifts that occur when an item is used in different constructions.
Croft’s critique of previous approaches to categories

**Typological approaches**

**Splitters**

Careful distributional analysis leads to a ‘splitting’ approach to lexical categories.

Problem: where does one stop splitting?

How do we tell the difference between major categories and minor categories, or between categories and subcategories?
Radical Construction Grammar: basic ideas

Within a single language

• Splitting is a better analytic method than lumping.
• Constructions are the basic units of syntax.
• Each construction defines its own distinct word classes.
• These word classes may overlap with each other to a large extent
  Example: attributive construction vs. predicative construction
    • the respected/former officer The officer is respected/*former
• General lexical categories such as noun, verb and adjective (or even ‘count noun’) do not exist as such in individual languages.

Radical Construction Grammar: basic ideas

Across languages

• There are no universal syntactic categories.
• There are no universal constructions.
• Language universals are to be found in “conceptual space” (semantic prototypes) and in the mapping between form and function (general patterns of typological markedness).
• General categories such as noun, verb, and adjective are best described as universal semantic prototypes.
Radical Construction Grammar: basic ideas

Across time

• Language is fundamentally variable and dynamic.
• Grammatical knowledge is usage-based-- it is dependent on an individual’s linguistic experience over time
• Because language change is gradual and affected by many different factors, there is a certain degree of arbitrariness in any given synchronic state of a language.
Radical Construction Grammar: within-language generalizations

Example: Nouns, Nominal Adjectives, and Adjectives in Japanese

- Each construction (column) defines a separate word class
- For any two constructions, some members overlap
- No two constructions define exactly the same word class
- The first three rows represent the traditional categories N, NA, A
Radical Construction Grammar: cross-linguistic generalizations

Universal Semantic Prototypes

- Items that conform to one of the prototypes tend to occur in a wider range of contexts and require less structural coding
  - Noun: boy, book, tree, bird

- Items that deviate from the prototypes tend to occur in a narrower range of contexts and require more structural coding
  - Noun: amusement, happiness, knowledge, reaction

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<thead>
<tr>
<th></th>
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Radical Construction Grammar: cross-linguistic generalizations

**Behavioral Potential:** In any language, a prototypical item (e.g. action word used for predication) displays at least as wide a range of syntactic positions and inflectional morphology as a non-prototypical item (e.g. property word used for predication).

1. They are **reading** that book again.
2. *Water is containing** hydrogen and oxygen.
3. *48 plus 4 is equaling** 52.
4. That book has been **read** a hundred times, it and still looks new.
5. *Hydrogen and oxygen have always been contained** by water.
6. *52 is equaled** by 48 plus 4

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Radical Construction Grammar: cross-linguistic generalizations

**Behavioral Potential:** In any language, a prototypical item (e.g. action word used for predication) displays at least as wide a range of syntactic positions and inflectional morphology as a non-prototypical item (e.g. property word used for predication).

1. She’s a very bright student, as bright as they come.

2. *She’s a very total stranger, as total as they come.

3. *This stranger is totaler / more total than that one.

4. *Four is a very even number, as even as they come.

5. *Four is an evener / more even number than two.

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Radical Construction Grammar: cross-linguistic generalizations

**Structural coding**: A nonprototypical item (e.g. property word used for predication) displays at least as many structural coding morphemes (derivational morphemes or accompanying function words) as a prototypical item (e.g. action word used for predication).

In English, adjectives and nouns used as predicates require a copula, while verbs do not:

1. He is very fond of pizza.
2. He is a lover of pizza.
3. *He very fond of pizza.
4. *He lover of pizza.
5. He loves pizza.

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Radical Construction Grammar: cross-linguistic generalizations

**Structural coding**: A prototypical item (e.g. property word used for predication) displays at least as many structural coding morphemes (derivational morphemes or accompanying function words) as a prototypical item (e.g. action word used for predication).

In English, verbs used as modifiers of nouns must occur in a relative clause or in participle form, while adjectives used as modifiers can occur directly before the noun:

1. the fit guy
2. *the runs guy
3. the guy who runs
4. the running guy

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Thai verbs/adjectives again

Both action words (‘verbs’) and property words (‘adjectives’ or ‘adjectival verbs’) can be used directly as predicates, with no copula, and can be directly negated:

1. khaw (may) dii
   she not good
   ‘She is (not) good’

2. khaw (may) yim
   she not smile
   ‘She smiles’ / ‘She does not smile’

3. khaw (may) phuut phasaa-ciin
   she not speak Chinese
   ‘She speaks Chinese.’ / ‘She does not speak Chinese’

• In this case, property words used as predicates do not conform to the semantic prototype, but do not show any structural coding either.

• This is consistent with Croft’s theory.

• A counterexample would be if action words required a copula but property words did not.

Thai verbs/adjectives again

Both action words and property words can be used as modifiers of a noun, with or without the relative clause marker thii:

4. khon (thii) dii
   person that good
   ‘a person who is good’ or ‘a good person’

5. khon (thii) yim
   person that smile
   ‘a person who is smiling’ or ‘a smiling person’

6. khon (thii) phuut phasaa-ciin
   person that speak Chinese
   ‘a person who speaks Chinese’ or ‘a Chinese-speaking person’

• In this case, action words used as modifiers do not conform to the semantic prototype, but do not require any structural coding.

• Structural coding is optional for both action and property words.

• This is consistent with Croft’s theory.

• A counterexample would be if property words required a relative marker but action words did not.
Thai verbs/adjectives again

Both action words and property words can be intensified in the same way, by reduplication:

- dii dii ‘very good’
- klay klay ‘very fat’
- phuut phuut ‘talk a lot’
- kin kin ‘eat a lot’

- In this case, action words are not inherently gradable, but they show the same behavioral potential as property words.

- Both action and property words can show intensification.

- This is consistent with Croft’s theory.

- A counterexample would be if action words could show intensification but property words could not.
Thai verbs/adjectives again

Words describing properties or states are normally nominalized with the morpheme *hkwaam*, while action words are normally nominalized with the morpheme *kaan*:

- khwaam dii: ‘goodness’ (property)
- khwaam suk: ‘happiness’
- khwaam rak: ‘love’ (state)
- khwaam-khaw-cay: ‘understanding’
- kaan phuut: ‘speaking’ (action)
- kaan chokmuay: ‘boxing’

- In this case, action words used for reference require a different structural coding morpheme than property words used for reference.
- This is consistent with Croft’s theory.
- A counterexample would be if object words required a nominalizer but action and property words did not.

Thai verbs/adjectives again

Action words behave differently than properties with respect to comparison.

*rot-yon*  *rew*  *(maak)*  *kwaa*  *rot-fay*  *(property)*
car   fast  (more)  than  train
‘Cars are faster than trains.’

*khaw*  *tham-naan*  *kwaa*  *phuu-cat-kaan*  *(action)*
she  work  than  manager
Intended: ‘She works more than the manager.’

*khaw*  *tham-naan*  *maak*  *kwaa*  *phuu-cat-kaan*
she  work  more  than  manager
‘She works more than the manager.’

- In this case, action words used for comparison are non-prototypical, and require additional structural coding.
- Action words must be followed by comparative marker.
- This is consistent with Croft’s theory.
- A counterexample would be if property words required a comparative marker but action words did not.
Croft’s answers to the “unanswerable” questions

• Do these differences (nominalizations, comparative forms) justify a separate category of adjectives in Thai? Or should adjectives be classified as a subcategory of verbs?
  
  • Croft: This question presupposes categories that don’t exist. Each construction (predication, comparison, nominalization, etc.) defines its own distinct word class.

• In what sense is an adjective in one language the same as an adjective in another language? Do all languages have adjectives?
  
  • Croft: All languages have a universal semantic prototype for adjectives (property word used for modification). The overt manifestation of this prototype (structural coding and behavioral potential) is relatively subtle for Thai, more obvious for English and Spanish.
  
  • Property words should NOT require more structural coding morphemes than action and object words to occur in modification constructions.
Cross-linguistic generalizations in argument realization (Goldberg 2006)

“Linking rules” that map semantic arguments onto syntactic positions are often claimed to be innate and universal, as in the following proposal from Pinker (1989).

1. Link the agent to SUBJECT
2. Link the patient to OBJECT
3. Link the theme argument (first argument of BE or GO) to SUBJECT unless SUBJECT is already linked; to OBJECT otherwise
4. Link the goal to an OBLIQUE (prepositional phrase) argument
5. Link the theme argument in a CAUSE TO HAVE predicate to the second object in a ditransitive construction

Goldberg’s critique: (1) “universals” are only tendencies (e.g. ergative constructions and passive constructions violate these rules); (2) these tendencies are motivated by general pragmatic and processing factors.
Cross-linguistic generalizations in argument realization (Goldberg 2006)

A similar proposal by Dowty (1991) recognizes universal proto-roles. This allows for a somewhat more nuanced approach to argument linking.

- **Contributing properties for Actor role**
  - Volition; sentience (and/or perception); causes event; movement

- **Contributing properties for Undergoer role**
  - Change of state (including coming-to-being, going-out-of-being); incremental theme (i.e. determinant of aspect); causally affected by event; stationary (relative to movement of proto-agent)

**Figure 9.1** Protypical properties of Actors and Undergoers (cf. Dowty 1991)

Goldberg’s critique: (1) “universals” are only tendencies (e.g. ergative constructions and passive constructions violate these rules); (2) these tendencies are motivated by general pragmatic and processing factors.
Do these examples follow the linking rules?

1. [Jane] saw [a UFO]. Experiencer, Stimulus
2. [Bill] cut [the bread] with [a knife]. Agent, Patient, Instrument
3. [The speaker] stumbled. Theme
4. [Penny] put [the bread] on [the table]. Agent, Theme, Goal
5. [The audience] loved [the performance]. Experiencer, Stimulus
6. [The musicians] were nervous. Experiencer
7. [The storm] broke [the window]. Cause, Patient
8. [An intruder] broke [the window]. Agent, Patient
9. [The window] broke. Patient
10. [Sam] took [her friend] to [the movie]. Agent, Theme, Goal
Cross-linguistic generalizations in argument realization (Goldberg 2006)

Goldberg proposes a weaker version of Dowty’s generalization.

**The Salient Participants in Prominent Slots Generalization (SPPS): Actors and Undergoers are expressed in prominent syntactic slots.**

- Allows for languages that don’t clearly express a grammatical subject
- Allows for linking of either Actor or Undergoer to prominent slot, in the absence of the other.
- Follows from psycholinguistic evidence that Actors and Undergoers are cognitively salient in human perception and attention to events.
Cross-linguistic generalizations in argument realization (Goldberg 2006)

Another proposed universal:

**Theta criterion**: each NP argument receives one theta role; each theta role is assigned to one NP argument. (Non-overt arguments require null pronoun “pro” or “PRO”)

**Isomorphic mapping hypothesis**: The number of NPs lines up as simply as possible with the number of semantic arguments.

Lidz, Gleitman & Gleitman (2003):
- Kannada-speaking children were asked to act out scenes based on familiar verbs in ungrammatical contexts.
- They were more likely to interpret causative meaning from stimuli with two overt NPs (transitive syntax) than from stimuli with causative morpheme on verb and one overt NP.
- Authors’ conclusion: isomorphic mapping hypothesis is innate and guides acquisition.
- Goldberg’s alternative: results due to pragmatic mapping generalization, and aspects of research design.
<table>
<thead>
<tr>
<th>Construction Type</th>
<th>Number of linguistically expressed NPs (complements)</th>
<th>Number of central semantic participants in the scene (arguments)</th>
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</thead>
<tbody>
<tr>
<td><strong>Short Passives</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td>1: <em>(Pat)</em></td>
<td>2: <em>(Pat, Pat’s killer)</em></td>
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<tr>
<td><em>(e.g. Pat was killed)</em></td>
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<tr>
<td><strong>The Deprofiled Object construction</strong></td>
<td>1: <em>(the tiger)</em></td>
<td>2: <em>(tiger, tiger’s prey)</em></td>
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<tr>
<td><em>(e.g. The tiger killed again)</em></td>
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<tr>
<td><strong>Semantic “Incorporation” constructions</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td>2: <em>(Pat, the toast)</em></td>
<td>3: <em>(Pat, toast, the spread)</em></td>
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<td><em>(e.g. Pat buttered the toast)</em></td>
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<tr>
<td><strong>Cognate Object construction</strong></td>
<td>2: <em>(Pat, a hearty laugh)</em></td>
<td>1: <em>(Pat)</em></td>
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<td><em>(e.g. Pat laughed a hearty laugh)</em></td>
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<td><strong>Certain idioms</strong>&lt;sup&gt;4&lt;/sup&gt;</td>
<td>2: <em>(Pat, the bucket/a salute)</em></td>
<td>1: <em>(Pat)</em></td>
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<td><em>(e.g. Pat kicked the bucket; Pat gave a salute)</em></td>
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Cross-linguistic generalizations in argument realization (Goldberg 2006)

Goldberg’s proposed universal:

Pragmatic Mapping Generalizations:
(A) The referents of linguistically expressed NPs are interpreted to be _relevant_ to the message being conveyed.
(B) Any semantic participants in the event being conveyed that are _relevant_ and _non-recoverable_ from context must be overtly indicated.

This allows for a wider range of constructions that violate isomorphic mapping.
This allows for cross-linguistic variation in whether relevant and recoverable referents are expressed.
Mappings are still constrained in terms of which arguments need to be overtly indicated.
Lidz et al (2003) results are explained: children did not use causative morpheme paired with one argument as cue to causative event because the other argument was not recoverable from context and could not be identified.
Typical dialogues in Russian (3) and Korean (4) follow pragmatic mapping principles. Both languages allow omission of recoverable arguments.

(3) Q: Did you introduce Ivan to Masha?
   A: Da, pedstavil.
   “Yes, (I) introduced (him) (to her)” (Franks 1995)

(4) A: I ran across a big fat bug this morning
   B: kulayse, cwuki-ess-e?
      So kill-PAST-SENTENTIAL.ENDING
   “So, did [you] kill [it]?”
   A: Ani, tomanka-key naypelie twu-ess-e
   No, run away-COMP leave let-PAST-SENTENTIAL.ENDING
   “No, [I] let [it] run away” (W. Nahm, personal communication, Feb. 16, 1999)
In his (2004) and (2014) books, Hawkins explores evidence from language typology, production preferences as shown in corpora, and psycholinguistic experiments that support the following hypothesis:

(1) _Performance-Grammar Correspondence Hypothesis (PGCH)_
Grammars have conventionalized syntactic structures in proportion to their degree of preference in performance, as evidenced by patterns of selection in corpora and by ease of processing in psycholinguistic experiments.
Cross-linguistic generalizations and processing constraints (Hawkins 2004, 2009, 2014)

Minimize Domains (MiD) - speakers and listeners prefer to minimize connected sequences of linguistic forms in which syntactic and semantic relations of combination and/or dependency are processed.

Phrasal Combination Domain (PCD) – the smallest string of elements required to construct a mother node (e.g., VP) and its immediate constituents.

In head-initial languages, heavy late constituents help minimize domains relevant to language production and comprehension.
Phrasal Combination Domains for English VPs

(3) a. The man vp[waited pp1[for his son] pp2[in the cold but not unpleasant wind]]

1  2  3  4  5

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b. The man vp[waited pp2[in the cold but not unpleasant wind] pp1[for his son]]

1  2  3  4  5  6  7  8  9

---------------------

In head-initial languages, heavy late constituents help minimize domains relevant to language production and comprehension.
Phrasal Combination Domains for English matrix clause and subject NP in combination

**PCDs for Canonical Sentence**

\[
[\text{NP New sets} \quad [\text{RC that were able to receive all the TV channels}]] \quad [\text{VP appeared}]
\]

Subject NP  
Matrix S  

IC-to-word ratios: Subject NP = 3/3 (100%), Matrix S = 2/12 (17%)

**PCDs for Extraposition Sentence**

\[
[\text{NP New sets}] \quad [\text{VP appeared}] \quad [\text{RC that were able to receive all the TV channels}]
\]

Subject NP  
Matrix S  

IC-to-word ratios: Subject NP = 3/5 (60%), Matrix S = 2/3 (67%)
Phrasal Combination Domains for Japanese matrix clause

(11) a. Mary ga [kinoo John ga kekkonsi-ta to]s it-ta]vp
   Mary NOM yesterday John NOM married that said
   Mary said that John got married yesterday.

b. [kinoo John ga kekkonsi-ta to]s Mary ga [it-ta]vp

In head-final languages, heavy constituents may be fronted to help minimize domains
Phrasal Combination Domains for Japanese matrix clause

    Tanaka NOM Hanako from that book ACC bought,
    “Tanako bought that book from Hanako”


In head-final languages, heavy constituents may be fronted to help minimize domains
Cross-linguistic generalizations and processing constraints (Hawkins 2004, 2009, 2014)

In addition to accounting for word-order preferences, Minimize Domains helps explain typological generalizations in conventionalized grammars of languages.

The tendency for languages to be consistently head-initial or head-final.

(15)  

a. \( \text{vp[went pp[to the movies]]} \)  

b. \( [[\text{the movies to} pp \text{ went}]] \text{vp} \)  

c. \( \text{vp[went [the movies to]pp]} \)  

d. \( [\text{pp[to the movies] went}] \text{vp} \)
In addition to accounting for word-order preferences, Minimize Domains helps explain typological generalizations in conventionalized grammars of languages.

The most common NP-internal word orders

(17) np[bright students s'[that Mary will teach]]

(17’) np[Adj Ns’[CS]]

C = the category that constructs S’: e.g., relative pronoun, complementizer, subordinating affix or particle, participial marking on V, etc. (Hawkins, 1994, pp. 387–393)

Four most common NP-internal orders allow for minimal domains:

- [N Adj [C S]] (Romance)
- [Adj N [C S]] (Germanic)
- [[S C] N Adj] (Basque)
- [[S C] Adj N] (Tamil)

The tendency for complements to occur closer to the head than adjuncts.
Constructionist approaches to cross-linguistic generalizations

Three solutions:
• 1. All languages have the same conceptual-semantic prototypes (Croft on categories)
• 2. All languages share the same pragmatic mapping generalization (Goldberg on argument realization).
• 3. All languages are affected by the same processing constraints (Hawkins on grammar-performance correspondence).

Advantages of constructionist approach:
• Explains why we have universal tendencies and not strict universals
• Provides motivation for cross-linguistic generalizations in general properties of human cognition, and thus avoids the need for “innate” constraints
• Accounts for observed correspondences between “soft constraints” (preferences) and “hard constraints” (grammatical rules)
• Provides research program for typology-based psycholinguistic research