

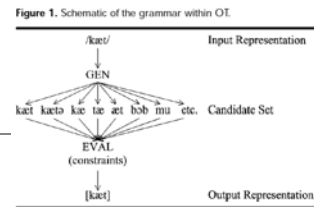
	<p><b>ICS 464</b>  <b>11/13/06</b></p> <p>Introduction to Cognitive Science</p>
	<p style="text-align: right;">1 Next</p>

	<p><b>Exam #1</b></p>
	<p>Chapter 9 - How can binocular rivalry be used to study influences of top-down processes on bottom-up mechanisms?</p> <p>The study of binocular rivalry can reveal the influences of top-down processes on bottom-up mechanisms by examining how the bottom-up artifacts such as suppression and the alternating timing of eye suppression can be influenced by top-down processes such as knowledge and attention by manipulating the stimulus (e.g. patchwork stimuli).</p>
	<p style="text-align: right;">2</p>

	<p><b>Exam #2</b></p>
	<p>Chapter 9 - What type of evidence does "patchwork stimuli" provide?</p> <p>Patchwork stimuli "offers evidence that the visual system is equipped with the ability to take advantage of the coherence of the competing percepts to construct a meaningful stable, albeit temporary, percept."p278</p>
	<p style="text-align: right;">3</p>

	<p><b>Exam #3</b></p>
	<ul style="list-style-type: none"> <li>■ Chapter 10 – In optimality theory (Prince and Smolensky 1993), Principle 2 states that: Universal Grammar provides Con, a set of universal constraints assessing the well-formedness of structural descriptions. How does Optimality theory explain the difference between languages with respects to constraints?</li> <li>■ Principle 4: Cross-linguistic variation is explained by variation in the ranking of the universal constraints. p304</li> </ul>
	<p style="text-align: right;">4</p>

## Exam #4



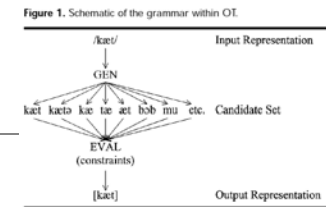
Chapter 10 - Optimality Theory makes the claim that all phonological interactions can be analyzed as the interaction of faithfulness and markedness.

In Figure 1, does faithfulness or markedness "appear" to be predominant in the selection of the output?

Could both play a role in determining the output?

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## Exam #4

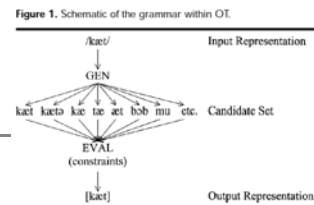


- Comparing "input with output and in each case require that the output preserve some feature of the input: these are faithfulness constraints." p299

- Faithfulness "appears" to be predominate, because input and output "appear" identical.

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## Exam #4



Could both (faithfulness and markedness) play a role in determining the output?

"Linguistic markedness, or inherent complexity of structures . . ." p305

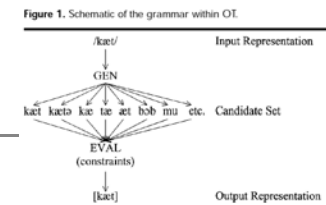
"markedness: "marked", or linguistically complex, structures are literally marked as such by the constraints they violate." p305

"The basic notion of a marked structure is directly built into the theory: a marked structure is one receiving a violation mark by a constraint in Con." p306

"Linguistic markedness is captured by the use of constraints which can be violated . . ." p323

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## Exam #4



Could both (faithfulness and markedness) play a role in determining the output?

Yes, in Optimality theory, depending on the language, the constraint order differs and faithfulness constraints may or may not have priority over different types of markedness constraints.

The output "kæt" may be selected because it does not violate a high priority markedness constraint.

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## Exam #5

- a) What does IRB stand for? Institutional Review Board
- b) According to the IRB, a human subject means a living individual about whom an investigator (whether professional or student) conducting research obtains what two types of data?
- (1) data through intervention or interaction with the individual
- (2) identifiable private information.

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## Exam #6

IRB – What are the three ethical principles of the Belmont Report? Give a brief description.

- Respect for persons
  - Individuals should be treated as autonomous agents
  - Persons with diminished autonomy are entitled to protection.
- Beneficence
  - Do not harm
  - Maximize possible benefits and minimize possible harms.
- Justice
  - To each person according to individual need, individual effort, societal contribution and according to merit.

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## Exam #7

Methodology – What are the three levels of research?

The three levels of research are:

- Level 1 – Exploratory / Descriptive
- Level 2 – Descriptive Survey
  - Correlational / Comparative
- Level 3 – Quasi-experimental / True Experiment

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## Exam #8

Methodology - If there is little literature on the subject, which level of research methodology would you be at?

- L1 – Little literature
- L2 – Conceptual or theoretical
- L3 – Theoretical

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## Exam #9

- Chapter 11 - What makes words impossible?
- Case 1: The derivation is blocked because a rule (a movement rule in all the examples that HK give) that the derivation depends on is impossible. P 329
  - Impossible words are ungrammatical words that violate the grammar of the language or possibly a universal language.
- Case 2: The derivation is blocked because the structure it generates is impossible. (The constraint is on the product rather than the process.) p332
  - “What is supposed to make a word impossible is that there is something defective about its meaning; that is, that what makes it impossible that w should mean e is that e isn't a possible meaning.” p332

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## Exam #10

- Chapter 11 - Why is the impossible words argument important?
- The strategy of "impossible word" arguments is to provide evidence for the stronger claim by showing that the derivations of certain lexical items would be blocked by independently motivated grammatical constraints, and that, when they are, the corresponding lexical items are intuitively impossible. P334

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## Exam #10

- Chapter 11 - Why is the impossible words argument important?
- Fodor and Lepore claim “the whole point of running an impossible word argument *is to provide evidence for lexicalization*: that is, to provide evidence for inferring that there is a grammatical process that derives surface lexical items from complex, phrasal underlying structures. p333

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## Exam #10

- Chapter 11 - Why is the impossible words argument important?
- The impossible word argument is important because by showing that impossible words are violating complex linguistic structures one could infer that similar quotidian or common words are allowed to exist by those same complex linguistic structures.
- This lead to the proposition that the structure of the words are related to the concepts they express or their semantic meaning.
  - Hale and Keyser claim complex linguistic structure
  - Fodor and Lepore claim the structure mirrors the concepts
  - Johnson claims that “there is insufficient evidence to hold that word-structure bears any interesting relation to the structure of concepts.”

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## Exam #11

- Chapter 12 – Describe the symbolic and connectionist approaches.
- “The traditional symbolic approach views information processing in the mind as discrete, rule-governed computation, applied to hierarchical structures with explicit symbolic content (Fodor 1975; Newell 1990).”
- “The connectionist approach, by contrast, conceives mental computation as the parallel operation of “soft” (continuously valued) constraints. . . . complex behavior is the result of a large number of simple numeric processors working in concert.” p336
- Comparison of structure-based and constraint-based models

Property	Structure Based (symbolic)	Constraint based (connectionist)
Preference factors	structure- based rules	soft constraints
Degree of parallelism	serial	parallel
Processing breakdown	discrete	gradual

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## Exam #12

- Chapter 12 – Describe the general approach of the “competitive attachment model.” How do symbolic and connectionist approaches fit into the “competitive attachment model.”? In chapter 12, what does the model purport to explain?
- The competitive attachment model . . . In particular, hybrid connectionist approaches to language processing have taken a modular approach, in which subsystems of a larger mechanism are separately formulated as either a traditional symbolic system or a connectionist network, depending on the sub-task performed. p344

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## Exam #12

- Chapter 12 – Describe the general approach of the “competitive attachment model.” How do symbolic and connectionist approaches fit into the “competitive attachment model.”? In chapter 12, what does the model purport to explain?
- The integrated hybrid information-processing paradigm is constrained “from above” by the symbolic and structural properties of formal linguistic theories and “from below” by the numeric properties of neural-inspired connectionist models p352

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## Exam #12

- Chapter 12 – Describe the general approach of the “competitive attachment model.” How do symbolic and connectionist approaches fit into the “competitive attachment model.”? In chapter 12, what does the model purport to explain?
- The model purports to explain people’s preference, where syntactic or structural ambiguities create ambiguous interpretations.

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	<ul style="list-style-type: none"><li>■ 4 quizzes left, 1 homework<ul style="list-style-type: none"><li>– 2 quizzes + 3 homeworks</li></ul></li><li>■ Homework10<ul style="list-style-type: none"><li>– Detailed presentation outline – 2 pages</li><li>– No references</li></ul></li></ul>

	<ul style="list-style-type: none"><li>■ Review Chapter 13</li></ul>