

HUL381/ELL457: Mind, Machines and  
Language  
Major Exam, Form:

Name: \_\_\_\_\_

Entry code: \_\_\_\_\_

Date: \_\_\_\_\_

### Section 1. Short Answer Questions

1. (Total 12pts) Describe the reordered access theory of processing of ambiguous words (4pts). Your answer should be comprehensive and state evidence related to: 1. Context effects (4pts) 2. The effect of dominance of meanings (4pts).

2. (Total 8pts) The traditional writing system of the Chinese languages (e.g., Mandarin, Cantonese) is ideographic (each concept or word is represented by a distinct character). More recently, the Chinese government has adopted a spelling system called pinyin, which is based on the Roman alphabet, and in which each symbol represents a sound. Following are several Chinese words in their character and pinyin forms. (The digit following the Roman letters in pinyin is a tone indicator and may be ignored.)

木	mu4	tree
花	hua1	flower
人	ren2	man
家	jia1	home
狗	gou3	dog

Figure 1: Chinese writing

Based on this information, would the location of neural activity be the same or different when Chinese speakers read in these two systems (4pts)? What happens in the case of brain damaged Chinese speakers (4pts)? Explain.

# Answer Key for Exam A

## Section 1. Short Answer Questions

1. (Total 12pts) Describe the reordered access theory of processing of ambiguous words (4pts). Your answer should be comprehensive and state evidence related to: 1. Context effects (4pts) 2. The effect of dominance of meanings (4pts). **Reordered Access Theory:** According to reordered access, access to word meanings is influenced by two interacting factors. The first factor is meaning dominance more frequent meanings will be easier to access than infrequent meanings. When you encounter a word, the bottom-up input activates all of the semantic representations associated with the word. Word representations are organized as in the TRACE model, so that when more than one representation is activated by a word, the activated representations compete with one another. Biased ambiguous words are easy to process because the dominant meaning wins the competition quickly. Balanced ambiguous words are more difficult to process because the two competing representations are more evenly matched, and it takes longer for competition to select a winner. The second factor that influences meaning selection is the context that a word appears in. When context and meaning dominance both favor the frequent meaning of an ambiguous word, competition between multiple activated word meanings is short-lived the dominant meaning wins the competition very quickly. When context favors the less frequent meaning, its activation is raised to the point where it becomes an effective competitor with the more dominant meaning. As a result, the subordinate meaning can be selected when context favors it, but it takes more time for the subordinate meaning to beat down the more frequent dominant meaning. Evidence from reading time experiments indicate:

- (a) **Neutral context:** Biased words read/processed as quickly as unambiguous words as only the dominant meaning is activated
- (b) **Biased context**
  - When context is biased and the dominant meaning of the biased word is being used, biased ambiguous words are read/processed faster compared to unambiguous words as only the dominant meaning is activated.
  - When context is biased and the subordinate meaning of the biased word is being used, biased ambiguous words are read/processed faster compared to unambiguous words as the activation of the dominant meaning is competing with the subordinate meaning before finally the latter meaning wins.

(Total 8pts) The traditional writing system of the Chinese languages (e.g., Mandarin, Cantonese) is ideographic (each concept or word is represented by a distinct character). More recently, the Chinese government has adopted a spelling system called pinyin, which is based on the Roman alphabet, and in which each symbol represents a sound. Following are several Chinese words in their character and pinyin forms. (The digit following the Roman letters in pinyin is a tone indicator and may be ignored.)

木	mu4	tree
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Figure 2: Chinese writing

Based on this information, would the location of neural activity be the same or different when Chinese speakers read in these two systems (4pts)? What happens in the case of brain damaged Chinese speakers (4pts)? Explain.

Additional evidence regarding hemispheric specialization is drawn from Chinese readers. The Chinese language has two main writing systems. One system, pinyin, is based on the sound system of the language; each symbol corresponds to a syllable. The other system, traditional Mandarin/Cantonese, is ideographic; each symbol corresponds to a word. Traditional Mandarin/Cantonese is not based on the sounds of the language. Chinese people with left-hemisphere damage are impaired in their ability to read pinyin, whereas people with right-hemisphere damage are impaired in their ability to read traditional Mandarin/Cantonese. Also, experiments with unimpaired Chinese readers show that the right hemisphere is better and faster than the left hemisphere at reading traditional Mandarin/Cantonese, and vice versa.