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Pictures of Ghosts: A Critique of Alfred Bloom's *The Linguistic Shaping of Thought*

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Pictures of Ghosts: A Critique of Alfred Bloom's *The Linguistic Shaping of Thought*

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I was reminded of a Chinese saying, "Ghosts are easier to draw than horses," as I read Alfred Bloom's (1981) *The Linguistic Shaping of Thought: A Study in the Impact of Language on Thinking in China and the West*. Ghosts, being

invisible to humans, can be arbitrarily depicted without any risk of losing likeness; whereas horses, mundane creatures that they are, must be drawn within some limit of resemblance. Bloom's analysis of Chinese language and thought—ghostly creatures to most of his English-speaking audience—has attracted considerable attention in this country. The book has received largely favorable reviews in such journals as *Contemporary Psychology* (1982), *Journal of Asian Studies* (1983), and *American Anthropologist* (1982). As David Jordan (1982) points out, "there have been few ideas in anthropology more persistently appealing or more discouragingly elusive than the suspicion that modes of human thinking are constrained by the structure of human language." This hypothesis, usually attributed to Benjamin Lee Whorf, has long held fascination not only for anthropologists but also for psychologists and linguists. Bloom's book has apparently convinced many, including Jordan, that the suspicion is right—language structure does affect thinking.

Bloom applied Whorf's hypothesis to counterfactual reasoning. Whereas the English language has a distinctive marker for the counterfactual (e.g., with the structure "if . . . had, . . . would have . . ."), the Chinese language does not. Thus, Bloom argues, although Chinese speakers can and do think counterfactually, they would be expected to do so less directly and therefore less easily than their English-speaking counterparts. Most of his evidence comes from experiments in which his American subjects (mostly students at Swarthmore College) and his Chinese subjects (mostly students at the Taiwan National University and the University of Hong Kong) answered questions on short counterfactual paragraphs or statements written in their native language. He reported that his American subjects reasoned far better counterfactually than his Chinese subjects. His analysis also extends to the conversion of properties and actions into entities, a grammatical construction that Bloom terms "entification."

Critique

Intriguing though Bloom's argument is, his evidence is seriously flawed. Two basic problems involve the design of his experiments and the construction of his Chinese materials.

Confounded Design

An inherent difficulty of testing Whorf's hypothesis lies in the practical confounding of language and culture: exposure to a particular

culture inevitably accompanies an exposure to its language (unless one learns a language entirely through foreign works that are translated into that language, or from people who learned it that way). Therefore, any difference in thinking between speakers of different languages may be attributed to the difference in culture just as well as to the difference in language. Bloom did not succeed in surmounting this difficulty. With the single exception of an experiment using bilingual Chinese subjects, Bloom's experiments and anecdotes all involve comparisons between groups exposed to different cultures as well as languages.

At least two cultural differences might have contributed to Bloom's results. First, college students in the United States and in China are products of different education systems. Chinese students receive less practice in answering questions based on essay comprehension. Whereas American education places greater emphasis on comprehension, Chinese education places greater emphasis on memorization, with corresponding differences reflected in the criteria for selecting college students. Accordingly, it should not be surprising if Chinese students are outperformed to some extent by their counterparts at Swarthmore on comprehension questions. Second, Chinese culture tends to be more practical than Western culture, as Bloom himself points out. This practical orientation may at least in part account for Chinese subjects' unwillingness to answer such questions as "If all circles were large and this small triangle 'Δ' were a circle, would it be large?" and "If the Hong Kong government were to pass a law requiring that all citizens born outside of Hong Kong make weekly reports of their activities to the police, how would you react?" (the latter being extremely unlikely in reality).

In some of Bloom's experiments, linguistic differences were confounded not only with cultural differences of the sort described above but with educational level as well. In the most blatant confounding, one experiment compared a group composed of hotel workers in Taiwan to students at the Taiwan National University. Bloom attributed the superior reasoning performance of the university students to their greater exposure to English. Clearly, however, this finding may simply reflect the relative educational levels of the two subject populations.

One of Bloom's experiments has a design that is free of confounding between language and culture. In this study, native Chinese-speaking Taiwanese subjects who knew English were tested on counterfactual reasoning twice, first on a paragraph written in Chinese,

then three months later on a supposedly equivalent paragraph written in English, with no feedback on the first test. Despite Chinese being their native language, these subjects pathetically achieved only about 6% correct on the Chinese version, but they achieved 86% correct on the English version! Since the comparison is within-subject, culture is ruled out as a source of confounding. These results therefore appear to provide evidence that there exists an area of thought that is highly dependent on the language in which it is expressed.

Error-riddled Translations

Indeed, these results would have been extremely strong evidence for Whorf's hypothesis had the Chinese materials been grammatical.¹ However, grammatical and idiomatic errors permeate Bloom's Chinese materials to greater and lesser degrees.² The nature of these errors has nothing to do with the counterfactual mode of thought being "un-Chinese." Since such errors are too numerous and miscellaneous to mention individually, I will classify them into four types and briefly discuss each type in turn.

Most critically for the counterfactual studies, in three of the four Chinese versions reproduced in Bloom's appendix, including the version used for the within-subject experiment mentioned above, an auxiliary was systematically omitted throughout the paragraphs. The omission was such that the English equivalent of the counterfactual sentences would say, for instance, "Bier could not read Chinese, but if he had been able to read Chinese, then he certainly [omitted character] *discovered* that those Chinese philosophical works were relevant to his own investigations" (italics mine). The missing character in the then-clause, "hui," has the equivalent effect of the English "would" or "would have." Each of the passages was in the form, "X was not the case, but if X was, then would Y, would Z, would W, etc.," and the auxiliary "hui" was omitted in each of the then-clauses. This occurred four times in the first story, five in the second, and six in the third. (The above stories were respectively 6, 7, and 12 lines long.) Since the resulting ungrammatical passages anomalously asserted that a series of counterfactual actions was in fact taken, the subjects might well have been puzzled on the issue. In fact, Bloom reported that many of the Chinese subjects who responded correctly to the above Chinese versions wrote the words "would have" in English in the margin of the Chinese materials, suggesting that they had noticed the error and were indicating to the investi-

gator (surely a non-native, since no native speaker could have made such an error) that they were choosing to resolve the contradiction in the paragraph by assuming an error there. Bloom, however, proceeded to interpret the subjects' spontaneous insertions as an indication that those English words "helped them to maintain a conscious involvement in the counterfactual mode of thought" (pp. 24–25). The dramatic difference shown by the Chinese subjects in their performance on Chinese and English versions of the same story, rather than being a reflection of language-dependent modes of thought, may simply be a reflection of Bloom's failure to construct grammatical and idiomatic Chinese materials.³

The fourth counterfactual story in the appendix (p. 97) did not make this systematic error (although it contained other linguistic errors, some of which I will point out). Along with this improvement in grammaticality and coherence, Bloom introduced other syntactic and semantic changes that might have further increased the salience of the counterfactual interpretation. Chinese subjects performed far better on this version than on a similar but less grammatical version of the same story. For example, students in Taiwan were 63% correct on this version but were only 7% correct on the less grammatical one. Bloom suggested that this range of performance "define[s] the limits of Chinese counterfactual responding" (p. 27). It seems equally likely that the range defines the limits of the quality of Bloom's Chinese materials.

A second type of error was the omission and misuse of conjunctions that are the close equivalents of the English conjunctions "but," "and," "whereas," "then," and the conjunctive phrase "in contrast." Such errors—of which at least ten were scattered over Bloom's Chinese materials—obscured the logical structure of the stories and statements. For instance, the third sentence in the fourth counterfactual story said, "Bier could not read Chinese, [omitted conjunction] if he did, . . ." (p. 97). The conjunction "but" appeared at the corresponding position in the English version of the story.

The vagueness of the logical structure caused by the omission and misuse of conjunctions was compounded by the frequent occurrence of run-on sentences. Because of the lack of relative pronouns such as "who," "where," and "which" in the Chinese language, English sentences with relative clauses are typically broken down into separate sentences in Chinese translations. However, instead of having shorter sentences in his Chinese ma-

terials when such clauses appeared, Bloom linked English sentences into even longer sentences in Chinese. For instance, one of the Chinese versions of the story on Bier began, "Bier was an 18th century German philosopher, he liked to investigate the principles of the universe and the laws of nature, because there was some contact between China and Europe at that time, Chinese philosophical works could be found in Europe, but very few were translated" (p. 96). The above sentence, which was split into two sentences in the corresponding English version (p. 27), ought to have been split into three sentences in Chinese. Similar run-on sentences appeared in four other places in his Chinese paragraphs.

Finally, Bloom's use of words in Chinese was often unidiomatic or simply wrong. For instance, one of his Chinese instructions for entification said, "Please read the following two examples, and write the following three sentences according to the *situation* in the examples" (p. 99, italics mine). Bloom presumably meant "principle" rather than "situation." In a story testing the effect of entification, the following clause appeared in the Chinese version: "the original relation between was reversed" (p. 100). As in English, the Chinese word for "between" is a preposition that takes two objects. A story in an experiment on entification began, "A recent report on pollution stated: There exists a certain relationship between living in a polluted environment and getting lung disease" (p. 100). Subjects were subsequently asked a question on a prediction based on the relationship. However, the word "relationship" has different default meanings in English and Chinese. Whereas a correlational "relationship" in English is by default a positive one, the Chinese term is neutral. Since Bloom did not specify the direction of the relationship anywhere in that story, the answer to the question was left ambiguous.

Other errors, such as the unidiomatic ordering of phrases and clauses, are difficult to explain to nonspeakers. In general, Bloom's Chinese materials were too poorly written to allow any meaningful comparison between performance on his English and Chinese versions.

To Bloom's credit, it should be noted, the language that he chose for comparison with English is one spoken by a quarter of the world's population. It is reassuringly a horse, even if to nonspeakers it appears to be clad in ghost's clothing.

Potential Tests of Whorf's Hypothesis

Bloom pointed out that linguistic effects on thinking are least likely to be found in percep-

tually tied areas such as color categorization and color memory. Instead, such effects are most likely to be found in tasks in which successful performance depends on information that cannot be represented in perceptual terms, and on linguistic labels that provide highly complex, abstractly derived perspectives on reality that we are unlikely to construct without their aid—for example, tasks involving counterfactual thinking. Unfortunately, however, the latter class of tasks are precisely those in which culture and language are most likely to be confounded.

Although the effect of language on thought is elusive, it need not be discouragingly so. The effects of culture and language can theoretically be unconfounded. One possible remedy is to test bilingual subjects in two languages. Although Bloom's attempt at testing bilingual subjects failed, its errors were tractable. This design has a limitation in that null effects may be uninformative (since subjects are capable of translating the given materials between the two languages). Nonetheless, this limitation can potentially be overcome by measuring the time required for the task. The design carries certain constraints. First, subjects' relative fluency in the two languages must not be such that differences in performance are attributable to it. Second, not only must materials in both languages be grammatical and idiomatic, they must also be as clearly written as possible in each language, even if this implies that the versions are not literal translations of each other. After all, even subjects who are given two versions of different clarity in the *same* language may show better performance on the more clearly written version. Such a difference obviously does not demonstrate that language shapes thought.

When comparisons are made between groups of subjects from different cultures, the effect of language may be confounded by possible differences in the intelligence and the educational experience of the groups. To control for the effect of test-taking abilities resulting from such factors, subjects should be tested on materials that might be expected to facilitate thinking in each of the languages. For example, besides being asked questions on counterfactual material, English- and Chinese-speakers should similarly be asked questions involving implication. Whereas the conditionals "if" and "if and only if" are not distinguished in everyday English, both being expressed by the conjunction "if," they are often expressed in two different forms in everyday Chinese. If linguistic labels do affect thinking, Chinese-speakers would be expected to outperform their English-speaking counterparts on mate-

rials involving implication, just as English-speakers would be expected to outperform Chinese-speakers on materials involving counterfactual reasoning. If these differences between groups are in fact opposite in direction, depending on the type of material, they would not be attributable to subjects' differential abilities in test taking.

More generally, the issue of the effect of language on thought can be decomposed into several subissues. First, if thought is indeed dependent on language, is the dependency based on social interaction or is it cognitive? Some thoughts may be more clearly communicated in one language than in another. Moreover, by making certain perspectives on reality salient, the structure of a language may shape the development of thought just as culture in general shapes the development of thought: through the communication of ideas from one individual to another. Neither of these two reasons need imply that there exist some areas of thought that have no level of internal representation in the mind more abstract than the level of linguistic symbols. Even in a case where an idea is made salient through the structure of a language rather than its content, as the counterfactual realm is made salient through the subjunctive mood in English, once the idea is communicated, it may be internally represented more abstractly, in terms independent of the subjunctive mood. And it may be at this more abstract level that thought operates. Since all of Bloom's experiments depended on comprehension, they could not possibly distinguish between social and cognitive effects of language. To separate these effects (which of course need not be mutually exclusive), one would have to include a task that ensures that subjects do comprehend the materials before requiring them to do some mental operation such as making inferences or recalling the materials. Differences in difficulty may arise in the comprehension phase or the thinking phase.

If some areas of thought necessarily operate on linguistic symbols, then two further questions arise. First, there seems to be no *a priori* reason for expecting the effect of language on thought to be limited to symbols in natural languages. Is thought dependent on symbols in general, including nonlinguistic symbols such as those in mathematics? It would be less difficult to avoid confounding by culture in investigating the effect of such symbols on thought. Second, even though some areas of thought may operate on symbols, are natural languages powerful and protean enough that the particular choice of symbols in many languages never imposes limitations on thought?

Although Bloom's studies provide no evidence regarding the impact of language on thought, his studies may have aroused sufficient interest that new light will be shed on Whorf's hypothesis.

Notes

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¹Besides the ungrammaticality of the materials, this experiment is flawed in design. The ordering of the presentation of Chinese and English versions of the story was not counterbalanced. Since the English version always followed the Chinese, it is not clear how much of the subjects' improvement on the English version was due to their encounter with the story a second time. To control for the effect of repeated exposure, Bloom should have included a group of similar subjects who received the Chinese version twice. For related empirical results on the comparison of Chinese and English counterfactuals, see Au (1983).

²The grammatical and idiomatic errors mentioned summarize the judgments of five college-educated native speakers of Chinese, including two instructors of Chinese at the Department of East Asian Languages at the University of Michigan.

³Bloom in fact mentioned in a footnote that several Chinese linguists and other informants had suggested that he include the auxiliary "hui," and that when the phrase "y ding hui" (meaning "certainly would") was used, subjects did find the paragraphs somewhat more fluent. He also mentioned that the inclusion of that phrase did not exert any appreciable effect on overall inclination to respond counterfactually. (Neither the paragraph used in this test, nor the exact test results, were reported.) Given the blatant self-contradictory nature of the Chinese stories with the omission of "hui," it would seem that the only reason for the correction of that error not to have had any appreciable effect is that there were too many other errors in the paragraph, resulting in a loor effect.

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