

What Does a Good Academic Writer Really Do?

Linda Ann Kunz
LaGuardia Community College, CUNY

Liza Sunderlin
Kingsborough Community College, CUNY

Surprise!

For years we have taught ESOL writers The Formula— introduction, body, conclusion; thesis and main points; topic sentence and illustration; Never start a sentence with *and*, *but* or *so*; use transitional words and phrases like *Moreover*, *However* and *Therefore* instead; Never write a sentence fragment; Never use dashes; Never say *I...*—and we have been paid back with dreary writing that falls far short of our students' enthusiasm and abilities. Read the attached summary of Eli Hinkel's article *Simplicity without Elegance* and you will recognize this kind of writing.

Good academic writers simply don't do what we make students do. In the six samples attached, you will find nary a *Moreover*, *However* or *Therefore* and only one of the 12 linkers most used by our students. Instead, these writers use *and*, *but* and *so*. And they use them to start sentences. No sample has an opening paragraph of more than two sentences; four of the six have no conclusion at all. None reiterates facts or ideas already mentioned. Topic sentences? Look for yourself.

Who are they and where do the samples come from? **John Rosenthal**, executive editor of *The New York Times Almanac* and former ESOL teacher: "Corpus Linguistics," an On Language column in *The New York Times*. **David Crystal**, author of 95 books on language, knighted by the Queen of England for his contribution to the study of English: from the introduction to *The Language Revolution* (2004). **Steven Pinker**, Peter de Florez Professor of Psychology at MIT, author of *The Language Instinct*: from *The Blank Slate* (2002). **Brian Greene**, professor of physics at Columbia University, author of *The Elegant Universe*: *New York Times* op ed (9/30/05), "That Famous Equation and You." **Mark Mathabane**, author of *Kaffir Boy*: *New York Times* op ed, "Appearances Are Destructive." **Luis Alberto Urrea**, professor of English at the University of Illinois-Chicago, author of *The Devil's Highway*: *New York Times* op ed (10/2/05), "City of the Big Gaps."

And what makes these writers good? It's the same thing that makes art good. 50 years ago, this great principle was first stated by poet and philosopher Eli Siegel:

All beauty is the making one of opposites, and the making one of opposites is what we are going after in ourselves.

Academic writing is beautiful when it puts together simplicity and complexity, lucid generalizations and compelling details. These six samples have sentences as unadorned as a three-word trunk (subject and predicate) and as complex as Pinker's 85-word gem of parallel structures. They use straightforward surface connectors like *and*, *but* and *so* while at the same time embedding clauses within phrases, phrases within clusters, like so many Russian dolls. They add copious extra information via inserts instead of through whole additional sentences or trunks. They collapse descriptions into pre- and post-modifiers thereby using the verb *be* minimally. They choose single words instead of multiples: *unabated* instead of *without end*, *clumped* instead of *drew together*. They don't use jargon.

All of these features make the samples more comprehensible, more enjoyable to read. They show the writers really want us to understand what they're saying. So purpose is the simplest thing of all: read and understand. Try the last eight sentences of Brian Greene's speculation about the future of the universe. You'll get it.

author	Crystal	Greene	Mathabane	Pinker	Rosenthal	Urrea
# words	1430	901	579	648	1034	628
# sentences	58	42	25	23	48	32
average # wps	24.6	21.4	23.2	28	21.5	19.6
shortest sentence	3	3	9	7	7	3
longest sentence	54	55	48	85	45	52
initial linkers	<i>Indeed,</i>	<i>Instead,</i>	0	<i>At the same time,</i> <i>In the same way,</i>	<i>For example,</i> <i>Actually,</i>	0
rovers	<i>, after all,</i> <i>, for example,</i> <i>, in any case,</i> <i>, in effect,</i> <i>, indeed,</i> <i>, likewise,</i>	0	0	<i>, of course,</i>	<i>, for example,</i> <i>, on the other hand,</i> <i>, meanwhile,</i>	<i>, after all,</i> <i>, perhaps,</i>
seq. signals	<i>First</i> <i>Then</i>	0	0	0	<i>Then</i>	0
initial <i>And</i>	3	1	1	1	1	2
initial <i>But/Yet</i>	3	5	0	0	2	3
initial <i>So</i>	0	0	0	0	0	0
FRAGMENTS	2	0	0	0	0	1
dashes	20	11	1	4	1	3
parentheses	2	1	0	2	4	0
1st person refs	9	2	10	0	0	3
2nd person	2	6	0	0	7	2
inserts	26	15	5	8	15	8
parallel structures	23	11	15	10	14	8

A Summary of Simplicity Without Elegance: Features of Sentences in L1 and L2 Academic Texts

Eli Hinkel
Seattle University

This article first appeared in the TESOL Quarterly, Vol. 37, No. 2, Summer 2003. The original is 27 pages long.

In his overview of research into L2 academic writing, Silva (1993) points out, "There seems to be a clear need for more extensive treatment of textual concerns...It may also be necessary for L2 writing teachers to work to enhance their writers' grammatical and lexical resources" (p. 671) to allow students to build a syntactic and lexical repertoire with which to produce more sophisticated academic texts. One of the difficult issues in teaching academically bound ESL students to produce appropriate academic written text is that research has not established with certainty what specific syntactic and lexical features, when taken together, can create an impression of a seemingly simplistic or reasonably sophisticated text in written L2 discourse. This article...identifies the grammar and vocabulary constructions that may create an overall impression of textual simplicity in texts written by nonnative English speakers (NNSs) relative to those written by native speakers (NSs) and that that may therefore reflect negatively on the quality of L2 academic essay text....

Hinkel looks at studies that compare conversational and written registers... For NNS students in U.S. universities, exposure to and experience with L2 spoken and formal written registers may represent a key lexical consideration that can ultimately determine the types of syntactic and lexical features such students employ in L2 essays. In a recent study, Shaw and Liu (1998) examined issues of textual simplicity and complexity in academic essays written by NNS university students. Shaw and Liu's study, based on pre- and posttest essays written by 164 speakers of 23 languages, found that the students' uses of informal linguistic features actually increased in frequency with greater exposure to the spoken register in English and despite intensive academic writing instruction. On the other hand, the researchers did not identify a similar increase in the use of

textual features of "academic style" (p. 246), which are considered to be lexically and syntactically complex (e.g. subordinate clauses), whereas the rates of occurrence of spoken and informal syntactic and lexical features (i.e., informal vocabulary items such as *a lot*, *because of* and *so*) increased significantly. The study concludes that in English for academic purposes programs in English-speaking countries, students are exposed to formal English writing but also have much contact with informal conversational discourse. The authors point out that L2 learners become adept at employing the features of the conversational register without developing register differentiation skills.

In the past two decades, corpus analyses of spoken and written text in English have made great strides in identifying the contextual meaning and functions of syntactic and lexical features that are prevalent in the conversational genre and that can make written academic text appear to be particularly simple. According to Biber et al. (1999), for example, compared with frequencies of lexical items in any other register (e.g. fiction or news), the conversational register shows a clear preference for simple nouns and noun phrases, and derived nouns are by far the least common in conversations...

Hinkel characterizes "simple syntactic and lexical features"... Constructions with *be* as a main verb can have copula or existential functions and usually mark a static informational style in written prose (Quirk et al., 1985). An example (from a text written by a Korean NS) is *In Korea, some families are very rich, and their children are lazy because they don't have to do anything*. Biber (1998) calls these "non-complex constructions" (p. 228) because they have reduced information content and are characteristic of spoken discourse...

Vague nouns (e.g. *guy*, *man*, *people*, *society*, *stuff*, *thing*, *woman*, *world*) represent one of the

most prominent features of conversational genre and lexically simple prose; for example, *When people grow up, they begin their way in the society, and they have to remember all the things their parents taught them* (from a text written by a Chinese NS). [This section goes on to classify the simplest public, private, expecting and tentative verbs like *argue, explain, promise, say, speak; know, learn, think, feel, hope; expect, like, try, want.*]

Hinkel describes the subjects and corpus... Of the 206 NSs whose essays were analyzed, 89% were first-year students enrolled in required first-year regular composition classes at private universities. The other 11% were similarly enrolled in first-year composition classes in a public university in the Midwest...All of the 877 NNSs were international students (NSs of Chinese, Japanese, Korean, Indonesian, and Arabic) who had achieved a relatively high level of L2 proficiency with TOEFL scores ranging from 545 to 603 (an average of 577)... The corpus consists of 322,750 words in 1,083 essays written by speakers of six L1 groups...

Hinkel describes the results of the analysis... (U)ses of *be*-copula as the main clause verb were significantly more common in NNS than NS texts. In fact, in the essays of Korean speakers the median frequency percentage rates of this feature were almost twice those in the prose of native English speakers, and in the texts written by speakers of Japanese and Indonesian, the median rates exceeded those of English speakers by over half the median rate. In many cases L2 writers relied on *be*-copula and the resulting stative descriptions to advance and support their claims practically to the exclusion of alternative means of essay development.

In Example 1, the NNS writer explains his position on whether parents should allow their children to form their own opinions by means of relatively static exposition:

1. *Children's opinions are always a controversial topic. Children are important to their parents, and some believe that older children are mature enough to flourish their opinions without parents' interference. Some argue that children are incapable of distinguishing right from wrong, and therefore it is the responsibility for parents to construct their children's opinions. The two beliefs are contradictory to each other, and many parents are anxious about this dilemma.* (Chinese NS)...

Predicative adjectives play an important role in descriptions provided in L2 texts. The essays of all five NNS groups contained significantly higher rates of predicative adjectives than those of native English speakers. Specifically, in the prose of all NNS writers, the mean frequency

rates of predicative adjectives were twice those in the NS essays or even higher. The range data further show that in some NNS texts, predicative adjectives represented at least 10% of the total number of words, and in essays of Korean speakers, more than 20% of all words. Example 2 illustrates the key role of these simple and stative descriptive features of NNS texts.

2. *People think that a teacher and students must be serious and diligent in the classroom. I understand the idea, and I think that learning is significant to keep up. In a serious class, people are sleepy or unattentive. If people are unattentive in the class, learning is hard for students. In contrast, if people think that the lesson is enjoyable, most people have interest in the class and the subject. In general if people have interest in the class and the subject, the lesson that is enjoyable is better than a serious lesson. Also, teachers are usually more friendly in the classroom that is joyful for students than a serious classroom. If teachers are friendly, most students feel more comfortable to ask a question to the teacher. In most cases, if the lesson is serious, the teacher is serious, too.* (Japanese NS)...

Vague nouns occurred in L2 texts significantly more often than in NS prose for all groups of NNS writers...

9. *People always study hard to get a good grade. People try to get a better grade, as well as they can, and do all the things in class. In my opinion, I disagree with the opinion that said grades do encourage learning. Because I think that if people get a good grade, it shows they have learned a lot about this lesson and did all the things. This is an example about grades encourage learning. When people get a bad grade, it means that they haven't learned all about their lessons, so that they fail in the final exam and they must take their class again. Grades are important in learning because from their grades people can see whether they have learned about their lessons or not.* (Indonesian NS)...

Public, private, and expecting/tentative verbs are very common and lexically simple...[The article also notes the lexical, ideational, and syntactic redundancies and the syntactic and lexical simplicity of the L2 text as in Example 13:]

13. *People can learn in many different ways. Some people learn well when the subject is presented in a situation that is serious. I learn well in a class that is formal because I can think more deeply about the subject, and it helps me to remember the material easier. Then I won't forget it easier and think about it for a long time. My sister told that when she learns something, there are visual aids beside the information, she can understand the subject better. I feel that I can understand the subject better in one way, and my sister can see it better in another. This is because different people learn in different ways.* (Indonesian NS)...

John Rosenthal, *Corpus Linguistics*

"On Language" *The New York Times Magazine*, 8/18/02 (1034 words)

¹Linguists can generally be divided into two groups: prescriptivists, or those who hold that language is governed by fixed rules of grammar, and descriptivists, or those who believe that patterns of actual usage reflect the way the language is used. ²In extremely broad strokes, if prescriptivists are anal retentive, then descriptivists are free-to-be-you-and-me.

³Descriptivists often accuse prescriptivists of being overly wedded to arcane rules of grammar, continuing to insist on tortured parsings like "It is I" or "Whom shall I say is calling?" ⁴Prescriptivists are loath ever to split infinitives (Captain Kirk be damned). ⁵And a sentence ending in a preposition is a grammatical transgression up with which they will not put. ⁶The usual author of this column is often accused of being a prescriptivist.

⁷Prescriptivists, on the other hand, believe that descriptivists are paving the way to a linguistic hell, one in which English teachers will have no more say over correct usage than surfer dudes. ⁸The prescriptivists worry that giving up on "whom" is a step down a slippery slope that will ultimately have us all speaking ebonics, and they won't stand for it.

⁹For years, when it came to settling language disputes, the prescriptivists have held the upper hand. ¹⁰Their thick volumes contained unequivocal rules of grammar, which they could look up at any time. ¹¹Descriptivists, meanwhile, typically, have had to rely on what "sounds" more natural. ¹²They have used "the English you hear on the nightly news" as their polestar.

¹³But with the advent of the computer, the balance of power is shifting. ¹⁴That's because the computer now makes it infinitely easier to track patterns of English usage and catalog them for use as reference material. ¹⁵Finally, the descriptivists have an empirical source of verbal ammunition: concrete examples of how the language is actually used.

¹⁶The collection and study of millions of such examples of actual usage is known as corpus linguistics, the study of a body of language.

¹⁷The idea of a corpus is nothing new. ¹⁸Samuel Johnson used a corpus of English texts in the 18th century to compile his dictionary, and linguists around the world have relied on corpora since the 1960s in their efforts to document hundreds of languages.

¹⁹What is new is the computer, which allows much more expansive and detailed investigation into language usage. ²⁰If the field of corpus linguistics was once a bicycle, the computer has turned it into a motorcycle.

²¹"Actually, it wasn't even a bicycle before the computer," says Susan Conrad, co-author of *Corpus Linguistics: Investigating Language Structure and Use* and a professor of applied linguistics at Portland State University. ²²"It was more like walking. ²³It was just too time-consuming to analyze a large body of data by hand. ²⁴The computer allows us to look at a large body of data and analyze language patterns."

²⁵Computers not only make it possible to expand corpora to millions of words; they also can be programmed to act as something of a verbal spreadsheet. ²⁶If so instructed, computers can identify every word in a corpus by its part of speech, its location in a sentence, the words that surround it and its meaning (for homographs and words with multiple definitions). ²⁷Computers can distinguish between written and spoken English and can identify words by the age, sex and geographic region of their author or speaker.

²⁸Once of interest only to grammarians and textbook authors, corpora are increasingly useful to anybody with an interest in knowing what people actually say: authors, editors, playwrights, advertising copywriters, English teachers and even members of the Gotcha! Gang.

²⁹Maybe you're the grammatically challenged singer-songwriter Joan Osborne, and you desperately want to know: What if God was one of us? ³⁰Would he insist on using the unreal conditional tense (What if God were one of us?), or would he just let it slide because hardly anybody remembers this arcane rule?

³¹"Businesses may be interested in corpora to see what technical language looks like," says Randi Reppen, director of the intensive English program at Northern Arizona University.

³²"They may want to learn how they can teach their employees to use language that is more common."

³³Reppen is the project manager for the American National Corpus, a huge undertaking sponsored by a consortium of publishers, software companies and academics, including Pearson, Microsoft, Sony and the Universities of California, Colorado and Pennsylvania, among many others. ³⁴When it is completed, the corpus will contain more than 100 million words, chosen from a broad selection of contemporary written and spoken texts—everything from books, magazines and newspapers to face-to-face conversations in drugstores and Laundromats that have been recorded and transcribed by researchers.

³⁵Based on a similar corpus of British English created in 1994, the American Corpus will provide a definitive portrait of how the English language is used in the United States today.

³⁶The first installment of 10 million words is scheduled for release this fall and will be available to anybody with Internet access. ³⁷Say, for example, you're writing advertising copy, and you want to know whether most people still use "I couldn't care less" or opt instead for the easier (but nonsensical) "I could care less."

³⁸You'll simply hop on the Web, enter the phrase "could care less" and count the occurrences in the corpus. ³⁹Then you'll do the same for "couldn't care less" and compare the number of hits. ⁴⁰"You could choose to limit your search to spoken language or to newspapers or even to academic writing," Reppen says.

⁴¹Smaller scale corpora are already shedding light on the English language, a development that the American National Corpus is sure to accelerate. ⁴²For example, linguists have long known that people don't edit themselves for grammar when they speak. ⁴³But the University of Michigan's Corpus of Academic Spoken English also reveals that "um" and "uh" are the 14th and 15th most common utterances around Ann Arbor.

⁴⁴Corpus linguistics is also giving descriptivists the most powerful weapon of all: the ability to thumb their nose at rules of grammar nobody uses anymore. ⁴⁵"Nobody owns the language," Conrad says. ⁴⁶"Most of the prescriptive rules are really arbitrary. ⁴⁷Why not end a sentence with a preposition? ⁴⁸It was just somebody writing a book who made that rule up."

from David Crystal, *The Language Revolution*

(1,430 words)

¹The year 2000 marked the end of a decade of linguistic revolution. ²The new century must deal with its consequences.

³Few people noticed at the time. ⁴But then, language change is like that—taking place slowly and subtly, unpredictable in its outcome, and recognized only after some time has passed. ⁵Most of us take language very much for granted, in any case, and are not used to bringing it into the forefront of our attention. ⁶And as revolutions affecting language do not happen very often in human history, it isn't obvious what to look out for when one does come along. ⁷Even the language professionals—the practitioners of linguistics—took until the end of the decade to draw public attention to the unprecedented nature of the various events they were observing. ⁸And we still lack integrated accounts of what happened—this book is a first attempt. ⁹But once we stand back and reflect on the dramatic linguistic changes which took place during the 1990s, the case that we are living at the beginning of a new linguistic era is, I believe, unassailable.

¹⁰You might have guessed that Something Was Up if you had noticed that 2001 was designated the European Year of Languages. ¹¹This was the first time a whole year had been devoted to languages, and though it was being celebrated only in Europe, it was ambitiously general in its aims. ¹²It was not, after all, called the year of European Languages—in the sense of “languages indigenous to Europe.” ¹³All languages spoken in Europe were included in its remit—and that meant dozens of African and Asian languages used by minorities all over the Continent. ¹⁴It was a year which focused on the importance of language as an expression of cultural identity, as a medium of international and national intelligibility, and as a means of enabling individuals and countries to open doors to a wider cultural and commercial world. ¹⁵It might just as easily have been called the European Year of Language. ¹⁶The acronym would have been the same: EYL.

¹⁷Many events took place in many countries during the year, and one of the outcomes was the

establishment of 26 September as an annual World Language Day, to keep public attention focused on the importance of plurilingualism—or, if you prefer, multilingualism—and foreign language learning. ¹⁸It was the second such decision. ¹⁹In 1999, UNESCO had already created 21 February as International Mother Language Day—a date which commemorated the deaths on that date in 1952 of five students defending the recognition of Bangla as a state language of former Pakistan (now Bangladesh). ²⁰Here too the aim was to protect and promote linguistic diversity and multilingual education. ²¹Two “days” devoted to language within three years! ²²Languages had never received such limelight before. ²³Was it a coincidence that the momentum for such outcomes gathered pace so successfully during the mid-nineties? ²⁴If a language revolution was taking place, then probably not. ²⁵This is precisely the kind of practical outcome we would expect to see if people were deriving fresh motivation and enthusiasm from a growing sense of new linguistic energies.

²⁶I do not believe that “revolution” is too strong a word for what has been taking place. ²⁷A “revolution” is any combination of events which produces a radical shift in consciousness or behaviour over a relatively short period of time, and this is what has happened. ²⁸There are always continuities with the past, but these are outweighed by the emergence of a genuinely fresh perspective. ²⁹In the context of an individual language, revolutions are rare. ³⁰In the history of English, for example, we might identify two, only, since the arrival of the language in Britain in the fifth century. ³¹First, in the early Middle Ages, there was the combination of linguistic developments and sociopolitical factors which around the eleventh century changed Old English to Middle English, with very different grammar, and an admixture of Romance elements that profoundly affected spelling and vocabulary—a revolution which took us, in effect, from *Beowulf* to Chaucer. ³²Then there was the period in the fifteenth century which took us from Chaucer to Shakespeare, resulting in an Early Modern

English which was very different from its Middle English predecessor in grammar, sound and spelling, and characterized especially by the standardizing effect of printing and the cumulative impact of the Renaissance, with its vast influx of classical vocabulary.³³ Since Shakespeare, the language has developed steadily, but its character has not been radically altered—as is evidenced by the fact that we can go to a Shakespeare play and understand most of what we encounter.³⁴ It is patently “the same” language—an intuition we do not have so comfortably when we encounter Chaucer, and not at all when we try to read *Beowulf*.

³⁵Many other languages have displayed their own periods of revolutionary change, but these have occurred in different times and for different reasons.³⁶ The wars, alliances and political revolutions that cause massive social (and thus linguistic) change do not follow any shared or predictable timetable.³⁷ The French Revolution had major consequences for both French and the minority languages of France but little linguistic impact elsewhere.³⁸ The Russian Revolution, likewise, led to policies which seriously affected the maintenance of regional and minority languages in the Soviet Union; but again, with negligible impact outside.³⁹ It is unusual to find changes which are so broad in their implications that they affect groups of languages, and extremely rare to find changes which are so global that they affect all languages.⁴⁰ Indeed, to illustrate the last point we have to alter the level of the illustrations and refer to the arrival of new media—such as writing, printing, telephony and broadcasting—whose influence on the character of languages has been universal.⁴¹ The Internet is the latest of these media, and its impact in language—as we shall see in chapter 3—has been the most revolutionary of all.⁴² This is a case where there is so little continuity with previous communicative behaviour that the term “revolution” is especially well motivated—and, indeed, is in danger of being overused.

⁴³What makes the second half of the twentieth century—and the 1990s in particular—a highly significant period in the history of language is that we can find there a coming together of three major trends, each global in its implications, which

together have fundamentally altered the world’s linguistic ecology.⁴⁴ It is the combined impact of these trends, affecting all languages in unprecedented ways, which warrants my use of the epithet “revolutionary.”⁴⁵ I have written separately on each of them, but this is the first attempt to bring them together into a single frame of reference, and to explore the consequences for the future of languages in particular and of language in general.⁴⁶ In *English as a Global Language* (1997), I discussed the reasons for the emergence of English as the world’s first truly global language, and the dramatic effect this newfound status is having on English itself.⁴⁷ The future of English is not as clear-cut as might be assumed—an argument I review in chapter 1.

⁴⁸*Language Death* (2000) presented the crisis facing huge numbers of languages which are currently endangered or dying, and reported the fresh initiatives being taken towards prevention and regeneration.⁴⁹ Here we are faced with the probable loss this century of at least half the world’s languages, raising issues which are taken up in chapter 2.⁵⁰ And in *Language and the Internet* (2001), I examined the radical effect on language of the arrival of Internet technology, which has supplemented spoken and written language with a linguistically novel medium of communication, and raised fresh questions about the way language will continue to evolve.⁵¹ These issues are reviewed in chapter 3.

⁵²The three topics are usually discussed separately, as these books illustrate, with points of interconnection referred to only in passing.⁵³ When we examine them together, and focus on the interrelationships, we encounter a vision of a linguistic future which is radically different from what has existed in the past.⁵⁴ It is a future where we will need to revise many cherished concepts relating to the way we think about and work with languages.⁵⁵ Some pointers towards the nature of the revision are brought together in chapters 4 and 5.⁵⁶ The concerns turn out to be general, going well beyond the responsibilities of linguists, language teachers and others professionally engaged in the language “business,” and involving sectors of society not traditionally considered to have much connection with linguistic affairs.⁵⁷ But that is the nature of revolutions.⁵⁸ They affect everyone.

¹The English language was shaped by broad historical events that did not take place inside a single head. ²They include the Scandinavian and Norman invasions in medieval times, which infected it with non-Anglo-Saxon words; the Great Vowel Shift of the fifteenth century, which scrambled the pronunciation of the long vowels and left its spelling system an irregular mess; the expansion of the British Empire, which budded off a variety of Englishes (American, Australian, Singaporean); and the development of global electronic media, which may rehomogenize the language as we all read the same web pages and watch the same television shows.

³At the same time, none of these forces can be understood without taking into account the thought processes of flesh-and-blood people. ⁴They include the Britons who reanalyzed French words when they absorbed them into English, the children who failed to remember irregular past-tense forms like *writhe-wrothe* and *crow-crew* and converted them into regular verbs, the aristocrats who affected fussy pronunciations to differentiate themselves from the rabble, the mumblers who swallowed consonants to leave us *made* and *had* (originally *maked* and *haved*) and the clever speakers who first converted *I had the house built* to *I had built the house* and inadvertently gave English its perfect tense. ⁵Language is re-created every generation as it passes through the minds of the humans who speak it.

⁶External language is, of course, a fine example of culture, the province of social scientists and scholars in the humanities.

⁷The way that language can be understood at some half-dozen connected levels of analysis, from the brain and evolution to the cognitive processes of individuals to vast cultural systems, shows how culture and biology may be connected.

⁸The possibilities for connections in other spheres of human knowledge are plentiful, and

we will encounter them throughout the book.

⁹The moral sense can illuminate legal and ethical codes. ¹⁰The psychology of kinship helps us understand sociopolitical arrangements. ¹¹The mentality of aggression helps to make sense of war and conflict resolution. ¹²Sex differences are relevant to gender politics. ¹³Human aesthetics and emotion can enlighten our understanding of the arts.

¹⁴What is the payoff for connecting the social and cultural levels of analysis to the psychological and biological ones? ¹⁵It is the thrill of discoveries that could never be made within the boundaries of a single discipline, such as the universals of beauty, the logic of language, and the components of the moral sense. ¹⁶And it is the uniquely satisfying understanding we have enjoyed from the unification of the other sciences—the explanation of muscles as tiny magnetic ratchets, of flowers as lures for insects, of the rainbow as a splaying of wavelengths that ordinarily blend into white. ¹⁷It is the difference between stamp collecting and detective work, between slinging around jargon and offering insight, between saying that something just is and explaining why it had to be that way as opposed to some other way it could have been.

¹⁸In a talk show parody on *Monty Python's Flying Circus*, an expert on dinosaurs trumpets her new theory of the brontosaurus: ¹⁹"All brontosaurus are thin at one end, much thicker in the middle and then thin again at the far end."

²⁰We laugh because she has not explained her subject in terms of deeper principles—she has not "reduced" it, in the good sense. ²¹Even the word *understand*—literally "stand under"—alludes to descending to a deeper level of analysis.

²²Our understanding of life has only been enriched by the discovery that living flesh is composed of molecular clockwork rather than quivering protoplasm, or that birds soar by exploiting the laws of physics rather than by

defying them. ²³In the same way, our understanding of ourselves and our cultures can only be enriched by the discovery that our minds are composed of intricate neural circuits for thinking, feeling, and learning rather than blank slates, amorphous blobs, or inscrutable ghosts.

from Brian Greene, *That Famous Equation and You*

New York Times op ed, 9/30/05 (901 words)

¹During the summer of 1905, while fulfilling his duties in the patent office in Bern, Switzerland, Albert Einstein was fiddling with a tantalizing outcome of the special theory of relativity he'd published in June. ²His new insight, at once simple and startling, led him to wonder whether "the Lord might be laughing...and leading me around by the nose."

³But by September, confident of the result, Einstein wrote a three-page supplement to the June paper, publishing perhaps the most profound afterthought in the history of science. ⁴A hundred years ago this month, the final equation of his short article gave the world $E=mc^2$.

⁵In the century since, $E=mc^2$ has become the most recognized icon of the modern scientific era. ⁶Yet for all its symbolic worth, the equation's intimate presence in everyday life goes largely unnoticed. ⁷There is nothing you can do, not a move you can make, not a thought you can have, that doesn't tap directly into $E=mc^2$. ⁸Einstein's equation is constantly at work, providing an unseen hand that shapes the world into its familiar form. ⁹It's an equation that tells of matter, energy and a remarkable bridge between them.

...

¹⁰The standard illustrations of Einstein's equations—bombs and power stations—have perpetuated a belief that $E=mc^2$ has a special association with nuclear reactions and is thus removed from ordinary activity.

¹¹This isn't true. ¹²When you drive your car, $E=mc^2$ is at work. ¹³As the engine burns gasoline to produce energy in the form of motion, it does so by converting some of the gasoline's mass into energy, in accord with Einstein's formula. ¹⁴When you use your MP3 player, $E=mc^2$ is at work. ¹⁵As the player drains the battery to produce energy in the form of sound waves, it does so by converting some of the battery's mass into energy, as dictated by Einstein's formula.

¹⁶As you read this text, $E=mc^2$ is at work. ¹⁷The processes in the eye and brain, underlying perception and thought, rely on chemical reactions that interchange mass and energy, once again in accord with Einstein's formula.

...

¹⁸Its singular fame notwithstanding, $E=mc^2$ fits into the pattern of work and discovery that Einstein pursued with relentless passion throughout his entire life. ¹⁹Einstein believed that deep truths about the workings of the universe would always be "as simple as possible, but no simpler." ²⁰And in his view, simplicity was epitomized by unifying concepts—like matter and energy—previously deemed separate. ²¹In 1916, Einstein simplified our understanding even further by combining gravity with space, time, matter and energy in his General Theory of Relativity. ²²For my money, this is the most beautiful scientific synthesis ever achieved.

²³With these successes, Einstein's belief in unification grew even stronger. ²⁴But the sword of his success was double-edged. ²⁵It allowed him to dream of a single theory encompassing *all* of nature's laws, but led him to expect that the methods that had worked so well for him in the past would continue to work for him in the future.

²⁶It wasn't to be. ²⁷For the better part of his last thirty years, Einstein pursued the "unified theory," but it stubbornly remained beyond his grasp. ²⁸As the years passed, he became increasingly isolated; mainstream physics was concerned with prying apart the atom and paid little attention to Einstein's grandiose quest. ²⁹In a 1942 letter, Einstein described himself as having become "a lonely old man who is displayed now and then as a curiosity because he doesn't wear socks."

³⁰Today, Einstein's quest for unification is no curiosity—it is the driving force for many physicists of my generation. ³¹No one knows

how close we've gotten. ³²Maybe the unified theory will elude us just as it dodged Einstein last century. ³³Or maybe the new approaches being developed by contemporary physics will finally prevail, giving us the ultimate explanation of the cosmos. ³⁴Without a unified theory it's hard to imagine we will ever resolve the deepest of all mysteries—how the universe began—so the stakes are high and the motivation strong.

³⁵But even if our science proves unable to determine the origin of the universe, recent progress has already established beyond any doubt that a fraction of a second after creation (however that happened), the universe was filled with tremendous energy in the form of wildly moving exotic particles and radiation. ³⁶Within a few minutes, this energy employed $E=mc^2$ to transform itself into more familiar matter—the simplest atoms—which, in the course of about a billion years, clumped into planets and stars.

³⁷During the 13 billion years that have followed, stars have used $E=mc^2$ to transform their mass back into energy in the form of heat and light; about five billion years ago, our closest star—the sun—began to shine, and the heat and light generated was essential to the formation of life on our planet. ³⁸If prevailing theory and observations are correct, the conversion of matter to energy throughout the cosmos, mediated by stars, black holes and various forms of radioactive decay, will continue unabated.

³⁹In the far, far future, essentially all matter will have returned to energy. ⁴⁰But because of the enormous expansion of space, this energy will be spread so thinly that it will hardly ever convert back to even the lightest particles of matter. ⁴¹Instead, a faint mist of light will fall for eternity through an even colder and quieter cosmos.

⁴²The guiding hand of Einstein's $E=mc^2$ will have finally come to rest.

Mark Mathabane, *Appearances Are Destructive*

New York Times op ed (579 words)

¹As public schools reopen for the new year, strategies to curb school violence will once again be hotly debated. ²Installing metal detectors and hiring security guards will help, but the experience of my two sisters makes a compelling case for the greater use of dress codes as a way to protect students and promote learning.

³Shortly after my sisters arrived here from South Africa, I enrolled them at the local public school. ⁴I had great expectations for their educational experience. ⁵Compared with black schools under apartheid, American schools are Shangri-Las, with modern textbooks, school buses, computers, libraries, lunch programs and dedicated teachers.

⁶But despite these benefits, which students in many parts of the world only dream about, my sisters' efforts at learning were almost derailed. ⁷They were constantly taunted for their homely outfits. ⁸A couple of times they came home in tears. ⁹In South Africa students were required to wear uniforms, so my sisters had never been preoccupied with clothes and jewelry.

¹⁰They became so distraught that they insisted on transferring to a different school despite my reassurances that there was nothing wrong with them because of what they wore.

¹¹I have visited enough public schools around the country to know that my sisters' experiences are not unique. ¹²In schools in many areas, Nike, Calvin Klein, Adidas, Reebok and Gucci are more familiar names to students than Zora Neale Hurston, Shakespeare and Faulkner.

¹³Many students seem to pay more attention to what's on their bodies than in their minds.

¹⁴Teachers have shared their frustrations with me at being unable to teach those students willing to learn because classes are frequently disrupted by other students ogling themselves in mirrors, painting their fingernails, combing their hair, shining their gigantic shoes or comparing designer labels on jackets, caps and jewelry.

¹⁵The fiercest competition among students is often not over academic achievements, but over who dresses most expensively. ¹⁶And many students now measure parental love by how willing their mothers and fathers are to pamper them with money for the latest fads in clothes, sneakers and jewelry.

¹⁷Those parents without the money to waste on such meretricious extravagances are considered uncaring and cruel. ¹⁸They often watch in dismay and helplessness as their children become involved with gangs and peddle drugs to raise the money.

¹⁹When students are asked why they attach so much importance to clothing, they frequently reply that it's the cool thing to do, that it gives them status and earns them respect. ²⁰And clothes are also used to send sexual messages, with girls thinking that the only things that make them attractive to boys are skimpy dresses and gaudy looks rather than intelligence and academic excellence.

²¹The argument by civil libertarians that dress codes infringe on freedom of expression is misleading. ²²We observe dress codes in nearly every aspect of our lives without any diminution of our freedoms—as demonstrated by flight attendants, bus drivers, postal employees, high school bands, military personnel, sports teams, Girl and Boy Scouts, employees of fast-food chains, restaurants and hotels.

²³In many countries where students outperform their American counterparts academically, school dress codes are observed as part of creating the proper learning environment. ²⁴Their students tend to be neater, less disruptive in class and more disciplined, mainly because their minds are focused more on learning and less on materialism.

²⁵It's time Americans realized that the benefits of safe and effective schools far outweigh any perceived curtailment of freedom of expression brought on by dress codes.

Luis Alberto Urrea, *City of the Big Gap*

New York Times op ed, 10/2/05 (628 words)

¹Hurricane Katrina blew a young African-American football star to the Chicago suburb where I live.

²It's not just a White Christmas here in Naperville—it's white all year round. ³The parking lot of Naperville North High school is liberally larded with BMW's and pop-top sports cars. ⁴But A. J. Liddell's race has not affected the city's welcome to him and his family—the suburbs, too, want to help. ⁵That A.J. Liddell is a formidable football player has, perhaps, jacked up the enthusiasm. ⁶One fundraiser brought in more than \$14,000 for his family.

⁷But few of the hundreds, if not thousands, of poor evacuees now staring at Chicago's formidable towers are likely to enjoy the good fortunes of A.J. Liddell. ⁸And that's the larger story of the local economy: that in this era of outsourcing, housing bubbles and budget deficit paydowns, the traditional Chicago gap between haves and have-nots has eroded into a chasm.

⁹We are the city, you will recall, where just over a decade ago more than 700 people died in a heat wave. ¹⁰Read: poor people. ¹¹Read: poor old people of color. ¹²This year, when a potentially deadly repeat was forecast, the news media started to run panicky stories about how to cool yourself down if you didn't have air-conditioning. ¹³Think residents of the Cabrini-Green public housing complex sitting in tubs of cold water for eight hours.

¹⁴And now, with the cost of gas and heating oil on the rise, there is real worry that a classic Chicago cold snap would cause another tragedy among the same group. ¹⁵Gas prices in the Chicago area have risen this summer by double the usual percentage rate.

¹⁶But it's the malaise in the schools that reflects the sharpening of the class struggle during the Bush era.

¹⁷The majority of the evacuee children being absorbed here are not going to Naperville

North, but to places like the 21 Chicago public schools that have failed to meet state testing standards for six years, putting them in danger of being shut down under the Bush administration's No Child Left Behind law. ¹⁸That's 12 elementary and nine high schools in some of the neediest sections of this city. ¹⁹When the city frantically tries to restructure seven of these schools, it is also paying a consultant \$1.5 million to figure out what to do with the other 14. ²⁰If one of the elements of disaster is financial crisis, imagine the effect of over a million more dollars bleeding out—before the needs of the new students are met.

²¹Even in the affluent western suburbs, certain school districts have eliminated mandatory physical education in high school because there is no money for it. ²²Perhaps there should have been another law called "no child left on his/her behind."

²³This summer, the gap in pupil spending between the haves and the have-nots in Illinois widened substantially, with the top-spending district spending a whopping \$19,361 more per student than the lowest-spending districts in the state. ²⁴That's \$4,000 higher than last year and the biggest reported gap in 10 years. ²⁵You begin to see how education is the canary in this fiscal coal mine. ²⁶If you can't afford gym, if you can't afford special ed, if you can't afford lunches or books, how will you afford such innovative items as bilingual teachers, or texts, or English as a Second Language classes, or language labs? ²⁷Housing, counseling, heating oil?

²⁸The City That Works, as we like to call ourselves, does work. ²⁹The American Dream, I can assure you, works. ³⁰I come from a dirt street in Tijuana, after all. ³¹The eternal problem we must address, not just as a city, but as a nation, is equitable access. ³²How do we make the dream available to as many Americans as possible?