Abstract of "The Most Enduring Tool--Literally/Metaphorically"

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Anthropologists have noted that some stone blades and axes (such as the Acheulean and Chellean hand axes) were used continuously from 400,000 years ago to about 150,000 years ago. Subsequently, these stone axes were replaced by more sophisticated tools. Some anthropologists now refer to these tools as material metaphors or embodied metaphors because tools serve as extensions of the human body.

Linguistic metaphors are analogous to tools in the sense that they enable us to extend our minds. The basic structure of a metaphor involves a first noun phrase and a second noun phrase. The first noun phrase is related in a specific language to certain general assumptions concerning the second noun phrase. This theory of metaphor stresses the contextual relationships between the two noun phrases, and so it is called the relational theory of metaphor. It has more explanatory power than the traditional comparison theory of metaphor.

A specific metaphor may retain both noun phrases from the basic structure or delete one or both noun phrases in the final form of the metaphor that is actually spoken or written.

The presence or absence of metaphors in a literary work is significant. Works such as King Lear by Shakespeare contain vast networks of metaphors, while works such as Gulliver's Travels by Jonathan Swift tend to use plain, unmetaphorical language. Language in general also relies on large numbers of faded metaphors that are generally not recognized as metaphors.

Advanced tools and metaphors are both products of increased cognitive ability and connectivity in the human brain that probably resulted from two special mutations in human FOXP2, a gene that is also found in chimpanzees. In chimpanzees, however, the gene did not undergo the two mutations. These mutations took place within the last 200,000 years, and they probably ushered in the cognitive development that led to advanced tools and use of metaphors. Metaphorically speaking, metaphor is one of the most enduring mental tools.

About six or seven thousand years ago, humans invented writing, a skill that involves simultaneous use of implements and linguistic ability. Significantly enough, the center for speech in the human brain is adjacent to the center that controls motor functions essential for making tools. Material metaphors and linguistic metaphors may be linked neurologically, and the same kind of creative skill that produces material metaphors may also lead to literary metaphors.

The Most Enduring Tool--Literally/Metaphorically

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If human life as we know it is inconceivable without tools, it is worth asking: Which tools made by humans have been used for the longest time? "Stone blades and axes" may be a reasonable answer. More than forty years ago, anthropologists Ralph Beals and Harry Hoijer noted that the Acheulean hand ax (named after St. Acheul in France) "lasted through 400,000 to about 150,000 years ago."[1] Another stone ax, the Chellean (referred to as Abbevillean by some scholars), was also in use at the same time as the Acheulean. Will any of our contemporary tools come close to matching this record of 250,000 years of uninterrupted use?

In 2007, paleoanthropologist Clive Gamble noted: "The two revolutions Human [starting 300,000 years ago] and Neolithic [starting 15,000 years ago] have a cast of characters; among them farmers, hunters, anatomically modern humans and hominins. The last is now the widely used term to describe us, Homo Sapiens, and all our fossil ancestors. The more familiar hominid that it replaces includes us, our fossil ancestors, and the great apes."[2]

Gamble went on to ask: "Where would the human revolution be without stone blades? ....[T]he production of blades is only one variant in...core technology....[that] brings together skills, knowledge, and technique....Cores are also a good example of a material metaphor where the body provides an understanding of the skills and technique involved."[3]

The term material metaphor suggests a new use of the word metaphor. In his review of Gamble's book, Robert Proctor, professor of the history of science at Stanford, says: "Gamble's point is that...[tools] are

extensions of the human body....[O]ur bodies are a kind of social technology, and...artefacts should be regarded as embodied metaphors."[4] [underlining added]

Tools require cognitive ability that enables the user to understand connections and relationships among objects, and the purpose of this paper is to explain a mental tool that enables humans to develop connections and relationships in the realm of thought. This mental tool is the linguistic metaphor. The Oxford English Dictionary notes that the first known use of the word metaphor (by Henry VIII) dates back to 1533. Before 1533, various other words (such as kenna or kenning) were used in English to refer to what we call metaphor today. The Greek etymology of metaphor (meta = beyond or over; pherein = carry or bear) indicates the purpose of this mental tool: to reach beyond or to extend conceptual structures.

CATEGORY, ANALOGY, SIMILE, METAPHOR

In order to understand how metaphor functions, we need to explore the relationships among category, analogy, simile, and metaphor. We talk about drawing an analogy or pushing an analogy too far. Rarely, if ever, do we talk about drawing a metaphor (between two items) or pushing a metaphor too far. The words drawing and pushing suggest a process: a process by which a similarity is noted or created in an analogy between two items from different categories. If similarity is established between two items from the same category, then the end-product is a comparison, not an analogy. Thus sentences like Shallots are like onions and Your job is like my job involve only comparison because items like shallots and onions belong to the same category, that is, food of a specific type.

Analogy, on the other hand, involves the process of establishing a similarity of some kind between two items that are not in the same category, that is, between two dissimilar items. For example, in the course of a

conversation, we might develop an analogy between the earth moving through space and a solitary ship moving over an immense ocean. Depending on exactly what we are trying to illustrate, we might develop or draw out the analogy to suit our specific purpose. If a listener were to object to the analogy by pointing out that the earth does not float on water the way a ship does, we might claim that the listener was "pushing the analogy too far."

If we express an analogy in a single sentence containing an explicit relational word such as *like* or *as*, we will produce a simile, as in the sentence *The earth is like a solitary ship on a vast ocean.*

The analogy remains explicit in the simile. If we make it implicit, through deletion of explicit relational words, we will produce a metaphor: *The earth is a solitary ship on a vast ocean.* A metaphor may grow out of an analogy, but it is a different creature. An analogy is like a caterpillar crawling on a leaf, while a metaphor is like a monarch in flight on a sunlit day. Since the difference between a simile and a metaphor is that the latter does not contain an explicit word such as *like* or *as*, the simile lies somewhere between analogy and metaphor in terms of degrees of explicitness.

UNDERLYING STRUCTURE OF METAPHORS AND SIMILES

The basic components of similes and metaphors are the same: two noun phrases or nominal structures and their syntactic and semantic relationships. Theoreticians of antiquity (such as Greek or Sanskrit rhetoricians) as well as recent analysts have recognized the general role played by the two Noun Phrases in a metaphor, and modern scholars have used various labels for them such as *tenor* and *vehicle*[5]; *principal subject* and *subsidiary subject*[6]; *literal term* and *figurative term*[7]. In this paper, the two noun phrases will be called *first noun phrase* and *second noun phrase*. The words *first* and *second* indicate a syntactic sequence that must not be reversed in the basic conceptual

structure if the metaphor is to function properly. The <u>second noun phrase</u> represents a general assumption to which the <u>first noun phrase</u> is related.

For example, in the metaphor <u>John is an ox</u>, the order of the two noun phrases (<u>John</u> and <u>an ox</u>) is not reversible (because <u>An ox is John</u> is not a well-formed structure). In this metaphor, <u>John</u> is being related to some GENERAL ASSUMPTIONS about <u>an ox</u>, not the other way around.

METAPHORS ARE CONTEXT-SENSITIVE

Metaphors function only in specific linguistic contexts. Let us say that in a conversation about wrestling, someone says about a wrestler named John that <u>John is an ox</u>. In such a context, the general assumption in English about the second noun phrase <u>an ox</u>, is that it is a big, strong creature, not easily surpassed in physical strength. If, however, the conversation is about intelligence, then the metaphor <u>John is an ox</u> will be interpreted to mean that John is not very bright (because in English the general assumption is that an ox is not particularly intelligent).

The claim about the general assumption being appropriate only in relation to a specific language can be proved by translating the sentence <u>John is an ox</u> into some other language. As a literal statement, it can be translated in a straightforward manner, but as a metaphor it cannot be recreated in another language in such a simple manner. The general assumption about the second noun phrase is just that, an assumption, and two different linguistic communities do not necessarily make the same general assumptions.

In English, for example, a rat has all kinds of negative connotations, and so a sentence like <u>He is a rat</u> can suggest physical uncleanliness or dishonest habits or other negative qualities. There is a community, though, in Rajasthan, India, that feeds rats generously in formal rituals. Translating <u>He is a rat</u> into the local language, Marwari, will not

convey anything remotely similar to the meaning of the sentence in English because in Marwari, _a rat_ involves substantially different general assumptions.

THE GENERAL ASSUMPTION DOES NOT HAVE TO BE TRUE

The general assumption is dependent on a specific language or culture but not necessarily on truth conditions or factual accuracy. My zoologist friends tell me that in reality bats can see rather well and that it is cave shrimp that are truly blind. Nonetheless, in English _John is blind as a bat_ is accepted as a well-formed simile, but _John is blind as a cave shrimp_ will not function as a well-formed simile because the truth about a cave shrimp is not a general assumption among speakers of English.

A LITERARY METAPHOR FROM _KING LEAR_

The examples cited so far may have little literary value, but their basic structure is the same as that of metaphors in famous works. In Shakespeare's _King Lear_, after experiencing Goneril's switch from subservience to blatant ingratitude, Lear curses her and wishes that if she ever gives birth, the child will turn viciously against her in a way that will make her realize

> How sharper than a serpent's tooth it is
> To have a thankless child!
> (I. iv. 295-296) [New American Library edition]

No paraphrase can ever serve as the equivalent of a great writer's lines, but for analytic purposes we might say that the structure underlying Lear's anguished statement is the simile:

> To have a thankless child is as painful as (or more painful than) a serpent's bite.

In this simile, the first noun phrase is _To have a thankless child_ and the

second is a serpent's bite. Grammatical and stylistic transformations can convert the underlying simile into Lear's actual utterance. Notice that in this actual utterance, a serpent's tooth precedes the first noun phrase To have a thankless child.

DELETION IN UNDERLYING STRUCTURE OF A METAPHOR

The final structure of a metaphor can not only show reversal of the basic order of the two noun phrases but also (as Perrine[7] has shown) deletion of one or both of these underlying noun phrases. In Romeo and Juliet, the metaphor Night's candles are burnt out implies that the stars are Night's candles. When dawn arrives, the stars disappear or go out like candles. Romeo needed poetic style, and so the first noun phrase of the underlying structure The stars are Night's candles was deleted.

In The Merry Wives of Windsor, the metaphor Sheathe thy impatience... has the underlying structure Impatience is a dagger in which the second noun phrase a dagger is deleted, and Shakespeare's use of the verb Sheathe in Sheathe thy impatience evokes the notion of impatience being as dangerous as a dagger.

In the metaphor in Isaiah 22, 13: Let us eat and drink, for tomorrow we die, the underlying conceptual structure is A lifetime is but one day. Both underlying noun phrases A lifetime and one day are deleted in the final statement in Isaiah. The reader's mind has to play an active role in recreating the underlying metaphor. If the reader does not recreate the underlying metaphor, the quotation from Isaiah will appear to be a literal statement about dying on the very next day.

DEFINITION OF METAPHOR

A metaphor may now be formally defined as a linguistic structure in which one noun phrase is related to general assumptions about another noun

phrase, in a specific language, in a specific context. Since this theory emphasizes the relationship between the two noun phrases, it is a RELATIONAL THEORY of metaphor.

The popular view of metaphor is that it involves comparing two items. As George Lakoff and Mark Johnson have noted, this comparison theory is "still [the] most widely held theory of metaphor."[8] In the definition proposed here, this notion of comparison is not included because the first noun phrase in a metaphor is not really compared with the second noun phrase, except in a trivial sense. In Lear's exclamation "How sharper than a serpent's tooth it is/ To have a thankless child," he is not really _comparing_ filial ingratitude with the fangs of a snake. Rather, he is _relating_ the pain caused by his daughter's treachery to general assumptions about pain caused by snakebite.

NETWORKS OF METAPHORS

In _King Lear_, Shakespeare created a large pattern of metaphors which collectively imply that the human condition is degraded when people behave in an animalistic manner. Animals are splendid creatures by themselves, but human beings must not behave like animals if they are to be true to their human heritage. In _King Lear_, there are well over one hundred instances (involving more than sixty different animals) in which Shakespeare uses animal imagery. Alongside the serpent mentioned earlier, the following animals are also metaphorically present: dog, ass, horse, hedge-sparrow, cuckoo, sea-monster, kite, wolf, fox, snail, oyster, crab, mongrel bitch, goose, wagtail, monkey, bear, wild goose, ant, eel, vulture, owl, packhorse, lion, louse, hog, sheep, cat, mastiff, greyhound, spaniel, frog, toad, tadpole, wall-newt, rat, ditch-dog, mouse, deer, boar, fly, tiger, cow, jackdaw, beetle, civet, and swine.

Mere chance cannot account for the presence of so many animals in the

text. Shakespeare deliberately created the cohesive pattern of metaphors. It is also significant that this vast network of animal imagery is used to highlight animalistic aspects of the human condition. Here are some examples from <u>King Lear</u>:

> The hedge-sparrow fed the cuckoo so long
> That it had it[s] head bit off by it[s] young.
>
> (I. iv. 221-222)
>
> . . . . O Regan, she hath tied
> Sharp-toothed unkindness, like a vulture, here!
>
> (II. iv. 133-134)
>
> . . . I would not see thy cruel nails
> Pluck out his poor old eyes; nor thy fierce sister
> In his anointed flesh stick boarish fangs.
>
> (III. vii. 57-59)
>
> As flies to wanton boys are we to the gods;
> They kill us for their sport.
>
> (IV. i. 36-37)
>
> Why should a dog, a horse, a rat, have life
> And thou no breath at all?
>
> (V. iii, 308-309)

Every act of the play contains powerful animal imagery that is actually used as a metaphor or has metaphoric potential. Both Lear and Gloucester fail to assess evidence properly, especially the language used by their children, and the metaphors make the theme of dehumanized parent-child relationships a major philosophical issue in the play.

Great literary works do not necessarily have to rely on networks of metaphors, but even the absence of such networks is significant. In Jonathan

Swift's *Gulliver's Travels*, there are relatively few vivid metaphors. Gulliver's story is wonderfully clear, but Swift chose not to endow Gulliver's language with striking metaphors, probably because he wanted Gulliver to appear as a somewhat naive and, consequently, reliable narrator. Here, from the opening chapter, is Gulliver's description of his first encounter with the Lilliputians:

"I heard a confused noise about me, but, in the posture I lay, could see nothing except the sky. In a little time, I felt something alive moving on my left leg, which advancing gently forward over my breast, came about up to my chin; when bending my eyes downward as much as I could, I perceived it to be a human creature not six inches high, with a bow and arrow in his hand, and a quiver at his back."

Gulliver's story is most extraordinary, and it is his flattened language that helps to make the story plausible. Irony is created in the gap between what Gulliver fails to perceive in the events he describes and what the reader sees in the same events. A narrator like Gulliver had to be furnished with plain, unmetaphorical language. Certain aspects of the story can be viewed metaphorically, but the language used to tell the story itself does not rely on metaphors the way the language of *King Lear* does.

FADED METAPHORS

Metaphors can undergird not only full-length works like *King Lear* but also ordinary words. In "Metaphorical Style as Message,"[9] I noted that words like *explain* (or *embark* or *salient*) are all based on underlying metaphors. *Explain*, for example, is made up of *ex*- (out) and *planare* (to make level or smooth). Etymologically, the act of explaining is the act of smoothing out an idea that might seem uneven or difficult. *Embark* is based metphorically on the idea of putting cargo on a bark or ship, and today's abstract word *salient*

is based metaphorically on the physical act of leaping. Latin *salient* is the present participle of *salire*, to leap. Something that leaps becomes salient. English has thousands of faded metaphors of this type.

METAPHOR ACQUIRES A NEW MEANING IN THE TWENTIETH CENTURY

In 1994, I commented,[10] on a new meaning of *metaphor* as a generalized symbol that developed in the twentieth century, as illustrated by the following three quotations:

> ...the whole poem [*The Divine Comedy*] of Dante is,
> if you like, one vast metaphor..."[11]

In this remark, T.S. Eliot seems to be saying that Dante's epic poem represents the loftiest goals of a spiritual journey. The clause *if you like* indicates Eliot's awareness that he is stretching the meaning of *metaphor*. In later years this meaning of *metaphor* as generalized symbol became quite common. Here are two examples:

> "Vietnam became a metaphor for futility..."[12]
>
> "Cancer is a metaphor for what is most ferociously
> energetic...for the biggest enemy..."[13]

ANTIQUITY OF METAPHORS

Having seen how pervasive metaphor is in all aspects of language and thought, we need to ask how far back in time the use of metaphor (and simile) stretches. Egyptian and Sumerian are two unrelated languages in which the oldest known texts were written. Here are two samples from a Sumerian lullaby and a Sumerian poem:

> usa ŋganu usa ŋganu   Come Sleep, come Sleep
> usa ŋganu ki dumuŋaše....   Come to my son....
> igi gunani suzu ŋarbi.   Put your hands on his sparkling eyes.[14]

This metaphor involves personification of sleep. Its modern equivalent is the

Sandman. The quotation from the Sumerian poem is:

Your city lifts its hand like a cripple, O my lord...[15]

This simile involves personification of the city. The two examples show that metaphors and similes of 5,000 years ago were products of the same kind of cognitive ability that we see in current writing.

When did human brains become developed enough for use of figurative language? Robert Proctor notes that "the modern mind seems to appear 100,000 years after the modern body....No one really knows whether Neanderthals could speak or think like us.....In the 1960's and 1970's, language, art and symbolism were projected onto ever-older hominin fossils. Now the tendency is to (re-)dehumanize early paleolithic hominins--hence the darkening of the whites of their eyes in recent museum displays....When do the instruments of early hominins start to serve as material metaphors?"[16]

Proctor's claim concerning the emergence of the modern mind long after the modern body is supported by the discoveries of geneticists. Enard et al[17] noted that FOXP2, a gene involved in speech and language underwent two mutations (amino-acid replacements) in humans but not in chimpanzees. Geneticist Sean Carroll notes that "Estimates of the time of fixation of the two amino-acid replacements place them within the last 200,000 yr of human evolution, an intriguing correlation with the age of _H. sapiens_."[18] Tools and artifacts became significantly more advanced after these mutations in human FOXP2. The Stone Age did not end because humans ran out of stones. (Gamble, p.275)

It may be impossible to fix a precise date for the emergence of figurative language, but it is safe to say that metaphors promote mental connectivity and enable humans to extend their intellects the way stone blades and axes enabled extension of human hands. Metaphorically speaking, metaphors are among the most enduring mental tools.

CONCLUSION

The Ascheulean ax and the tools that preceded it should be viewed in the light of the role played by FOXP2 in cognitive and linguistic development. The oldest known stone tool was made 2.4 million years ago. The Acheulean ax appeared 400,000 years ago and stayed in use until 150,000 years ago. Modern humans had begun to appear by this time, and they used their enhanced mental power to make more sophisticated tools that rendered the Ascheulean ax obsolete. About 50,000 years ago, humans started making even more sophisticated tools, and significantly enough, cave paintings and new artifacts started appearing.

Approximately six or seven thousand years ago, the invention of writing facilitated record-keeping and ushered in complex social organization in an era that witnessed the creation of cities and the rise of modern civilization. Writing also promoted simultaneous use of implements and linguistic ability.

It is probably not a simple coincidence that the center in the human brain that controls tool-making is adjacent to Broca's area, the center that controls speech. Damage to one of these centers often involves damage to the other. Tools as material metaphors may yet prove to be as eloquent as the linguistic metaphors of Homer and Shakespeare.

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