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Recovering the Lost World,
A Saturnian Cosmology -- Jno Cook
Chapter 28: Language and Causality.

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Primates learn from their peers, not from adults.
-- Sherwood Washburn, [note 1]

Consciousness

And now for something entirely different: Let me introduce *subjective consciousness* at this point, and language and texts as a secondary topic. The reason for presenting this material is two-fold. First, I need to point out that an understanding of events in the remote past is never modulated by abstract metaphors, something we today do with great fluency. The events of the distant past are facts, they never "stood" for something other, excepting perhaps in the use of similes. Secondly, I need to point out how grammar effects the understanding of the world for different people, how it completely and radically changes concepts which we take for granted. This is particularly relevant to an understanding of the following chapters which deal with Mesoamerica.

Subjective consciousness is not biological. It is a learned faculty, like language, and is thus dependent on contacts with other people and includes within its structure the ability to promulgate its use to others by purposeful example. To become *subjectively conscious* means to learn how to *teach subjective consciousness* to others, and thus keep *subjective consciousness* alive. This is no small task, yet we constantly perform the task of teaching through our dialogues with others and we do it automatically.

Even the most ardent micro-evolutionist will have to admit that language and speech were probably not available to humans before about 40,000 BC. (John Halloran at [www.sumerian.org/] believes 10,000 years ago to be more accurate.) And much, much later came consciousness as we experience it today. Of course, our experience of consciousness is so entwined with our identity, and seems so overwhelmingly innate, that anything suggesting differing conditions, like the notion that our

experience of extended consciousness -- *subjective consciousness* -- is not biological, but is cultural, will bring most people's reflection on this topic to a complete halt. It comes as an immense shock to realize that *subjective consciousness* is only a very recent development.

We are here not talking about consciousness, self-consciousness, or self-awareness. These are qualities possessed by all animals. It allows them to identify themselves, allows them to associate past experiences with their peers and mates, allows knowledge of the thousands of details of a wide-ranging geography, and allows the incorporation of learned experiences. We do all that too, and mostly without thinking about it.

And we point fingers, and understand others when they point. As Malcolm Gladwell notes in *Blink* (2005), "... interpreting a pointing gesture requires, if you think about it, that you instantaneously inhabit the mind of the pointer." Most animals don't get it. Animals do not seem to do well with questions either, which represents a similar displacement into the mind of another person. [note 2]

I will describe *subjective consciousness* as distinct from *consciousness* further below. At this juncture it might be more instructive to list some examples of people who, for any number of reasons, have remained *pre-subjectively conscious*. These include people who are very accomplished, for example, musically, but have never composed anything new or even improvised, people who can draw or paint with mastery but only derivatively and have never produced a new image. Or the person who keeps asking you and others for advice on some question, yet never acts on it. Here there is a failure of imagination, or as others have suggested, a failure of judgment, although I would hold that we are dealing with both the inability to imagine and to make judgments based on what was imagined. This is a poor integration of functions which the left-brain is capable of with the remainder of mental activities which we would call "thinking."

Of course it is possible to get through life without ever accessing or exploring the analogical vistas of the imagination, just as it is possible to converse without ever using metaphors. Such conversation, or such thinking, can certainly present the complexities of relationships, the gripping realities of emotions, and the humor of situations. And we can still fill a dialog with lies and falsehoods, just as we can deliver biting sarcasm. What can't be done easily is to present or suggest a situation to the recipient of our dialog which is composed, not of reality, but of a what-if situation -- an analogical reality, offered to the hearer for his personal exploration.

The lack of metaphorical thinking in remote antiquity is critical to understanding what we are told by our forebears. The languages in which the first observations of the heavens were rendered were specific and concrete -- as Jaynes suggests -- "end to end." These people were not creating symbols or dealing in mystical religious philosophies; what we are told of was exactly what was seen and experienced.

This is, in fact, what Jaynes proposes, that metaphorical thinking dates only from after 1000 BC. Jaynes demonstrates this through examples and details from the earliest historical texts and through an analysis of cult objects of Mesopotamia and Egypt. Of course, nothing is proven, for nothing can be proven about the mentality of an era we did not participate in. But enough striking examples are brought forward to suggest that his hypothesis might very well be correct. I should point out that Jaynes was completely unaware of any of the catastrophism developed in this text.

What is more significant is that Jaynes's concept of *subjective consciousness* is based on a working model of the mind which has very large predictive value. This is also why there has been no follow-up to Jaynes's model. Besides stepping away from academic mainstream psychology in writing *The Origin of Consciousness in the Breakdown of the Bicameral Mind* (1976), Jaynes's model, which locates consciousness exclusively in the left hemisphere of the brain and delegates volition to the right half, in effect closed the door to further research, despite the fact that vast behavioral areas remained to be explored, for the basis of the model was largely philosophical, it was not clinical. But it works!

Current stock psychological research, as with neurological research, is based entirely on stringing together data from endless clinical studies. It also tends to be very reductive, equating conclusions from clinical data to elements of computer models and electrical circuitry, despite the fact that the interrupt-based methods of computer processing are not equivalent to the simultaneous capabilities of the brain -- the only true multi-processing system.

You will also see a reductiveness to named parts of the brain as if "firing order" and "activity" are causally meaningful. They are not. The dependence of the limits of clinical data is equivalent to the stalemate reached in the study of language some decades ago -- a reduction of words to sounds and phonemes without a single notion of how to jump from there to syntax.

But despite the turn by professionals to the academic minutia of clinical studies, the broad concepts of separate left and right brain are alive in popular culture. Separate qualities are often ascribed to the two hemispheres, which are, however, generally totally wrong. To say that the left hemisphere is capable of speech, for example, is completely correct, for we are aware of this faculty. To say that the left hemisphere is logical and the right hemisphere is intuitive is completely bogus. Nothing which may be accomplished by the right hemisphere is accessible to consciousness, so that nothing can be said about the workings of the right hemisphere except by inference. And the inferences come from feelings, from reminders and admonitions (often inappropriate) which spring to mind, and from images that impose themselves on consciousness. [note 3]

Malcolm Gladwell, 2005

A book by Malcolm Gladwell, *Blink* (2005), relates the ephemeral nature of the communication of the silent right brain with the conscious left. The book opens with attempts of the Getty Museum in California to verify the authenticity of a Greek statue, a kouros, dating from 500 BC which had been offered for sale to the Getty. The investigation, which included stylistic considerations, the provenance of prior ownership, the source of the material, and the evidence of 2000 years of aging, took 14 months.

In 1986, at the completion of the investigation, the kouros was viewed by a number of experts in ancient Greek sculpture. Frederico Zeri (on the Getty's board), stared at the kouros's fingernails when unveiled -- they looked wrong. Evelyn Harrison (an independent curator) felt something was amiss and recommended against purchase. Thomas Hoving (Metropolitan Museum of Art, NY) recalled that the word that jumped into his mind at the first sight of the kouros was, "fresh," hardly appropriate for a statue reputed to be 2500 years old. Hoving also recommended against purchase.

The Getty shipped the kouros to Greece and called a conference of experts. Here are additional responses: George Despinis (Acropolis Museum, Athens), to quote Gladwell, "took one look at the kouros and blanched." Georgios Dontas (Archaeological Society, Athens), saw the statue and felt cold, he felt, he

said, "as though there was glass between me and the work." Angelos Delivorrias (Benaki Museum, Athens) felt a wave of "intuitive repulsion" at the first sight of the sculpture.

The experts were eventually vindicated; the kouros was indeed a fake. But now look at the broad base of opinions of the experts: All of them made up their mind within one or two seconds after first seeing the kouros. Not one of them could articulate the reasons for their opinion or "revulsion." Note that the feeling of incorrectness seemed to be universal, but also note the words which entered their minds, and the image of the glass. These were all articulate people, yet they were stumped to explain their "feelings."

What is most amazing is that the inarticulate part of the minds of these six curators managed to come to identical conclusions in under two seconds each, when the Getty had managed to get the wrong answer after 14 months of expert investigations. The speed is phenomenal, but the inarticulateness and terseness of communication between the silent right brain and the conscious left mind is a definite drawback.

Gladwell, following current theories, writes, *"The part of our brain that leaps to conclusions like this is called the adaptive unconscious, and the study of this kind of decision making is one of the most important new fields in psychology."*

Daniel Goleman, 2006

As a second example of the reduction of Jaynes's left rear and right rear hemispheres to smaller constituent parts of the brain, consider Daniel Goleman's book *Social Intelligence* (2006). Goleman uses both sociological and neurological clinical sources in an attempt to define social interactions as dependent on pattern recognition. Here the high-speed recognition, which he calls the "low road," at least has a clear method of communicating its findings to the conscious left brain. On recognizing an emotion in others, the observer will duplicate this in his own body. Goleman calls it "emotional contagion."

> *"Emotional contagion exemplifies what can be called the brain's 'low road' at work. The low road is circuitry that operates beneath our awareness, automatically and effortlessly, with immense speed. Most of what we do seems to be piloted by massive neural networks operating via the low road -- particularly in our emotional life."*

The "high road," writes Goleman:

> *"... in contrast runs through neural systems that work more methodically and step by step, with deliberate effort. We are aware of the high road, and it gives us at least some control over our inner life, which the low road denies us."*

The "immense speed" of the low road, however, is relative. The brain can operate at an immense speed with familiar material. All of us have been looking at faces and associating facial expressions with emotions since we were a month old. The same operation "beneath our awareness" takes hold in typing or playing a musical instrument. But ask yourself a difficult question, and it may take weeks or months before an answer "pops into your mind" based on all the information you had already gathered. It is the "unaware" right brain which will have reviewed all the relevant data that you have consciously accumulated, perhaps over a lifetime.

Goleman lists (after Matthew Lieberman) some brain areas involved in processes which escape conscious awareness, as the amygdala, basal ganglia, lateral temporal cortex, ventromedial prefrontal cortex, and dorsal anterior cingulate cortex. It is a long list.

I would be more comfortable with Jaynes's model, which posits a fully functional second mind, but one which has almost no control over speech, and whose operation remains completely inaccessible to consciousness. It is equivalent to being inhabited by another psyche, one who is smart, fast thinking, correct in most situations, but, as has been observed, also willful, impatient, and quickly annoyed.

Michael Gazzaniga, 2008

The third example is a book by Michael Gazzaniga, *Human: The Science behind What Makes Us Unique* (2008), which discusses split-brain (commissureotomized) patients. "Being inhabited" is a concern specifically addressed. Gazzaniga writes:

> *"Why don't split-brain patients have dual consciousness? Why aren't the two halves of the brain conflicting over which half is in charge? ... Are consciousness and the sense of self actually located in one half of the brain?"*
> [note 4]

Yes, Jaynes would say. Gazzaniga points out that attention remains fixed on a single spatial location after the brain has been split, as if the two halves were still working together. (Of course this is a fiction. We cannot tell what the right brain is concentrating on.)

He also notes Paul Broca's research (in the late 19th century) which located the center for speech on the verbal left hemisphere, writing, *"A split-brain patient's left hemisphere and language centers have no access to the information that is being fed to the right brain."*

Thirty years earlier, Jaynes wrote about that also. Information can visually be fed separately to each hemisphere by showing separate images to the left and right eye. (There is some loss of information, since the optical nerves of the eyes each split the field of view between the left and right hemispheres.) Under this condition the left and right hemisphere can be asked to respond appropriately to the separate images, and this will be accomplished, for both the left and right brain can understand speech. Since the hands and fingers are almost totally under control of either the right or left brain, the response (like picking an appropriate object) will reflect the decisions of a single hemisphere. This has led Gazzaniga to some conclusions about the separate hemispheres, as follows. (I'll note the right as silent, the left as verbal in the following.)

> *"Although the* [silent] *right hemisphere remains superior to the isolated* [verbal] *left hemisphere for some perceptual and attentional skills, and perhaps also emotions, it is poor at problem solving and many other mental activities"*

This badly short-changes the right brain. Goleman, in the previously quoted book, in essence suggested that the silent right brain, or the parts of the brain unavailable to consciousness or introspection, is superb at gauging emotions. Gazzaniga calls it "face recognition." The silent right is also capable of completely logical analysis of data, unlike the left brain which tends to make up even incorrect theories, as the author points out. Gazzaniga writes:

"The [verbal] *left hemisphere, on the other hand engages in the human tendency to find order in chaos and persists in forming hypotheses about the sequence of events* [in this example]*even in the face of evidence that no pattern exists: slot machines, for instance."*

The use of the phrase "human tendency" takes us beyond speculation. Now calling the left brain with its apparent inherent need to come up with theories, "the interpreter," Gazzaniga finishes his analysis on a poetic rather than a scientific note:

"How is that two isolated hemispheres give rise to a single consciousness? The [verbal] *left-hemisphere interpreter may be the answer. The interpreter is driven to generate explanations and hypotheses regardless of circumstances. The* [verbal] *left hemisphere of split-brain patients does not hesitate to offer explanations for behaviors that are generated by the* [silent] *right hemisphere. In neurologically intact individuals, the interpreter does not hesitate to generate spurious explanations for sympathetic nervous system arousal. In these ways, the* [verbal] *left-hemisphere interpreter may generate a feeling in all of us that we are integrated and unified."*

The waters have been seriously muddied. Jaynes covered all this 30 years earlier, and without recourse to vapid generalizations about consciousness or "human tendencies." Let me start at the beginning, and review what we know.

Becoming Human

As a brief summary: Humans were not always *subjectively conscious*. The nature of *subjective consciousness* was explained in the text. As *subjectively conscious* humans, we are at best 3000 or 4000 years old (2000 to 1000 BC), with a "recorded" pre-history dating back 5000 years (to 3000 BC), and not the slightest significant amount more. All history starts there. There are objects and constructions from before 3000 BC, but they are certainly not "ours" -- not the work of *subjectively conscious* humans. Neither is much of what can be dated to before about 1000 BC. We owe our humanness, like the genesis of Earth's biology, to the "Gods of Creation" -- the planets, and their catastrophic interferences with Earth.

It might have gone another way. *Subjective consciousness* could have never happened. We could still be chipping flints, as Homo erectus did for a million years without improving on their one stone tool. Even today there is a great diversity of *subjective consciousness* in the world, a clear indication, I think, that it is not a biological function. Our humanity is something we have to actively work on. We are a gregarious species, a social one, and, as a group, look to others for authentication and authority. That is dangerous because this particular behavior is biological, and represents a fallback position when *subjective consciousness* falters.

We are animals, although we like to think we are different. Our biology is fully integrated into the domain of the mammals. We may have a few features not shared with other mammals, but most are shared. Primarily, like other mammals, we give birth to immature young and need to spend a long time teaching them. All mammals teach their young and that is crucially important to humans. This teaching is overwhelmingly biologically driven, and a subject often completely neglected by anthropologists and archaeologists, for it is "women's work" -- like spinning whorls or all those Venus Figurines. It does not deal with weapons, hunting, or economics. [note 5]

Becoming "human" -- that is, *subjectively conscious* -- was a chance event. There is no biological cause. Language is a prerequisite, but language has the same status -- it also has no biological basis and has to be learned. There are, however, some requisite mechanisms for language which are biological. We have to have a voice box located high in the throat and nasal cavity large enough to produce a range of sounds and we need a brain set up to allow lateralization of the speech center. (Some brain functions are lateralized in other mammals also.) There are other prerequisites which are shared with mammals, like the ability to learn rapidly, especially at an early age, and parents willing to teach what they in turn have learned.

> *The cat brings a live mouse back to its litter of kittens. They play with the mouse, eventually kill it and eat it. The kittens have learned about mice, about the chase, about killing mice, and eating them. When the kittens grow up, they bring mice back to their own kittens. That they also learned.*
>
> -- observation, 1983

Language Development

The structure of languages, their redundancy, variability, and complexity of expression are all at the service of teaching -- and not just teaching children, but adults also. The same is true of *subjective consciousness*. Whenever we engage with others, we are constantly proposing a new consciousness with our expressed thoughts about areas of interest. These are proposals for alternate and new mind-space scenarios. They are new -- to the other person -- because what we express is our own, and seldom the mental experience of the other person. Teaching never ends.

The enormous number of constantly changing languages and the vast differences in grammars are proof enough that languages are not biologically mandated. The versatility of humans allowed languages to develop. However, although the existence of humans -- hominids -- stretches back millions of years, languages are not thought to be much older than about 40,000 years.

As a species we are deprived of a number of communication possibilities that are well-developed in other species. We have language because we happened to have made use of what we had: a voice box which can make very complicated discrete sounds, the ability to identify sequenced sounds, an inventiveness -- you might even say, playfulness -- beyond anything seen in two million years, an unlimited food supply, and lots of free time. Altogether, language seems to have little purpose until recently, when it became the basis for *subjective consciousness*, and looks more like an accident than an adaptive evolutionary trend with some survival purpose. It looks, in fact, more like a game that was played among humans, something which we readily acknowledge in our casual banter with others. [note 6]

All mammals communicate, and gregarious mammals do so in complex ways which remain mostly outside our ken. And it is all about food, sex, and young, and territory and enemies. Dogs, originally as wolves (100,000 to 60,000 years ago), are gregarious, and they growl, howl, and grunt, and have a dozen barks. They also use body language and facial expressions, very similar to us, to communicate. (Dog gestures are easy to learn, by the way, and can be used effectively to "talk" to dogs.) So far, so good. We do all that. We can communicate with grunts, talk with our hands, and express ourselves with facial gestures. And, as such, we need nothing beyond hand waving and a few grunts for

communal food gathering, or raising children. [note 7]

But dogs (wolves) also communicate in ways completely beyond our abilities. They live in a Smell Universe which is absolutely amazing and unknown to us. A wolf (dog) rolls its back on a killed animal and carries the smell back to the den -- often dozens of miles away -- to identify the prey by species, age, health at the time of death, and the age of the kill. The route to the kill is attached to the reporting wolf like a map of smells so that the home wolves need not be guided. They know what landmarks were trotted past, how far to go, and can home in on the prey during the last part of the trek. They are not led by the wolf who brings back the news.

Dogs (rats also) have a bundle of nerves connecting the smell centers of the left and right hemispheres of the brain which is 10 times the diameter of our left to right speech connection. That means a circuitry 100 times more abundant in neural connections than what we use for speech. These animals have an integrated brain capacity dedicated to smell which is thousands of times larger than our capacity altogether for vocabulary, grammar, speech, and memorized names and phone numbers.

You cannot play "peek-a-boo" with dogs, as you can with small children. You will continue to "be there" for a dog even though you cannot be seen. The three dimensional Smell Universe has a fourth dimension in time. When I come home with my dog, she sniffs the stairway space to determine if any occupant of the house has gone upstairs, and (I suppose) when. Dogs also read the emotions of other dogs (and humans) by smell in addition to using visual signals.

Dogs are carnivores, and are attuned to the sounds, smells, and movements of prey, and thus are very aware of the same among each other. We (or related ancestor species) have been scavengers and predators for about 2 million years, maybe more. We certainly should also be attuned to sights, smells, and sounds, and thus we could be expected to have developed a language made up out of these senses.

But we have no left-right connection in our brain at all for smell. In fact our sense of smell is the only one which does not cross over in the brain, unlike all others (sight, hearing, touch, as well as all motor and autonomic nerve control). Our sense of smell is very rudimentary. That leaves us with sight and sound. And here is where things get complicated. We have areas in the rear brain which are able to make minute differentiations of sounds, and especially time-separated sounds. The area makes a slight impression on the skull (or the skull accommodates) and this is suspected as being in development with Homo erectus and Homo neanderthalensis.

At that point in our development, we could tell bird calls apart, but, aside from identifying animal calls, sound identification was useless to us in hunting. We were by design a species which roamed the edges of the savanna (supposedly) where our visual acuity (and our ability to run after a gazelle until it fell down from exhaustion) was much more important than sound. We moved from the savannas to forests and rivers where sound plays a minor role for us. Our visual acuity, however, exceeds that of dogs and wolves. We gathered food, whether plants or fish or large animals, by sight, not by sound.

Yet we have a well-developed capacity for differentiating sounds. We can tell *where* a very small object falls on a hard floor from the sound. Dogs will smell for it. We do not know the genesis of our enhanced hearing abilities, but most likely it served as a monitoring sense in communal groups. We have been gregarious forever. We have always lived in groups. We can follow a single conversation in a babble of talking voices. Eyes and hands could be used to pay attention to one task while hearing kept us aware of the activities of the group.

Our acute hearing is also of significant utility in child rearing. Our hearing is acute enough to spot the emotional content of a baby's voicing by the inflections. We can differentiate between degrees of displeasure and degrees of joy, and the whole range of other emotions and needs. (Dogs can do this also.) Our young are born in a most inept state and we need to care for them for a very long time. Next to eating nuts and berries and bringing home game, caring for children is the most time-consuming activity we ever undertook as a species. Child-rearing has probably always been a communal activity, but there are other things for the community to do as well, and since you cannot watch children constantly, sometimes you have to listen for them instead.

I don't think the start of language involved some spear-carrying Cro-Magnon coming home and having to invent the phrases, "Me-kill. Caribou. Come-with. Slice-up. Bring-home." It probably originated while watching and listening for kids, and sitting around in the spare time making up jokes, "Tickle, tickle, ha ha ha." [note 8]

Children have to be taught everything. Children learn through repetition, and humorous situations are the ones they would like to repeat or re-live. Whacking a child for stealing meat out of the pot, or shushing them away from hot coals, is not the type of activity adults and children would repeat just for the fun of it. But jokes and funny situations are. They are repeated and re-lived voluntarily.

If, in fact, there is anything "primitive" in language, it is humor. It runs consistently through all languages and through the speech of normal adults as well as brain-damaged people. My mother-in-law, with complete loss of expressive language and a severe impairment of receptive language due to two strokes, would still react to a funny situation appropriately.

And, additionally, there is nothing as universal as the ability to make puns. Puns come out of nowhere. They seem to arrive from some very primitive speech level. Puns seem to implicate the fun intellectual relationships between words of a basic vocabulary listing which exists in the mind. Even reasonably intelligent dogs invent jokes, but they cannot conceive of puns.

Language is not necessary to obtain food. We lived in a veritable pantry for tens of thousands of years. A sparsely populated world provided nothing but food for omnivorous humans. I believe that we developed language to entertain ourselves in all our free time, as we played. Play is a common characteristic activity of all mammals, and for children (as for all young mammals) play is learning.

It only takes two or three people to start an attempt to repeat and recall a funny situation. It takes very little to come up with a few nouns and verbs, and then you are off and running. A child moves from one-word sentences at 18 months to fully developed 4- and 5-word sentences in the span of a few months. Children who are never taught language will learn at any age, and within a few months.

A few adults can "invent" language in the same span of time. And with children around it will propagate generationally. Since it is a learned activity, it will incorporate its own teaching methods. We so readily teach children language because we ourselves have learned to teach language from our parents.

Language also propagates geographically. When talkies meet a non-talking group of people, the non-talkers will be talking in short order. This has been experienced repeatedly when signing deaf people have been introduced to groups of non-signing deaf people. They invent a common speech (differing from the signing originally used by the signers!) in a matter of weeks. [note 9]

The largest mystery of human language is that it is only about 40,000 years old (or much less), whereas modern humans have been around (by inference from rates of change of mitochondrial DNA) for 100,000 years. In itself that would tell you something: neither language nor grammar are biological. It is not like an appendix. It didn't "evolve" as a brain function or some neurological structure, not, at any rate, as part of the biology of our species. It evolved culturally. The rapid changes still seen in many languages today, and the enormous diversity of "grammars," also point to cultural evolution.

The biological structure needed for speech includes, besides a voice box of the proper dimensions, the enlargement of nasal passages. We don't see this in Neanderthals, but we see them fully developed in the first moderns of the archaeological record. From that point on our voicing and sound-recognition went hand in hand.

The Cro-Magnon types existed for 60,000 years (as in the Levant) using only the primitive Mousterian toolkit developed by and used by Neanderthals. And then, suddenly, about 40,000 or 50,000 years ago, we see the Cro-Magnon toolkit spring to life in southeastern Central Asia and the adjacent western Central Europe region, along with pierced shells and beads, carved ivories, limestone statues, bone needles and other household and hunting implements, decorated spear throwers, and, in Southwestern Europe, the first painted caves. None of these had ever been produced by any other hominids during the previous 3, 6, or 12 million years. [note 10]

The suggestion is that language suddenly developed 50,000 to 40,000 years ago. Wherever it developed, it would have spread like wildfire through adjacent populations of humans. It would have been the coolest thing next to pressure flaking. Language might have been the more easily taken up if the main attraction was the material culture of the nearby talking Cro-Magnon tribe. [note 11]

You have to admit that techniques like making buttonhole borers, detachable harpoons, or pressure-flaked serrated knives are not biological "evolutions" -- they are cultural evolutions. The sudden development and variety of Cro-Magnon's toolkit is *absolutely astounding* compared to the million years that Homo erectus used a single general-purpose bi-faced hand-axe as their only tool, or the uniformly sized flint "side scrapers" fabricated by Neanderthals for 200,000 years.

There are other parallel developments that are less easy to trace. Making cords, knotting nets, spinning, and weaving -- all point to a genesis in remote antiquity of about the same date. Mixing and compounding colorants were definitely within the scope of Cro-Magnon, as witnessed by the decorated caves of France and Spain and elsewhere. The first pottery dates from about the same time, in Japan. [note 12]

You would expect that language had something to do with that, but it is nearly impossible to describe in words how to knap flint or proceed with pressure flaking. In fact, language is not needed to pass on the knowledge of flint manufacturing or spinning but rather language is used to come up with the ideas for the uses of flint or threads. Language is descriptive, and any one description develops another, by way of metaphorical extension.

> *"The grand and vigorous function of metaphor is the generation of new language as it is needed. ... "*

"[Metaphors] *literally create new objects. Indeed, language is an organ of perception, not simply a means of communication."*

-- Julian Jaynes

From language came ideas -- suddenly and in wild profusion. That is where all the new tools came from. They were "made to order." A single human with language is capable of generating and specifying a range of ideas far beyond anything the whole rest of the mammal world was able to think of collectively in a billion years -- or Homo erectus was able to generate in over a million years.

What we have to conclude is that about 40,000 years ago humans came to a new beginning. With the addition of language, the world was totally modern. Soon all the edible plants had been named, all the huntable animals had been identified, every cave had been explored and decorated. Although language is not needed for demonstrating household tasks, naming a plant is a lot easier than locating the plant as an example. Language introduced new possibilities across the board. Anything could be invented which could be described -- tools and techniques were invented as needed.

And language allowed telling stories. We don't really know much about the stories; we only have the numerous instances of rock carvings and the painted caves which may point to such activities. When a painted cave depicts a herd of deer swimming across a river, it would certainly suggest a story activity to us, as do the cliff wall drawings in the Sahara of cattle roundups and dancing, although these last may be much later.

The Cro-Magnon toolkit coincides with the start of the last major glaciation (in Europe). Anthropologists insist that Cro-Magnon grew up during the severe cold of a major glaciation. I think that they grew up in a mild climate south of the northern glacier. More likely they had purposefully entered Europe as new hunting territory. But with the end of the glaciation it got colder and the migratory herds started to relocate northeast into Central Europe and into Northern Asia. The Cro-Magnon followed, now equipped with an advanced lithic technology for efficient hunting, portable kitchen utensils, a knowledge of the constructing of shelters, and of boats, rope, netting, and clothes, and very soon the techniques of spinning and weaving. It was language, also, which supported the social order needed for the Cro-Magnon trek eastward into Asia. [note 13]

Distance was no barrier in antiquity, as others have noted, and especially for hunters. By 35,000 years ago moderns had moved from Asia into all the continents faster than any species had ever spread, and in some cases much earlier. Australia was reached by 60,000 years ago.

Boat People

People spread out to get away from each other, and migrated to new areas to feed an expanding population, and this spread ideas widely. There are some clear signs of immensely wide contacts. Spinning and weaving, for example, are a very ancient practice. Spinning whorls are found worldwide and are identical everywhere. And finally there is the racial demography of Asia, with its parallel bands of three or four distinctly different human "types" from north to south, an indication of distinct groups all traveling east (or west, at an earlier time) to populate new territories -- and meeting the coastal populations which had arrived 20,000 years earlier. In the Americas we see the same bands -- linguistic in this case -- running in a north-south direction, an indication of arrivals of

distinct groups via the Pacific coast.

At the U. C. Berkeley, Johanna Nichols has, for 15 years, classified languages by grammatical similarities to come up with relationships, rather than using the traditional language trees built on vocabularies. After 150 years of studies, finding relationships of vocabularies has only reduced the 5000 or more languages of the world to some 300 primitive types, with no indication of a connection between them.

The use of grammar as the connecting thread makes sense. All versions of pidgin English are identical in that the speakers use an English vocabulary overlaid on their native grammar. Grammar is very conservative, and it changes only slowly compared to words. The most astounding result of Nichols's work has been the identification of core grammars which spread up the east coast of Asia and down the west coast of the Americas. [note 14]

> *"In Nichols's mind, the picture is clear. An enormous and sustained wave of human migration started about 50,000 years ago somewhere in Southeast Asia. Over thousands of years, successive bands of people spread out from the region. They could move relatively quickly because they were coastally adapted -- they knew how to make simple boats and make a living from the sea. Over thousands of years, some carried their languages south and west through coastal New Guinea and into Northern Australia, while others moved clockwise up the coast of Asia, across the Bering Strait into Alaska, then down the west coast of North and South America."*
>
> -- Bob Adler scicom.ucsc.edu/SciNotes/9901/echoes/echoes.htm

"Simple boats" is contemporary chauvinism. It also seems clear that the trek along coastal South America was north from Antarctica. With the withdrawal of ocean water by glaciation, the coasts were cleared to reveal the plains of the continental shelves. Oceans may have been calmer. The course of travel would have been from river to river along the coasts. There are rivers every 25 miles (40 km) or so mostly everywhere. Humans stuck close to rivers because, like all primates, we require enormous amounts of drinking water. The rivers additionally were the routes inland.

Languages and Texts

In previous text I have offered snippets of historical documents in evidence on the presumption that our forebears at least had the wits to be able to keep records, even if they didn't develop particle physics or historiography. But these records and many of the later narratives cannot be read directly from our cultural perspective, which introduces the bias of modern values and the world-view derived from our particular grammars and what we think we know. It is critical to have an understanding of the worldview of the people who wrote the records of antiquity, and for this a look at the languages of those records might be useful.

I am no linguist, so this overview will be fairly brief and may not be accurate. In most instances I have only discussed some aspects of texts. This may shine some light on the underlying languages and grammars.

The language base is what forms the cognitive processes used by a people in their perception of the world. The Indo-European languages are solidly based on the concept of time as a series of "events" which flow from the future to the past through the present. The verb forms and their declensions certainly show this. We face the future. "Time is like a river," said Heraclitus, facing upstream, "you cannot step into it twice."

However, this is not true for most languages. Many languages do not require people to recognize "time" as a flowing substance or for time to have significance. There are large differences between languages, which cause different speakers to use entirely different analytical methods in reaching an understanding of the world. There is certainly an ongoing convergence among the radically different viewpoints on the world (which can be seen as early as in Mesopotamia) and today more so with increased contact between people with differing languages.

... American Languages

Overall concepts of time are cultural (so is the "value" of logic, by the way). This was pointed out by Edward T Hall in books on cultural differences (*The Silent Language* (1959), *The Hidden Dimension* (1966), and others), dealing with personal space, the concepts of self as related to the body, and, most amazingly, difference with respect to an understanding of time.

Some of this was based on earlier observations by the linguists Edward Sapir and Benjamin Whorf of two North American Indian languages. Whorf pointed out that the first concern of Hopi is actuality, and of Navajo, the type of activity. Hopi belongs to the Uto-Aztecan language family group which includes Nahuatl, spoken by the Mesoamerican Aztecs, and the *lingua franca* of the Classical Era Maya. The language group is found in the Western United States, away from the coast, along the west coast of Mexico, and into Nicaragua, interspersed with other language groups.

The Sapir-Whorf Hypothesis (as it is known) suggests that language affects how people perceive their reality -- the content and structure of a culture is directly related to the content and structure of a language, that is, of the grammar of a language.

> *"The commonly held belief that the cognitive processes of all human beings possess a common logical structure which operates prior to and independently of communication through language is erroneous. It is Whorf's view that the linguistic patterns themselves determine what the individual perceives in this world and how he thinks about it."*
>
> *"The -- for us -- self-evident distinction between past, present and future does not exist in the Hopi language. It makes no distinction between tenses, but indicates the validity a statement has: fact, memory, expectations, or custom."*
>
> *"There is no difference in Hopi between 'he runs' 'he is running, 'he ran,' all being rendered by 'wari' -- 'running occurs.' An expectation is rendered by 'warinki' ('running occur* [I] *daresay'), which covers 'he will, shall, should, would run.' If it is a statement of a general law, 'warinkiwe'* [sic?] *('running occur, characteristically') is applied (La Barre, 1954)."*

"The Hopi 'has no general notion or intuition of time as a smooth flowing continuum in which everything in the universe proceeds at an equal rate, out of a future, through a present, into a past.' (Whorf 1952)"

"Instead of our categories of space and time, Hopi rather distinguishes the 'manifest,' all that which is accessible to the senses with no distinction between present and past, and the 'unmanifest' comprising the future as well as what we call mental."

-- originally at newciv.org/ISSS_Primer/

From the same source, on the Navajo, and their primary concern with the type of activity:

"Navajo has little development of tenses; the emphasis is upon types of activity, and thus it distinguishes durative, perfective, usitative, repetitive, iterative, optative, semifactive, momentaneous, progressive, transitional, conative, etc., aspects of action."

Writing in *Language, Thought, and Reality* (1956), Benjamin Whorf states:

"We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way -- an agreement that holds throughout our speech community and is codefied in the patterns of our language. The agreement is, of course, an implicit and unstated one, but its terms are absolutely obligatory; we cannot talk at all except by subscribing to the organization and classification of data which the agreement decrees."

Hall, writing in *The Hidden Dimension* (1966), comments on the fact that Whorf became fluent in the Hopi language, which he studied for years, but with some effort. About Whorf's efforts, Hall writes the following:

"Whorf discovered part of the difficulty when he began to understand the Hopi concepts of time and space. In Hopi, there is no word which is equivalent to 'time' in English. Because both time and space are inextricably bound up in each other, elimination of the time dimension alters the spatial one as well."

He quotes Whorf as:

"The Hopi thought-world has no imaginary space ... it may not locate thought dealing with real space anywhere but in real space, nor insulate space from the effects of thought."

Hall concludes:

"In other words, the Hopi cannot, as we think of it, 'imagine' a place such as the missionary's heaven or hell."

I am quoting Hall here to show how divergent the reality of the Hopi might be from a reality based on the Indo-European grammar of tenses. The failure in being able to imagine a place which could only exist in the mind, which Hall suggests above, seems like a failure of *subjective consciousness,* but this statement is hardly adequate evidence.

Following chapters will need to deal with translations from the Mayan and these will point out the very apparent lack of concern for sequences in time, although "history" was certainly understood. There will also be an inexplicable certitude of time existing in a rotating series with a scale of no more than 250 years. And where we would attempt to establish causal connections between events through their apparent contiguity in time, the Maya feels the need to establish events as the actions of some agent -- to the point, at times, of making up names. Both of these are pointed up above for the related languages of the Hopi and Navajo.

> *"I mentioned in relation to the units of measure that the Mayas did not seem to have the same concept of time as ours. This would seem strange if we take into account an overwhelming majority of inscriptions which have relation with records of periods of time. However, in the Maya language there does not exist the word 'time.' The most common expression is 'kinil' meaning in relation to the sun, or days."*
>
> -- Nexus Tzacol, from Project Ahau (Internet).

Keeping this in mind will help with understanding, even though the Mayan texts I have accessed are only available to me through translations, at times through two other languages. More on Mesoamerican texts further below.

... Sumerian texts

Neither Sumerian nor the later Akkadian is an Indo-European language. Akkadian is, in fact, a Semitic language (today classified as part of "Afro-Asiatic" which includes Arabia and North Africa). Sumerian does not seem to be related to any other language, although I have seen suggestions including Hungarian, Basque, Dravidian, and Georgian. The Akkadian speakers had enormous respect for the Sumerians, whom they succeeded, and they long used Sumerian as their official language. But we know next to nothing about Sumerian. In Sumer and Akkad there was a sense of time somewhat similar to that of the Indo-European language in that they had a past tense and a combined present and future tense -- actually a *perfect* and *imperfect* as in Arabic. But there is a notable difference in the point of view.

> *"... from the perspective of a Babylonian*[Akkadian, Sumerian] *the past lay before him or "faced him," while the future was conceived as lying behind him. ... the attention of Mesopotamian culture was directed towards the past and thus ultimately towards the origins of all existence."*
>
> -- Stefan Maul (1997) [note 15]

The sense of "the flow of time" is thus reversed in Sumerian and Akkadian from how we assume time to flow. The Mesopotamians "face the past," and are propelled backwards "into the future" -- a cognate of the word "back" in Sumerian, by the way. The beginnings were the only reality. All the innovations of civilization had been delivered by the Gods at the beginning of time. It allowed the Gods to retain their nearly three-thousand-year stranglehold on Mesopotamia.

... Egyptian texts

Old Egyptian is a distinctly African language (At one time called Hamitic), the language group of much of Northern Africa, and of the same family as Semitic Akkadian and others in the Sub-Saharan region. But a conservatism even stronger than in Mesopotamia shows in their lack of any need to present narratives. Although there are some chronological narratives written quite late, there seem to be no early "narratives" such as we have in Sumer, Akkad, and Babylon starting after 2000 BC. There were tabulation of kings and annual records, as elsewhere, dating to the 5th dynasty which records kings dating back to 3050 BC. But narratives seem to have developed only during the Middle Kingdom (ending in about 1500 BC), and are quoted in inscriptions in tombs for a 200-year period early in the New Kingdom (after 1327 BC) -- in a quaintly "antique" language, that is, in the style of the Middle Kingdom.

Yet Egypt, which obviously and insistently looked to the past as the only reality -- the "First Time" -- also looked forward to the pharaoh's meeting with Re, the God of creation, as a completion of the pharaoh's earthly existence. I suspect reality was understood as a cycle of existence where time revolved, and perhaps continually repeated the past. Time did not move, as it does for us. However, it is uncertain what the worldview really was, or how it could be explained in terms familiar to us.

We know more about the Egyptian attitude towards words and names. Certainly they believed in the efficacy of ceremony and the force of words. From the spells used in the tombs, and from some later tales about the use of names, we sense that for the Egyptians *words by themselves* represented a powerful magic. The preparations for burial were entirely enfolded in magic, with absolute certainty of the results -- the continued life after death -- proven, as Jaynes explained, by the voices of the dead which continued to be heard.

What seems to be lacking in ancient Egypt is our understanding that a simile is not an identity. Books about Egypt which speak of this or that "representing" something or other, are mistakenly imposing our sense of metaphorical equivalence on their use of language. The pharaoh did not represent Horus, he *was* Horus. The multiple statues of the king in his funeral temple were not representations, they actually *were* the king -- all of them. The curious identity of images with what they "represented" is probably best demonstrated by the fact that in tombs the hieroglyphs which used images of birds or animals were faced away from the coffin (or had their legs removed graphically) so they could not advance on the coffin -- to keep the pharaoh's body safe from attack. Although this is totally foreign to us, the Egyptians had no room for metaphors.

... Chinese texts

China has a "saved" literature from 2300 BC to 700 BC, collated sometime after 500 BC. It is presented as factual, and the earliest record is a compilation, the *Annals of Shu* by Confucius, of odds and ends of surviving documents of the Shang dynasty and earlier. The first two sections of the Shu (covering dates back to 2357 BC) are clearly noted as later recollections. These start with, for example, "Examining into antiquity, we find that... ." Only the remaining sections were written at the time of the events which are described. The Shu is history.

There are, in addition, "legendary histories" of China, which are not part of the coda of the Classics. These legends and mythologies were not committed to writing until a later date (after AD 200 or 400), when a story-telling literature had become well established.

The Chinese languages do not have a "tense" associated with verbs, although there are clear indications in the texts of "when" actions occur which is fully congruent with the great complexities of Indo-European verb declensions, such as the "future past perfect." The script is ideographic, which makes it useful over different languages and more stable over time than phonetic scripts, but it is open to questions of exact meaning. Additionally, the media was impermanent -- bamboo slivers, cloth, and paper. Thus the coda of older documents has required constant transcription and has been open to endless emendation. This has left no actual documents contemporaneous with historical events, only later compilations. Additionally the script was not unified until about 200 BC under the Chin, the same dynasty which purged China of nearly all books in 213 BC. Many of these were reconstructed from memory and hidden books -- but not until much later.

The other influence on the compilations after 500 BC was the humanist and realist philosophies of the Confucianists (Confucius, 551-479 BC) and the earlier Taoists (Lao-tse, 604-531 BC). Here we are in an era of classical philosophical development. We see efforts to tame and explain the world in terms of basic forces of nature (as the yin/yang and material elements), not unlike the contemporaneous Greek efforts to displace the Olympian Gods with rational thought. This had an impact on the records which are forwarded to us, for they have been cleaned up and emptied of mythical and legendary elements. The texts were edited to be in the service of the imperial aristocracy, and only examples of virtuous deeds have been retained. The Chou had already removed many of the ancient religious specifics. The Confucianists retained only the veneration of ancestors, plus a concept of heaven as the source of all authority. The Shu is history, however, and can be believed. It is not legend, it is fact. [note 16]

> *"It was philosophers of this period* [the third dynasty, the Chou, 1027 to 221 BC] *who first enunciated the doctrine of the 'mandate of heaven,' the notion that the ruler (the 'son of heaven') governed by divine right but that his dethronement would prove that he had lost the mandate. The doctrine explained and justified the demise of the two earlier dynasties and at the same time supported the legitimacy of present and future rulers."*
>
> -- www-chaos.umd.edu/history/

In part the proof of legitimacy for any dynasty was the creation of a compendium of the activities of the previous dynasty to demonstrate how the previous dynasty had gone awry, and thus lost the mandate to govern the world. Thus we have very detailed (although terse) historical records from after about 200 BC, and some from 700 BC.

... Mesoamerican texts

Mesoamerican written texts were almost totally destroyed by the Europeans, and only partially reconstituted after AD 1500. What we have are four Pre-Colonial codexes of an astrological nature, with no "historical" content except as might be inferred. There are a number of Colonial period narrative texts, but they tend to be jumpy -- they do not convey the sense of the progress of time as we would expect, despite the occurrences of finely detailed counts of years in some texts. The *Codex Chimalpopoca*, for example, proceeds to list ages into the past but it seems to be mostly number

magic rather than historical fact. [note 17]

That the Mesoamerican narrative texts are formulaic, stylized, fantastical, and lack a cohesive narrative development may be due to the fact that the language structure does not require it. Mesoamerica presents a very large set of seemingly unrelated languages whose only structural affinities seem to be a highly developed sense of action (in verb use) and very weak tenses. Even the verb "to be" seems to be missing. But there is a strong sense of spatial relationships (topography), to be expected of a people who managed to make sense of the Tzolkin and Haab calendars as if they were spreadsheets.

Both the *Popol Vuh* and the *Annals of Cuahitlan* use a list of only "12 ancestors," which would amount to a time span of about 300 years, and use the movement of the tribe from a location of origin to a final location as the complete history of the recent world. It is the act of migration which is important, not the details, and the search for a new homeland is the only event of significance. The "history" texts of other tribes in the same region of Central Mexico also use this formula of a migration. Descriptions of epochs before the migration and arrival in a new homeland tend to be spectacular -- and may be assumed to represent celestial events rather than tribal events.

We know from the Maya that time was held to be circular, or rather repetitive. The numeric values of dates -- every day was individually named and numbered, and imbedded in a deep series of cycles -- loom as large as events. In fact, all events were placed on a rotating platter of time, and fitted in with predictability. Human events occurred because they had happened before, and human destiny was to repeat them, with the requirement that they do so properly. This sense of repetition is the cognate of a causal model of reality which, although mostly unintelligible to us, is not different from the status of prophecy in Greek antiquity or Christianity. [note 18]

The Maya and Mesoamericans assumed the existence of a spirit world which ordered all things to happen at the right place in time in the material world. The Mesoamerican concept of reality involved action. All successes and failures of the physical world were caused by the actions of the Gods of a parallel spiritual world, and for the Maya (and presumably for all the peoples of Mesoamerica) the spiritual world was completely dependent on actions performed in the physical world. Man maintained the spiritual world which was in turn responsible for all causation in the material world. This was a circular arrangement where each world upheld the other and presented a chain of causation which could not be broken.

Suzanne D. Fisher, in an introduction to an English translation of Antonio Bolio's Spanish translation of the Maya *Chilam Balam*, writes, about the spiritual nature of the Maya:

> *"As provider of nourishment for divine beings, man has in his hands the existence of the world, which is created and maintained by the gods. In this sense neither men nor gods are perfect, since both are mutually dependent upon one another; both are insufficient unto themselves, but the dynamic harmony they constitute gives them sufficiency."*

This philosophical outlook in Mesoamerica might explain the calendars with their unwieldy complexities of a dozen meshing cycles. Since the spiritual world remained essentially unknown, an almanac constituted the only clue as to what actions to take in the future. Once a small set of events was discovered to form a coincidence on the wheel of time, the concept of repeatability would yield an understanding of the relationship between the two worlds. I suspect this first happened after 2349 BC when Venus struck four times at intervals of 52 solar years. This was taken very seriously by the

Olmecs. Then when, after 1492 BC, Venus again appeared at a 52-year interval (but in a "Tun-year" interval), disaster was averted, not by chance it seemed, but by human intervention in the spiritual world. If the intervention involved bloodletting and human sacrifice, then the pattern was set. [note 19]

Such at least seems to be the world-view of the Maya, and by extension the world-view of all of Mesoamerica. The religious culture seems to be uniform up to about 600 BC, and over a large geographical area. There were apparently differing interpretations after 600 BC, but mostly consistent among the Maya.

Mesoamerican histories do not yield any information about the remote past which is sensibly ordered in time. The *Popol Vuh* groups similar actions together by location without regard to their sequence, making the book difficult to read for Westerners who expect a listing of events to follow each other chronologically. In the *Popol Vuh* the celestial ball-playing twins are repeating, with more success, the adventures of their twin fathers. It is the activity that counts, not the sequence. The *Popol Vuh* is discussed in a later chapter. Some books of the *Chilam Balam* are a notable exception to the lack of chronological order in narratives.

With Mesoamerican sources you have to search among strange descriptions and senseless concerns to find information coincident with Mesopotamian and Egyptian sources. There is plenty of solid information to be found, although nearly everything celebrates celestial events in 2349 BC and 865 BC, and much reads as magic run amok.

One exception is Book 10, the "Creation of the World," a section of the *Book Of Chilam Balam Of Chumayel*. "The Creation of the World" is very specific and recalls events dating back to 5800 BC without references to the metaphorical and allegorical twists of the Classical era. All except one event is dated correctly, that is, to the same dates as can be gleaned from Eastern Mediterranean sources, by Katun periods of 20 years. See the chapter "The Chilam Balam" for more details.

With some effort three additional sections can be read as accurate descriptions of events dating back to 2349 BC (the "third creation"), to circa 10,900 BC (the "survey of the world"), and possibly to 30,000 or 40,000 years before the present. See the chapter "The Olmec Record of the Past" for more details.

The *Chilam Balam* is also one of only three historical documents of the Maya, the others being the *Popol Vuh* and the engraved texts at Palenque of circa AD 700. Some of the text of Palenque points to events in the 24th century BC, which can be aligned with what we know from other sources.

Subjective Consciousness

What I have tried to show above is the variation in languages of different peoples (their grammars), which would have had a direct impact on their understanding of the world. Yet all of them used language to achieve *subjective consciousness* -- some earlier, some not until very late.

I have introduced the concept of *subjective consciousness* as culturally acquired in earlier text, and made reference to Julian Jaynes. Perhaps a very brief review of his work would be called for here.

I would urge anyone to read Jaynes, at a minimum in order to reach an understanding of *how* we think -- through metaphors, narratization, and spatial fantasizing -- and also how many judgments and solutions to problems are reasoned out without conscious awareness, that is, without what we would otherwise consider as "thinking." As noted by Jaynes, actual "conscious thinking" represents a thimbleful of the gross volume of all that we would consider as "thoughts."

Jaynes spends the first chapter of his book in telling what consciousness (*subjective consciousness*) is not. It is not a copy of what we experience; it is not the source of concepts; it is not needed for learning; and it is not necessary for thinking or reasoning. It is a difficult chapter, for much of what we hold dearly as the core of our innermost mentality is removed as support of consciousness.

... Basis of Consciousness

Language is an absolute prerequisite for *subjective consciousness*. Language is a system of naming which begets other names. It is ever-expansive, especially because the names for anything new are metaphorically related to things already known (and named).

But language is not enough for consciousness. After all, many animals use languages but can only conceive of the present tense and the near future. "Let's eat; let's play; let's screw."

> *"Arf arf, arf arf arf,*
> *the mailman is at the door,*
> *he is going to kill us all."*
>
> -- the dog

Here the dog, in her limited consciousness, is imagining the worst for the next few moments, as dogs have done for 100,000 years, be it marauding bears invading a campsite or evil mailmen tampering with the mailslot. But the imagined future for a dog does not extend much further ahead. We, on the other hand, can displace our "thinking" far beyond the present or into the past, reconstructing remembered or imagined spaces. But most importantly, our minds can race through many alternatives (of "who is at the door?") and make rapid evaluations -- all based on placing a substitute for ourselves into these alternative spaces.

But what are these mental "spaces?" The spaces of *subjective consciousness*, like language, are also created metaphorically. The general metaphor in use here is the *analog*, where every part of the "real world" is represented by a corresponding part in the model -- the mental space of *subjective consciousness*. It is like a map: the map reduces real world geography to marks on a paper, and the map in turn can be inspected to determine spatial relationships of the real world.

These spaces are constructed and "observed" by us, as if we are situated within them, and are thus inhabited by a copy of ourselves, an "analog I." You can even step back to see this "I" from some distance as an "analog me." So, to complete the definition of *subjective consciousness*, it requires the individual creation of an "analog I" in the expanded mind space. It is a facility so familiar to us that it is difficult to think of yourself actually engaging in "subjective consciousness." "Subjective consciousness" is to be distinguished from "self-consciousness" or "self-awareness" which is observable in many animals.

Now we have *subjective consciousness* as we understand it: a focus on the specifics of a space or an action, seemingly located in the mind, specifically in the left hemisphere, and using an "I" which is able to move about through actualities and possibilities and evaluate alternative courses of action based on probable outcomes. And in these spaces we can shift time. We can determine future actions (as yet uncompleted) and also review past actions (making up the elements of an operating space called "memory"). These evaluations are the level of "judgment" of which the verbal left brain is capable -- and at which it is very good.

Subjective consciousness is a focus which completely knits over the chasms between spatial locations (and times, also) in your mind -- to make it seamless to the point of not ever being able to be conscious of not being conscious. It reorganizes memories to make them seem like "looked at spaces," rather than actual sensory impressions. It forces you to "remember" anything you have done by taking an exterior spatial view of the activity. Even mathematical concepts are evaluated as spatial relationships. Jaynes claims there is no *subjective consciousness* except that which is represented by imagined spaces accompanied by the analogs of normal human actions -- we view, review, fit, weigh, and manipulate concepts, and all as actions. Time is also viewed spatially, as a continuous space of differing gradations. [note 20]

Subjective consciousness is a focus which only occasionally actually includes awareness of sensory experience. Not that you cannot shift your consciousness to something that catches your attention or become acutely aware of some part of your body -- but it is another (unconscious) part of the brain which tips you off, and then you shift to inhabit an "analog real space," moving your "analog I" to just behind the eyes. [note 21]

More importantly, and despite what you think occurs in your mind, *subjective consciousness* excludes the formation of concepts, so-called reasoning, and most judgments about physical objects and other people. There is no recollection, for example, of how you managed to drive your car home, and there is awareness, but no "thinking" involved in panic reactions. A later review of a newly constructed memory will add all the "reasoning" that determined your actions. All immediate "thinking" is done in the background, unconsciously, and by the right brain. You don't have any awareness of this until the conclusions are transmitted to the *subjective consciousness* of the left side. [note 22]

We only apply logic (as "reasoning") after the fact. Similarly, ask any artist where ideas come from -- they appear out of thin air. Ask Einstein where his concepts came from -- they came from no-where, usually while shaving. Einstein remarked that he shaved very carefully, for new ideas would pop into his mind and often startle him. This happened during other mundane activities also.

> *"I thought of that while riding my bike."*
>
> -- Albert Einstein

None of consciousness is anything like what a wolf does to chase down an elk, which is totally automatic, involves quick judgments and pre-guessing the moves of his prey, and who knows what else. If you or I did something as wild as that we would make all the right moves and never "be conscious" of them. What we *would* be conscious of is the overview of the real space we would be operating in (chasing an elk), but seen as if we were watching a movie, with ourselves simultaneously as actor and viewer.

Our "consciousness" could be elsewhere while we were chasing the elk. This condition is easily recognized in driving a car, where we make all the right adjustments to traffic, yet are "lost in thought" most of the time, lost that is, in the musings of our left-brain consciousness. We could be considering the opening notes of some piece of music. The car trip (or elk chase) would still be completed with the same efficiency -- our body would still make the correct decisions on how to move, where to turn, when to stop. And none of it would involve "thinking" as we commonly understand it.

The right brain can perform any "learned" activity blindly, like playing a piano, or driving a car. But it has trouble with new situations. Evaluating anything new is the task of *subjective consciousness*. In fact, *subjective consciousness* will hinder automatic activity. Try becoming aware of your fingers while typing. You will start making mistakes or even come to a halt. Become aware of someone looking at you while you are walking and your step will falter and your shoes will scuff the ground.

Development of Subjective Consciousness

What Jaynes next suggests is that *subjective consciousness* is learned by children at about age 7 or 8. It involves recognizing themselves as seen by others -- an "analog I" which is then internalized and placed into the space of the imagination. This analog can move around, perform actions, evaluate results, and can even vault through time. Parents constantly guide small children through numerous "what-if" situations and badger them with metaphorical constructions and reminders of remembered events, in effect *teaching them subjective consciousness*. Part of this is to teach to the child what others might be thinking. Since *subjective consciousness* is learned, it is cultural, not biological. And, Jaynes claims, because *subjective consciousness* is language-based, it is easily learned by children as soon as they gain some facility with the expansion of language into metaphors. [note 23]

Subjective consciousness is deeply imbedded in the teaching of *subjective consciousness*. It is as if we could say that "the expression of subjective consciousness" is "the teaching of subjective consciousness." In this respect it is no different from our teaching of language skills.

Historically, Jaynes places the creation of the "internal I" after the development of written texts. It was also in response to a population expansion of the Middle East, because the other source of *subjective consciousness* is meeting new people -- not those familiar to us. For the most part we don't look at those familiar to us, nor do we question how they see us. Having to meet strangers causes you to wonder how they are seeing you and this results in the creation of an "analog I" as the way you imagine others see you. By reflection this then becomes the way you imagine yourself. [note 24]

The quality of *subjective consciousness* changes over time. Since it is cultural, there is no biological evolution involved, but *subjective consciousness* does evolve. Jaynes has documented the radical changes over the span of a few hundred years during the first millennium BC in Greece and the Levant, and noted the changes in South America over the span of a few months. The quality of *subjective consciousness* will be different from one person to another, although any social group with the same language and a common culture will for the most part share a common *subjective consciousness*.

Both the left and right hemisphere of the brain can understand speech. However, only the left brain can speak. The right brain specializes in seeing objects in context and has a sense of spatial relationships. The left brain concentrates on specific objects but is able to apprehend and order linear patterns, including, of course, speech and stories. [note 25]

That is a sort of shorthand, for the right hemisphere is also involved in speech -- operating the mouth and vocal cords. And the right brain can talk to the left brain in "voices" which are either heard silently in the consciousness of the left hemisphere, or pass right through and are spoken. You will see yourself doing this, for example, in greeting familiar people, but you will also find yourself mouthing off at the most inopportune moments.

The "voices" from the right brain are the remembered admonitions of your parents, and later, your superiors. It is your right brain that brings to mind such things as "it is time to go," or "close the door." It is the right brain that always has the seemingly appropriate solutions, for it sees things in an overall familiar context and knows what to do in any situation which is not novel. It is also the more creative -- solutions to many "computable problems" come from the right.

The left brain concentrates on individual objects often to the total exclusion of context, but works easily in linear format -- like remembering phone numbers as one unit (which is but a larger decontextualized object), remembering songs and stories, and placing all the words of a sentence in the right order when you speak. The left is verbal, linear, and, because of the imagined spaces that can be examined, analytical. But in actuality it probably spends most of the time just meandering. The only conscious "thinking" we do is musing and reflecting -- always by means of imagined actions in imagined spaces. The right brain often gets annoyed with the left, and you will hear yourself muttering comments on your lack of directed thinking or your behavior.

Jaynes points to the left brain as the center of our consciousness: we are "aware" of left brain activities, but never of the right-brain. When the left brain gets into a bind on a problem, it is the right brain which often spits out an answer to the left-brain's consciousness -- "It popped into my mind."

In an age before written texts, or before reflection on the self as seen by others, the right brain "spoke" -- actual words were heard by the left side. We still hear these admonitions today, but mostly silently, "close the door." The wonderfully common-sense right hemisphere at times has to warn the left half of something, or get its attention. Jaynes suggests that using heard speech might have been a shorthand used by the right brain because the rear commissure connecting the two halves is only a few millimeters in diameter. By comparison, the olfactory commissure (which we do not have at all) in dogs and rodents is, as I mentioned, 10 times that diameter, thus 100 times the area. These animals integrate left and right brain functions surrounding smell much better than we integrate our verbal functions.

Our right to left communication today is often in visual concepts (I suspect), rather than words, although we still hear our mind "say" things -- quietly. It can be guaranteed that almost all statements of "correct behavior" which jump out of our mouth are initiated in the right brain. However, frequently they are inappropriate. The right brain does not deal with anything novel and cannot analyze the nuances of a new situation and peruse the alternate possibilities which the conscious left brain can imagine. Often you will find yourself saying, "My first thought was ... but upon further consideration...."

... Instructions from God

Throughout the "Era of the Gods" and for 2000 years after, these instructions from the right brain were "heard" as the voices of the Gods: instructions on crop management, irrigation, and whatever else was appropriate for daily life of a community. There were many thousands of people in Mesopotamia and Egypt involved in agriculture, distribution, and trade. These were also the first large populations to do

repetitive backbreaking communal tasks. Grain production requires that type of work, but it was done without reluctance because the Gods were held as real, superior, and absolute in power, and a slave mentality developed. Society was to continue as it was: with people sowing and reaping the fields of the Gods. Early inscriptions insist on this.

Jaynes points out the "authority" of spoken words, and he supplies extensive data from schizophrenics and commissureotomized patients. The right brain under these conditions issues commands, not solutions or suggestions. This is not different, he claims, from what was experienced by the people of Mesopotamia and Egypt up to about 1000 BC.

It is the development of written texts (claims Jaynes) which opened up a new vista: the possibility that words could be independent of a person and thus "voice" could be abstracted into silence. This is an amazing concept which filtered down into society over the next few hundred years as parents modeled such silent consciousness to children. And with that the voices disappeared. [note 26]

... Differences

As examples of the differences in consciousness of vastly different people, compare the war edicts and bragging of the Assyrians with the contemporaneous "Spring and Autumn" Wars being waged in China. The wars were no different -- and the same example of the warring Gods stood before both groups in the skies overhead. But the attitudes were completely different. The Assyrians were bellicose and cruel and insisted on devastating the peoples they had conquered -- always over matters of tribute.
[note 27]

> *"Throughout the Assyrian war records runs the monotonous mantra. 'I destroyed, I devastated. I burned with fire'. No hint of mercy or pity here; but ... repetitive and total conquest. Assyria, often likened to the Nazis, was a thoroughgoing military nation, highly disciplined. Her characteristics were destructive invasion, deportation and taxation."*
>
> -- Originally from CIAS at specialtyinterests.net.

The Chinese states went to war over the same sort of resources, but the tactics of war and settlements took a different course. By 400 BC there was already a conscious effort to view tactics philosophically and write about them, as follows. The Chinese in fact have never favored warfare.

> *"In general, the method of employing the military is this: Preserving the* [enemy's] *state capital is best, destroying their state capital is second best. Preserving their army is best, destroying their army is second best. ... attaining one hundred victories in one hundred battles is not the pinnacle of excellence. Subjugating the enemy's army without fighting is the true pinnacle of excellence."*
>
> -- Sun Tzu, opening lines *The Art of War* (circa 400 BC).
> [note 28]

... Points of Disagreement

For many people language is so obviously and unquestionably innate that the book by Jaynes will make absolutely no sense at all. And without the idea that language could have evolved culturally, you cannot understand the idea of a cultural evolution of *subjective consciousness*. Growing up bilingual helps, for it provides some perspective. But most of us fail to examine even our own "word-thinking" and the language of others. Another contributing factor is the incredible chauvinism we have adopted to separate ourselves both from animals and from the past.

Other people will dismiss Jaynes over the details of the *Iliad*, which he uses as his start-up example of a change in consciousness. The objections involve arguments about when the *Iliad* was written, whether Troy existed at all, and how a group of Greek pirates could possibly wage a ten-year war. Also, since Jaynes is using 1100 BC for the Trojan war (a date first suggested by Herodotus), he is forced to assume that the transmission of details of the epic was via some sort of semi-conscious bards. This follows a theory of "bardic transmission" dating from studies of Balkan epic poetry earlier in the 20th century, but the exact transmission from bard to bard has since been disproven. [note 29]

I have other differences with Jaynes myself. I object to Jaynes's insistence on the need for kings and leaders. It seems to be a peculiarly Western outlook that you cannot have a village of 200 people without some sort of control, much less a city of 10,000. Often he slips into generalization like "the mechanism of social control." Archaeologically, it appears that there were no leaders, kings, or pharaohs in control before 3100 BC. However, we do not need to look among antique or primitive societies alone for egalitarian societies. The precursor of the Dutch Republic, a collection of city-states, managed adequately without promoting anyone to absolute power for several hundred years. Humans will cooperate -- it is natural for us as a gregarious species, although it is also natural to demand leadership in times of social stress, as happened after 3100 BC. The idea of "individuality," which today makes us almost perversely independent and uncooperative, is a very late concept in Europe, probably dating to well after the 16th or 17th century AD. [note 30]

Jaynes uses the idea of "social control" to suggest how the voices of the Gods -- which most definitely occurred -- might have started and been located in the right hemisphere of the brain. He resorts to the suggestion of an "evolution by natural selection as a method of social control." But this is an unclear concept. I would suggest that "natural selection" is not an issue, primarily because the need for "social control" is not a fact.

I would suggest, instead, that the structure of the mammalian brain is already lateralized for spatial and linear functionality, respectively in the right and left hemisphere. This is in itself enough to naturally place speech functions -- which require linear order -- on the left. In addition, the speech functions are fluidly relocatable, which I think would argue against an evolutionary mandate. Some people have speech functions located on the right, as with those who suffered left hemisphere damage at an early age, and with some left-handed people.

What Jaynes, publishing in 1979, was not aware of was the research by Talbott in 1980, and the subsequent expansion on this over the next twenty years, showing the enormous cultural influence of the planets standing in the sky close to Earth, which were universally understood as the Gods who directed all human activities -- the very Gods whose voices Jaynes places in the right hemisphere.

Jaynes instead uses marked graves in the Neolithic (from 7000 BC), the rather occasional extravagant graves of "kings" (which may be the misdated Sumerian pit graves of 800 BC), and the display of the skulls of the dead in homes (and later temple structures) in various locations in the Middle East, to suggest that the hallucinating voices of the dead continued to be heard. In Egypt during historic times it was certainly held true that the voice of the dead pharaoh remained to be heard to advise and direct. But this period follows directly on the prehistoric era when, for a thousand years or more, mankind was confronted by the image of a large head looming constantly above the north horizon.

We have no idea of the function of all the variously displayed and decorated skulls. In the era before 3100 BC, the skulls might have been honored dead relatives, parents, or they might have been enemies or sacrificial victims. The images in the sky after 4077 BC must have had an enormous influence on humans, and humans, as ever, imitated what they saw. The exact measure of this is not revealed until after the head in the sky had disappeared. If anything induced the "voices of the gods" to be heard via the rear commissure between the right hemisphere and the left, it would have been this constant thousand-year image of a globe in the sky.

Advantages

We could ask, What is the advantage of subjective consciousness? Obviously, in the remote past, it was used to get through change, whether cataclysmic change or the need to live through social change. But, we could ask, what is the utility in today's milieu?

From my perspective, *subjective consciousness* allows traveling through time, visiting distant places, and imagining cosmic relationships. It also allows navigating the complexities of relationships, imagining technology not yet in existence, and selling products to those who do not need them.

We should also not neglect the possibility that the *subjective consciousness* of the left brain aids the normal background processes engaged in by the right brain. Certainly we know that the right brain knows whatever the left brain knows, and is able to work out solutions to questions that the left brain just cannot handle. Einstein's care in shaving is an example of the startling revelations which can come to consciousness as if out of nowhere. Einstein's brilliant ideas certainly were not limited to parental admonitions.

I suspect that a salesman who has gone through attempts to enter the mind of his customers will have offered all of these scenarios to his right brain. They will be stored somewhere and can be accessed as needed. The best approach for a particular customer will be selected and presented to *subjective consciousness* as if out of nowhere -- based on an almost instantaneous analysis of the customer's psychological state. Considering the speed with which the right brain can operate, this certainly is a more likely process than having to wait for *subjective consciousness* to take the time to trip through a number of imagined scenarios. Everyday speech and the creations of poets and artists must be generated like this. I also suspect that the right brain today, rather than using speech to alert the subjective consciousness, as was traditionally done, might also use images to a greater degree. But of course how *subjective consciousness* operates, and what its particular qualities are, depends completely on how a person is brought up in a particular social context, including the qualities of a particular language and grammar. We don't all think alike.

Disadvantages

We can also ask, What have we lost by giving up the bicameral paradigm? Jaynes addresses this in the third section of his book, "Vestiges of the Bicameral Mind in the Modern World," specifically under the topic of schizophrenia with the subtopic "The Advantages of Schizophrenia" (page 426).

What is interesting here is that Jaynes very convincingly equates schizophrenia with a complete loss of subjective consciousness: the loss of the inner space of the imagination, the loss of the self reflective 'I', the loss of the ability to narratize. It is a reversion to the pre-conscious bicameral paradygm.

> *"Another advantage of schizophrenia, perhaps evolutionary, is tirelessness. While a few schizophrenics complain of generalized fatigue, particularly in the early stages of the illness, most patients do not. In fact, they show less fatigue than normal persons and are capable of tremendous feats of endurance. They are not fatigued by examinations lasting many hours. They may move about day and night, or work endlessly without any sign of being tired. Catatonics may hold an awkward position for days that the reader could not hold for more than a few minutes. This suggests that much fatigue is a product of the subjective conscious mind, and that bicameral man, building the pyramids of Egypt, the ziggurats of Sumer, or the gigantic temples at Teotihuacan with only hand labor, could do so far more easily than could conscious self-reflective men."*

Thus schizophrenia provides a window on the behaviour of humans of before 1500 BC and much later in some other regions.

All indications are that this condition of hearing the voices of the gods generated by the right hemisphere of the brain was heard in plain language by the left hemisphere. Jaynes places the development of language in the Upper Paleolithic. The current estimates by linguists place the genesis of language at about 40,000 BC. John Halloran, an expert on the Sumerian language, convincingly suggests a range of 9,500 to 8,000 BC. See Halloran's site at [www.sumerian.org].

Children

Lastly, let me add some notes on children and *subjective consciousness*. Children learn language from adults who, on meeting a child, always test the level of the child's language abilities and then switch to a "caretaker language" to continue conversing. A "caretaker language" is grammatically slightly advanced beyond the level of the child. We have all learned this teaching technique, and we use it automatically with children. People who "baby-talk" to children are those who have made no effort to gauge the child's current abilities. [note 31]

What Jaynes suggests is that *subjective consciousness* is learned similarly to the way in which language is learned -- parents teach children *subjective consciousness*, and have done so actively since about 1000 BC. In the interaction with parents (*subjectively conscious* parents) children are constantly confronted with snippets of real and imaginary situations which, over the course of years of exposure, and graded to their mental abilities, suggest the possibilities of imagining what they might do under a proposed situation. What is always suggested to the child is what actions they might take -- because all "thinking" in the mind involves an analog of actions in the real world. Thus both the analogical "spaces" and the actions to be performed in them are constantly put forth to children,

and this is done by us with the same lack of awareness that we use with a graded caretaker language. This process also forces upon a child the recognition that others (mainly their parents) see them in their mind. We often identify the age of seven or eight as the first glimmer of "consciousness" in children. It is, in actuality, the first glimmer of their awareness of *our* consciousness. [note 32]

It is instructive to observe children 4 to 7 years old, although the state of *subjective consciousness* depends very much on their verbal abilities and the interaction they have with their parents and other adults. There seems to be a difference also between girls and boys, perhaps because girls (in our society) are more engaged in person to person relationships by their mothers. Pre-conscious children have recognizable behavior patterns which might be reflected in the following to various degrees. The following notes are my observations. (They are not from Jaynes.)

- They lack any clear memory of the past except for events they have been told about and some critical events which may have been reenacted mentally. Pre-language "memories" of events are almost entirely absent in everyone, for most memories are "constructed" by a subjective consciousness. (As I have pointed out, this is not true of spatial memories.) This obviously also goes for events before the age of 7 or 8.
- They show little of the self-consciousness which would result in being able to see yourself from an exterior perspective -- in effect as being seen by others. Children are self-aware, as all mammals are, but are unable to displace this to an exterior perspective. Their behavior is simply regulated by parental admonitions and the parental controls of shame, guilt, or embarrassment.
- The imagination of a child, as exercised in play, is often unbounded by reality and often lacks a measure of time. Importantly, the play space often lacks themselves as an involved actor. Older children will often "correct" the play fantasies of younger children, in effect mimicking parental teaching of *subjective consciousness*.
- They are often very opinionated, blurting out the opinions of their parents in lieu of any original "thinking" on a subject, a trait which often carries far into adulthood. Original thoughts on a particular subject would involve being able to create imagined spaces for action in the mind and walking an "analog I" through these spaces to evaluate alternative outcomes.
- They will interrupt adult conversations with non sequiturs, for there is no ability to narratize the present as a mental space in which they can fit themselves and observe the (real) space as if from afar (that is, in the mind), and to narratize into that mental space what others might hear or might be thinking at the moment.
- They often have hopelessly inadequate concepts of space and travel time ("Are we there yet?"). Children experience a dilation of real time which adults do not notice. Children (young children, especially) do not have access to the musings of *subjective consciousness*, with which adults fill real time to replace the second-by-second experience of actual time.

Yet children are fully functional. They learn to read and do math. They learn skills. They learn how things work, and how to interact with others. They can create and appreciate jokes. They know who they are. But the guide to their actions is the voices of parental admonitions and attitudes which were heard, remembered, and recalled. It is, in fact, the right hemisphere which does this for any predictable situation.

Endnotes

Note 1 --

Sherwood Washburn is paraphrased by Edward T. Hall, in *Beyond Culture* (1976), from S. L. Washburn, "Primate Field Studies and Social Science," in Nader and Marettzki, *Cultural Illness and Health* (1973). He is talking about primate young (as an area of study), but this could be extended to adults also. Adults also learn from their peers.
[return to text]

Note 2 --

That is not entirely true. Pointer dogs point with their nose and tail, and the young will learn from older dogs. I have only taught one Rottweiler dog to follow the direction of a human's pointed finger.

Humans understand and answer questions by 18 months.
[return to text]

Note 3 --

The following are from an Internet source which I have not tracked. Obviously the original author has just split up mental functions by opposing approaches, which, however, has little to do with what seems to be happening in actuality. The qualities listed below are almost all incorrectly assigned, the case being that either the two are reversed from inferences we can make, or both qualities belong on one side. I'll note the obvious reversals below (marked "rev"), followed by some comments.

Consciousness is located in the verbal left hemisphere, where speech generation is also found, and which operates the right hand. The silent right hemisphere is mostly incapable of speech although it can understand language. It operates the left hand. But the silent right is capable of close reasoning, data evaluation, and rote endeavors. It can type without thinking, operate a car, play music, unlock the door. There are 15 items listed at the original; I'll go through these by relisting them as follows:

	LEFT	RIGHT	
1	uses logic	uses feeling	(rev)
2	detail oriented	"big picture" oriented	(?)

(1), (2): **uses logic/ uses feeling;** and **detail oriented/ "big picture" oriented** -- Animal studies indicate that the right hemisphere, not the conscious verbal left, uses "logic," is "detail oriented," and bases decisions on "fact" (see below). "Detail oriented" is, however, also a left brain function since consciousness can only focus on one thing at a time.

	LEFT	RIGHT	
3	facts rule	imagination rules	(rev)

(3): **facts rule/ imagination rules** -- This is certainly reversed. The verbal left brain operates entirely in the realm of the imagination. The right does not. The right operates on facts.

	LEFT	RIGHT	
4	words and language	symbols and images	(?)

(4): **words and language/ symbols and images** -- The verbal left brain is the only one that can speak, but certainly the right brain also understands speech. The status of "symbols and images" is ambiguous, since some of the back communication of the right brain may be in imagery, but it can also be in words that pop into your head (and at times into your mouth), as it can be in sweeping feelings. "Symbols" I am not clear on. Symbols are abstractions, and thus probably in the domain of the left brain, which uses abstractions to jump through mental spaces which would be too time consuming to traverse in detail.

	LEFT	RIGHT	
5	present and past	present and future	(rev)

(5): **present and past/ present and future** -- It is the future which is accessed by the conscious left brain, as well as the past, including the imagined past or future -- especially this last. The silent right brain deals with the present, and with the past only in that current action is based on what was learned in the (real) past.

	LEFT	RIGHT	
6	math and science	philosophy & religion	(?)

(6): **math and science/ philosophy & religion** -- Math and science are created and manipulated in the space of the imagination, and thus represent left brain activities. But philosophy probably belongs there also. Religion (but not theology), in that it is unsupported by any reason, belongs on the right as accepted dogma. This suggests that science, if it is learned as handed-down dogma, also is a function of the right brain, and exhibits itself in the manner of unreasoned value judgments no different from what has been learned to be acceptable in social exchanges, or as religion.

	LEFT	RIGHT	
7	can comprehend	can "get it" (meaning)	(?)
9	acknowledges	appreciates	(?)

(7), (9): **can comprehend/ can "get it";** and **acknowledges/ appreciates** -- I'm not sure what to do with these. All of these are mental judgments, so that I would probably attribute them to the operation of the conscious left brain. The right brain is not judgmental, nor does it form meta-theories about knowledge. Not, at least, without your asking it to do so.

	LEFT	RIGHT	
8	knowing	believing	(?)

(8): **knowing/ believing;** -- knowledge is securely lodged in the verbal left hemisphere in that an analysis has been performed which supposedly lines up the elements of a syllogism to support the "facts." But almost always knowledge is generated by the silent right brain. Belief is a matter of conviction and has no more status than fantasy.

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          LEFT                      RIGHT
  10    pattern perception       spatial perception          (no)
```

(10): **order, pattern perception/ spatial perception** -- The verbal left brain deals with order, as in the word order of speech, and this could be extended, along with pattern recognition, to the mental arrangement of external objects or events, although, I should warn, this is dependent on the grammar in use. That would by default assign "spatial perception" to the silent right brain, but this might be an inference based on the absolutely amazing speed with which familiar situations are evaluated, plus the ability to review all the relevant data of a field of study.

```
          LEFT                   RIGHT
  11    knows object name     knows object function      (yes)
```

(11): **knows object name/ knows object function** -- Probably correct, in that it has been repeatedly shown that the silent right brain has difficulty naming objects, although it will recognize their use.

```
          LEFT                   RIGHT
  12    reality based          fantasy based              (rev)
```

(12): **reality based/ fantasy based** -- This is exactly reversed. It is the conscious left brain which deals in fantasies, whereas the right brain remains rooted in reality. But because it bases actions on learned situations of the past, the right brain becomes deadlocked in new or unfamiliar situations, whereas the conscious left brain can work through possible solutions of how to handle new situations.

```
          LEFT                   RIGHT
  13    forms strategies       presents possibilities     (no)
```

(13): **forms strategies/ presents possibilities** -- Both of these are functions of the conscious left brain. The right brain does not deal with options.

```
          LEFT                   RIGHT
  14    practical              impetuous                  (rev)
```

(14): **practical/ impetuous** -- This is also reversed. The active imagination -- what I have elsewhere identified as *subjective consciousness* -- makes the conscious verbal left brain "impetuous" while the right brain remains "practical." But because of the speed with which the right brain arrives at a course of action, it might be inferred that it is acting impetuously.

```
          LEFT                   RIGHT
  15    safe                   risk taking                (rev)
```

(15): **safe/ risk taking** -- Again, the applications are reversed. The conscious left brain takes risks often based on flimsy theories of how things work. The theorizing (tracking possibilities) is so much part of what we perceive as "consciousness" that we just cannot ignore it. We tend to think of these theories as "reasoning" and value them as the highest order of mental activity. This is how gamblers lose, and how bad investments are made.
[return to text]

Note 4 --

The quoted text is from an article adapted from the book which appeared in *Scientific American Mind*, June/July 2008, "Spheres of Influence" by Michael Gazzaniga.
[return to text]

Note 5 --

Our main distinction as a species is that we are strongly neotenized, which doubles our lifespan and flattens our face. Cats are also neotenized, living twice as long as a cat-sized mammal normally would. We also lost our fur, our tail, and the ability to produce vitamin C, but have gained our longevity for the sake of our oversized and helpless babies, and to allow for their long period of learning. The other outstanding difference -- bipedalism -- is certainly common among birds, marsupials, and dinosaurs. What we hold as "racial" distinctions (body size, hair, skin color, nose and eye shapes) have generally been held to be the result of 30,000 years of environmental isolation. For paleontologists only the inside slope of the front teeth is a clear racial distinction.
[return to text]

Note 6 --

Steven Mithen, in *The Singing Neanderthals* (2006), attempts to make a case for the evolution of language based in part on music and dance. The book involves a lot of guesswork and unfounded suppositions about prior hominids in an attempt to build the case for a slow evolution from natural selection. There is no "slow evolution."

Jaynes also attempted to make a case for how language might have developed, but too specific to Cro-Magnon, guesses about the effect of the European climate, and "selective pressures" to make much sense.

Alfred de Grazia, I feel, is closer in observing:

> *"Here is an area where evolutionary thought is especially self-contradictory and, consequently, slippery and evasive. It can only get from one small change to the next but cannot get from the beginning to the end; it can explain some intra-species changes, like horse-breeding and the Beltsville turkey, but it cannot explain a major development. No known mechanism directs a long string of slight modifications in the germ plasm. Even if we were to concede that the jump from hominid to human were only apparently large but was biologically small, human genesis would admittedly be a hologenetic occurrence; when it occurred, hominid life changed drastically; it speciated."*
>
> -- *Homo Schizo, Human and Cultural Hologenesis* (1983?)
> [return to text]

Note 7 --

About gestures, Edward Sapir, in 1972 wrote: *"... we respond to gestures with an extreme alertness and, one might almost say, in accordance with an elaborate and secret code that is written nowhere, known by none, and understood by all."* Quoted by Tim Friend in *Animal Talk* (2004).

About dogs, R.A. Fonda, in "Speculation on speciation" originally at rafonda.com, writes:

> *"In East Asia, by a hundred thousand years ago, casual scavenging of predator kills had developed into systematic exploitation of the wolves' capacity to pursue fleet game. That led to domestication of dogs, who were, themselves, differentiated from wolves by neoteny. They matured into an amenable creature that could pattern on humans as pack-alphas, and behave with 'puppyish' submission even when mature."*

Fonda is perhaps too glib about dog behavior. Domesticated dogs are still carnivores and wild animals, and they are certainly not neotenized. Their submission is not all that puppyish, but only as it benefits their own pack-member priorities. Their benefit to humans comes from their carnivore brains which are able to almost instantaneously reach conclusions based on integrating many diverse small environmental cues, and as a result of great value in hunting. Dogs can also "read" humans with amazing proficiency as a result. But most behavior is still all about search, chase, bite, rip, and eat. Don't get your hand caught in that sequence.
[return to text]

Note 8 --

From various considerations, John A. Halloran thinks that the Sumerian language was invented as a game by women, around 10,000 BC. That would place the genesis of language at the leading edge of the first settlements dedicated to mixed gathering/hunting and farming. He identifies some base words with earlier building structures in Iran and at Catal Hoyuk. See
[www.sumerian.org/prot-sum.htm]
[return to text]

Note 9 --

Halloran has suggested that the Indo-European language group is a secondary effort, that is, a language based on the active implementation of the "concept" of a language, whereas Sumerian shows the signs of a language invented from meanings associated with the voicing of vowels and consonants. In his study of Sumerian, he has shown that the basic words of that language originate from the meaning inherent in the sounds and the shapes formed by the mouth and tongue. Sumerian thus may be an original "proto-language."

> *"Biological forms must be descended from ancestral forms. This cannot be true for languages for an infinite time depth. The method of glottochronology must break down when it reaches the event horizon at which a population went from nonspeaking to speaking. In some cases, just the concept of speech will have inspired a population to invent their own language. In other cases, a population will have built their new language upon a repertoire of elements taken from an existing language."*
>
> -- John A. Halloran, at [www.sumerian.org/prot-sum.htm]

Studies of the basic meaning of words of Indo-European languages show little or no relationship to the physiological content of the mouthed sounds. It would be suspected that the prototype Indo-European language was created much like Northern European alphabets, in that they were derived from the *concept* of writing, and not in imitation of Mediterranean alphabets. The glyphs

used by the Romans or Greeks, like "alpha, beta, gamma, delta," originated from "ox, house, camel, river mouth" -- named objects signifying the sound of the letter. The Northern European alphabets do not show a derivation of glyphs from named objects.
[return to text]

Note 10 --

There are some Cro-Magnon-like developments at a much earlier period (70,000 ya) in South Africa. They are typically Cro-Magnon-like in that they seem to represent short-lived local fashions without any notable utility.
[return to text]

Note 11 --

Language is passed with ease to people who do not speak because the whole structure of language is imbedded in the task of teaching language. Without this our children would only learn with difficulty.
[return to text]

Note 12 --

Woven fabric dates from 25,000 BC (Germany). Colorants used by Cro-Magnon in decorating caves were most likely also used as makeup. Baskets derive from cording, and can be made waterproof by lining them with leather-hard clay. That is one step away from fired pottery.
[return to text]

Note 13 --

The "migration" of Cro-Magnon into Europe, or anywhere else, has not been firmly established, in that, for example, the expanded lithic industry does not start at some one location to spread out from there. Different aspects of the "cultural package" of the Cro-Magnon appear at diverse locations, representing, as James Shreeve writes in *The Neanderthal Enigma* (1995), "a complicated mosaic of mini-explosions that resemble one big explosion only when you stand back and take a long look at the whole."

This becomes an argument against the biological genesis of language, if we at least can accept that the use of language lies at the base of the cultural explosion in the Upper Paleolithic, for it would assume that humans all over the planet "evolved" nearly simultaneously. Of course a thousand-year lag looks instantaneous from our perspective.
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Note 14 --

This presumes that North America was invaded from Northern Asia. But it is clear that most of North America was populated from South America via the Caribbean, originally some 30,000 years ago, and again after 9000 BC. The west coast regions may indeed have been populated from Asia also after that date. We have no records, since the general rise of the oceans after the glaciers melted has destroyed evidence of coastal settlements.
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Note 15 --

"In our own modern conceptual world, the opposite seems to be self-evident: we look into the future, while the past lies behind us. Continuing with this line of thought, we might say that while we proceed along a temporal axis "headed towards the future," the Mesopotamians, although they also moved on a temporal axis in the direction of the future, did so with their gaze directed towards the past. The Mesopotamians proceeded, so to speak, "with their backs forward," that is, facing backwards into the future."

-- From Stefan Maul *Die altorientalische Hauptstadt -- Abbild und Nabel der Welt* (1997) translated by Thomas Lampert

See also Nicholas Osler, *Empires of the Word* (2005), for more details on Sumerian, as determined from Akkadian sources.
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Note 16 --

Do not confuse the insistence of the *Annals of Shu* on the existence of Yao and Shun with "legend," for they are not identified as "Emperors" (or "legendary emperors" as western commentators would have it), but are clearly identified as "Gods" -- a perfectly legitimate term for the two planetary apparitions. See James Legge, translator of *The Sacred Books of the East, The Shu* (volume 3) (1879). Legge's translation and notes still stand as a classic.
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Note 17 --

The Mesoamerican *Annals of Cuahitlan* claims we are living in the 5th age with no reference to the start of the current age. The first four ages are 676, 364, 312, and 52 years long. From what we know we could place the end of the 4th age in 1440 BC. Together that places the first creation in 2896 BC, or about 200 years after 3100 BC, only about a hundred years later than the recovery period for other people after the flood at the end of the "Era of the Gods." Interestingly, the first age ends in 2168 -- about the time of the demise of the Old Kingdom of Egypt.

This may be coincidence, however, since the ages are obviously numerologically constructed and based on the later importance of the numbers 52 and 13. The second and third ages together equal the length of the first age, 676 years, with 52 as the difference between the two (which is the length of the fourth age). All the numbers are multiples of 13.
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Note 18 --

Ralph L. Roys, in *The Book Of Chilam Balam of Chumayel* (1933) writes:

"A Katun of the same name recurred after approximately 256 years, consequently at the end of that time history was expected to repeat itself. The events recounted in the Maya Chronicles found in the Mani, Tizimin and Chumayel manuscripts [The Books of the Chilam Balam] *offer excellent grounds for believing that this belief was so strong at times as to actually influence the*

course of history. A surprisingly large proportion of the important upheavals in Maya history appear to have occurred in some Katun named either 4 Ahau or 8 Ahau."

In a footnote he adds:

"Katun 8 Ahau recurred approximately every 256 years, and for a thousand years every time a Katun of this name occurred, the Itzá were driven from their homes, no matter where they were living at the time. Late in the Seventh Century A.D. they were expelled from Chichen Itzá after their first occupation of that city. In the middle of the Ninth Century they were driven out of Chakanputun. At the end of the Twelfth Century they were again driven from Chichen Itza by Hunac Ceel. About the middle of the Fifteenth Century Mayapan was sacked and destroyed; and strangely enough it was again in a Katun 8 Ahau at the end of the Seventeenth Century that the Spaniards conquered the last Itza stronghold at Tayasal, which was the end of this remarkable nation."

Schele and Freidel (in *A Forest of Kings*) similarly relate, about the meek acceptance of Christianity by Can-Elk, the last of the Maya kings, in AD 1697:

"This fatalism was part of the legacy of the Classic-period attitude toward history and its relationship to cyclic time and supernatural causality. Classic-period scribes emphasized the connectedness among the actions of their living kings, the actions of their ancestors in the historical and legendary past, and the actions of gods in the mythological past. ... The result of this type of thinking, transformed by the exigencies of the Collapse and then the Conquest, became predictive history.
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Note 19 --

The 52-year interval after 2349 BC was in solar years, which were "Tun years" in the records of the past. The interval after 1492 BC was also 52 "Tun years" on the Tzolkin calendar, but represented an interval of 50 solar years. See Appendix B, "The Celestial Mechanics," the "52-year cycle." I discuss the Mesoamerican calendar in the chapter "The Maya Calendar."
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Note 20 --

Most of our memories are constructed, or rather reconstructed, by us if they involve action, for we fill them out with the appropriate details, to the point of making up dialogues. Which is why memories reported as evidence in courts are suspect. Of course we do have other memories too. You will probably remember the layout of your house at age three, even though you do not remember a single event or action from that age. All animals are capable of memories involving the geography of their environment, and often with astounding accuracy.
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Note 21 --

The shift of attention is managed by the "reticular formation" (Jaynes) or the "amygdala" (Goleman) or some other primitive element located at the base of the brain, with connections to sensory and motor areas of the brain and the spinal cord, which has the purpose of awakening certain parts of the nervous system while suppressing others on sensing external stimulations which require attention. How this is judged is beyond me.
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Note 22 --

Hollis Frampton, in *Circles of Confusion* (1983), reports on the interview of the holder of the world's land speed record at Bonneville Salt Flats, Craig Breedlove, after he had lost his brakes and parachutes at the end of a test run -- flying off the end of the course at 620 miles per hour (1000 km per hour).

> *"The car went out of control, sheared off a number of telephone poles, topped a small rise, turned upside down, flew through the air, and landed in a salt pond."*

Breedlove survived without a scratch. Frampton listened to a taped interview started immediately after the wreck, and wrote:

> *"Breedlove delivers a connected account of what he thought and did during a period of 8.7 seconds. In the course of the interview, Breedlove everywhere gives evidence of condensing, of curtailing; not wishing to bore anyone, he is doing his polite best to make a long story short."*

Frampton notes that the tape ran one hour and 35 minutes, a 650 fold expansion of experienced time.

A similar incident is recollected by Walter Shapiro, in "The Washington Post Magazine" (November 9, 1980), about a Navy test pilot, Major Russ Stromberg, whose plane lost power on takeoff from an aircraft carrier. In 8 seconds before ejecting he tested the controls, judged the consequences, and determined when to eject without either landing on the deck or at the site of the crash. It took him 45 minutes to describe the 8 seconds. (cited by Edward T. Hall, in *The Dance of Life*, 1983.)
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Note 23 --

There is obviously more to learning "what others might be thinking" than what is suggested here. Sarah Blaffer Hrdy writes:

> *"The reason our species has managed to survive and proliferate to the extent that 6 billion people currently occupy the planet has to do with how readily we can learn to cooperate when we want to. And our capacity for empathy is one of the things that made us good at doing that."*
>
> *"Predators from gopher snakes to lions have to be able to anticipate where their quarry will dart. Chimps and gorillas can figure out what another individual is likely to know or not know. But compared with that of humans, this capacity to entertain the psychological perspective of other individuals is crude."*

-- "Mothers and Others," *Natural History* (2001).
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Note 24 --

The reflections occur in everyday conversations. It is not unusual to hear someone say, "I did not want you to think that I thought you would think that I thought ... so and so." Convoluted on close analysis, but perfectly understandable to the parties involved.
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Note 25 --

In referring to the "left" and "right" brain we are talking primarily about the speech centers -- Broca's area and Wernicke's area. The abilities of the right and left hemisphere listed in the text are abbreviated for the sake of this text. To gain an appreciation for the incomprehensible complexity of mental functions, see the classic book by Oliver Sacks *The Man who Mistook his Wife for his Hat* (1970) which deals with dysfunctions of the right hemisphere. These right hemisphere abnormalities are not noticed by the subjects, whereas left hemisphere dysfunctions are experienced and can be described by patients.
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Note 26 --

"Modeled such silent consciousness," is a sort of sudden jump in the narrative on my part. It may have come later and taken more time.

At the close of the age of the prophets, the time from Elijah to Zechariah, Bible texts start including admonitions against hearing voices and talking in tongues. That is after 620 BC.

The Inca seemed to have learned in only a few months.
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Note 27 --

See also the writings of Edward T. Hall and any number of academics (and non-academics) who have taken up these topics. The principles first expounded by Hall are today used in international marketing.
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Note 28 --

Sun Tzu *The Art of War*, translated by Ralph Sawyer (1994). Admittedly, the texts, as they have come down to us, were edited and collated as late as circa AD 1000.
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Note 29 --

I am more inclined to view the *Iliad* as fiction purposely crafted "in the style of" an earlier period or a lost earlier literature, or possibly carried forward from a remote time, not as history, which is a substrate added over time, but as a tragedy. The *Iliad* spans only some two months, and is not about a war, but about the effects of the anger of Achilles and his reluctance to initiate action.

There is no archaeological evidence for an extended war at Troy and the city has not been located or identified. The hill at Hisarlik is too small to serve as the citadel of Troy, it is not in sight of the sea, and was repeatedly destroyed by natural disasters, and at the wrong times. But by the sixth century BC, as the Asiatic Greeks faced their defeat by the Persians, the *Iliad* became the favored epic of the heroic forebears of the conquered Greeks. Everyone believed that the war had happened. Greeks on both sides of the Aegean traced their linage to the heroes of the *Iliad.*

There is not a single mention of texts in the *Iliad*, even though these were already in wide use in Mycenaean Greece (supposedly by 1200 BC, and certainly by 900 BC). The tradition in antiquity, that Homer was blind and therefore could not write, points to a purposeful falsification also, and lends an aura of authenticity to the epic.

But the final composition of the *Iliad* has to be placed in the 7th century BC when the Greeks possess an alphabet. The poem selectively picks details from an imagined past. The battle tactics are wrong, as is the armor, and the funeral customs are foreign. There are anachronistic references to the Olympic Games, and the Gods are mocked -- suggesting a composition after perhaps 650 BC.

If the *Iliad* had achieved status as a classic at an earlier time, the vocabulary should have been recognized as archaic by the Greeks of the third century BC, since language conforms to classics. Alfred de Grazia suggests that the "heroic diction" was a purposeful amalgam of dialects of a late date.

Jaynes also forgets (perhaps) that events which are discussed and recounted will be remembered. This is true for early childhood experiences, and ought to be true of pre-subjectively conscious people also. Jaynes places the *Iliad* too close in time to his date for the change to *subjective consciousness*, and thus has to conduct an argument from an indefensible position.

It is quite possible that the whole of the *Iliad* (as Talbott has claimed) is but a retelling of the "War of the Gods" of 3147 BC. It strikes me, also, as a purposeful creation -- in a purposeful "antique style." If so, it is all the more marvelous that the *Iliad* passed through Jaynes's analysis transparently.

What we are seeing perhaps is the embellishment of memory on a grand scale, although the rigidity of the underlying structure of the *Iliad* argues for a conscious composition. But the *Iliad* was also extensively edited and codified after about 600 BC by others.

The *Iliad* was written with clear intent, as was certainly understood since the 19th century AD by literary critics -- Guy Davenport in 1954 wrote, "Not a line ... can be put out of its place" -- and with a clear political balance between the egos of the Asiatic and the European Greeks. But the facts of a detailed fiction along with an adopted diction has little to do with Jaynes's analysis, which deals with the use of body-part nouns for feelings and emotions and the actions initiated by the Gods. There is no need to consider the historical dimensions of the *Iliad.* Jaynes makes this clear in the closing paragraphs of his investigations of the *Iliad*, and I certainly agree with his conclusions.
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Note 30 --

In *Collapse* (2005), Jared Diamond writes about communal decision making in the highland communities of New Guinea, still in practice after the arrival of Dutch and Australian colonial government in the 1930s:

> *"Decisions were (and often still are today) reached by means of everyone in the village sitting down together and talking, and talking, and talking."*

And, he notes, this happens today to the extreme frustration of New Guinea government officials. As I note elsewhere, the same process of reaching complete consensus through endless talk was used by the much larger groups of Plains Indians, in the 19th century AD, to the frustration of US treaty negotiators.
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Note 31 --

How can Steven Pinker, popular author of books on language, all based on the notion that language is an inherent function of the brain, evolved over millions of years, be so wrong? (*The Language Instinct* (1994) and other books.) My first clue was his complete misunderstanding of "baby talk." He understands it as functional. I understand it as a completely disinterested attempt to communicate with children. I finally verified what I soon suspected, that Pinker has no children and has thus never had the opportunity to closely observe children in the acquisition of language abilities over extended periods of time.
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Note 32 --

But note that, despite the shorthand of this statement, what we are talking about is *subjective consciousness*, not *self-consciousness*. I have seen people dismiss Jaynes by noting that chimps show signs of self-consciousness. Well, so do my dogs. Animals certainly know who they are and are able to reflect on themselves. But no chimp has ever escaped a zoo. That would require a measure of *subjective consciousness*.

Added note: In 2006, a chimp escaped from a zoo in the US.
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