

SIX PRINCIPLES OF INTERPRETATION

ADAPTED FROM

INTERPRETING OUR HERITAGE

BY

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Interpretation is not the presentation of information, it is revelation based on information.

Interpretation must relate what is being displayed or described to something within the personality or experience of the individual.

Interpretation's primary purpose is provocation, not instruction.

Interpretation is an art, combining many arts. An art can be taught and successfully learned.

Interpretation must present the complete story and should relate to the whole person.

Interpretation for children should be specially prepared and not be a dilution of the adult version.

Goals, Themes, Objectives or Themes, Goals, Objectives

TOPIC

- Subject of program
- Usually one or two words
- Examples:
 - *The Exxon Valdez oil spill*
 - *Glaciers*
 - *Gettysburg Campaign*

GOALS

- What you hope to accomplish in your program
- Changes you hope will occur in the visitor's mind (provocation, philosophy)
- Not necessarily communicated directly to the audience
- Examples:
 - *To instill in visitors the importance of protecting and preserving sensitive marine environments*
 - *To inspire an appreciation for protection of "living laboratories" for environmental research*
 - *To stimulate a sense of awe regarding the drama of the Battle of Gettysburg*

THEMES

- A meaningful link between a tangible and intangible resource
- Central focus for your program
- Usually one sentence
- The "take home" message you want the visitor to walk away with
- Guides the research, direction, tangible/intangible linkages you use in your program
- Eliminates superfluous material
- Examples:
 - *The 1989 Exxon Valdez oil spill had a profound effect on the marine environment and coastline at Kenai Fjords National Park.*
 - *Glaciers provide important data for charting global warming.*
 - *The topography of Gettysburg tells the story of the life and death of thousands.*

OBJECTIVES

- A measurable statement of what visitors should be able to do after the program
- A statement that guides the information you use to reach your goals
- Examples:
 - *The listener will be able to name three marine animals that were affected by the Exxon Valdez oil spill*
 - *Visitor will be able to describe two techniques used by glacial researchers to chart global warming*
 - *Visitors will be able to recount the stories of two individuals who participated in the Battle of Gettysburg*

Tangible/Intangible Model for Developing an Interpretive Product

Select Tangible

What can you interpret with that tangible? Brainstorm all the possible intangible meanings—events, processes, ideas, and values that can be associated with the tangible. These are all tangible/intangible links. Your list should be long. Do you have enough Knowledge of the Resource (Kr)? Do you need to do more research? Ask others to brainstorm as well.

Are any of your intangibles universal concepts—a concept that everyone can relate to, but no two people will see exactly the same way?

Who is your intended audience? Do you have enough knowledge about the audience (Ka)? Remember that the visitor is sovereign. Interpretation must first relate to the personality of the visitor before it can provoke.

Based on your links and Ka, create a theme that links your tangible to an intangible meaning. The most effective interpretation has themes that tie a tangible to a universal concept.

Select tangible/intangible links that support your theme. Organize the links so that they develop a coherent idea or ideas. Provide information, tell stories, conduct activities, and use descriptive language to illustrate your links. Use effective transitions to move from one link to another.

E.G.

Thematic Interpretation

Theme: The main point or message a communicator is trying to convey about a topic (a topic is merely the subject matter of the program). The theme is the central focus of the program. A theme should:

- Be stated as a short, simple, and complete sentence.
- Contain only 1 idea.
- Reveal the overall purpose of the presentation.
- Be specific.
- Link a tangible with an intangible
- Answer questions such as "So what?" and "Who cares?"
- Suggest concepts and connections with resources or activities of widespread interest and recognition.

main message
story line
holds it all together

links a tangible
w/ intangible

link it to the place

Examples of theme statements:

The Oyler Mine, an example of a "doghole" uranium mine on the Colorado Plateau, has a long history which is regionally significant, and is nationally significant because of the national impact of the uranium boom.

Fossil trackways tell of past life and past ecosystems.

The history of the schoolhouse helps reveal early life in Fruita, and the schoolhouse shows us how day-to-day life can become interesting history only 60 years later.

The landscape of Capitol Reef, including cliffs, slopes, monoliths, natural arches and bridges, and narrow canyons result from weathering, erosion, and canyon incision of a thick sequence of sedimentary rocks in an arid climate.

Capulin Volcano is an outstanding example of a basaltic cinder cone volcano and is a product of the final stages of volcanism in the Raton-Clayton Volcanic Field.

Goal: A statement of overall general purpose for the program. Goals are the "warm fuzzies" a program offers the audience. Goals should be expressed with words that are open to many interpretations, such as, know, understand, appreciate, enjoy, be aware, etc.

- Goals describe the visitor understanding of themes.
- Goals should reflect the interpretive outcome.
- Goals should be broadly stated.

main part of program

purpose
big concepts
w.

Examples of Goals:

To be aware of the geology of uranium mineralization and uranium prospecting techniques.

To understand the geologic significance of fossils in general, and of fossil trackways in particular.

To get a feeling for what school was like in the one-room schoolhouse just 60 years ago.

To appreciate the concept of geologic time, and how the geologic past is relevant to the present.

Objective: A measurable, quantifiable statement of what the audience is supposed to receive from the program. Objectives should be expressed with specific verbs that are open to few interpretations, such as draw, cite, define, quote, compare, discern, solve, etc.

- Objectives are specific declarative statements of what the visitor can or will do as a result of the interpretive program.
- Stated in easily measurable terms.

test questions
what will
be able
to do
after the
trip

Examples of Objectives: (At the end of the program the audience should be able...)

To identify the impacts of the uranium boom on the Colorado Plateau landscape, specifically at Capitol Reef.

To list one reason why the study of fossils is important.

To list one way that geology has affected the human use of the region.

To explain how one Capitol Reef landform was formed.

N.B. The examples of theme statements, goals, and objectives are from programs at Capitol Reef National Park, Canyonlands National Park, and Capulin Volcano National Monument.

A. Mathis
Capulin Volcano NM
6/1997

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Howard Gardner's ground breaking theories were first published in *Frames of Mind*, 1983. Gardner was a Harvard scholar studying work on the development of children's cognitive processes based on the work of Jean Piaget. Through his own work on the development of cognition, he came to view those of Piaget as too narrowly focused. In his innovative theory, he presents a new framework for considering the gifts of children. Through studying other cultural definitions of intelligence, neurophysiology, anthropological studies and his own experimentation and observation of children, Gardner originally devised seven categories of respective intelligence. These are:

- verbal/linguistic;
- logical/mathematical;
- spatial;
- bodily/kinesthetic;
- musical;
- interpersonal; and
- intrapersonal.

While Gardner contends that all humans have some degree of all seven (now 8) intelligences, there are those who are more gifted in some areas, or in combinations of areas, than in others.

(An eighth intelligence, naturalistic/environmental, was defined and put forth in the mid '90s by Gardner. He explained it further in presentations, interviews, journal publications, and then more fully in detail '99 in his book *Intelligences reframed*. You will find more details on this form of intelligence on a separate web site, and on many other online sources. He has alluded to "existential intelligence" also, but at this time (2005) has declined to describe it more fully. Despite Gardner's reluctance to fully commit, many others have accepted this intelligence. See discussions here.)

Gardner's First 7 Intelligences Defined:

1. Verbal/Linguistic--deals with abilities in the complex acquisition, formation and processing of language. Thinking symbolically and reasoning abstractly fall under this category, as does the ability to create conceptual verbal patterns. Reading, writing, the development of symbolic writing and language skills--

anagrams, palindromes, metaphors, similes, puns, and analogies come under this heading. Children who talk early, those who enjoy making sounds and rhyming patterns; children who are prolific readers and have good memories for poetry, lyrics, tongue twisters, and verse may have a propensity in this area. These individuals love words, both spoken and written, and often think in words. They learn by verbalization, by seeing and hearing words and usually enjoy word games. (In his work that parallels that of Gardner's, Bob Samples refers to Verbal/Linguistic and Logical/Mathematical in one category as Abstract/Symbolic intelligences. See References .)

■2. Logical/mathematical--deals with the ability to think logically; inductively, and to some degree deductively; categorically; to recognize patterns, both geometric and numerical; as well as the ability to see and work with abstract concepts. Children who possess this form of developed intelligence may be constant questioners; they may easily grasp games that involve sophisticated strategies--like chess; or they may devise experimental formats to test their ideas. Also, they may be fascinated with computers or with puzzles that involving logic and reasoning abilities.

■3. Spatial Intelligence--deals with the ability to perceive images. These children think in images and are usually the ones able to find missing objects due to their tremendous powers of visual recall. They may be the first to notice things that have been changed or rearranged. Many are earlier drawers--delighted with shapes, lines and colors. These folks are attracted to jigsaw puzzles, mazes, find the hidden picture puzzles and they love to construct things with blocks. They have an early sense of proportion and perspective. They are also good at reading and constructing maps and discerning objects as they might appear in three dimensional space. They are often referred to as daydreamers--staring off into space. (In David Lazear's adaptation of Gardner's work, he expands this concept to include visual intelligence. Bob Samples also describes this type of ability as visual. See References .)

■4. Musical--obviously deals with the ability to create or interpret music. These children may need music while they study, and they are continually humming, singing, tapping out tunes rhythmically, or whistling. They have keen ears for distinguishing sounds and subtle nuances in music and in the sounds in their environments. These children can also be excellent mimics and can easily discern differences in speech patterns or accents. (Again, David Lazear expands this group with the descriptor of rhythmic, and Bob Samples describes this as auditory intelligence.)

■5. Bodily/Kinesthetic--deals with the gift of physical movement, that of both the fine and/or the large muscle systems. These children are the movers of the universe, and frequently they squirm, rock, even fall off their chairs when required to sit still for extended periods of time. These children are adept at creating and interpreting gestures and are often attuned at communicating in, or reading others body language. They may even have a need to enter the personal space of others or to touch them while communicating. This group of students

They will appreciate foot tech.
~~Shape~~
 of guns,
 32nd range of fire.

Shape of fork.
 resembles
 a pizza pie
 with a slice missing.
 Jay/Williams juxtaposition.

Can't bring records out here
 can we?
 Alteration.

Prop people

needs to learn by acting and moving, to learn by haptic experiences.

■6. Interpersonal--deals with the ability to understand and communicate with others and to facilitate relationships and group processes. The phrase "they can work the room " aptly describes their uncanny abilities to read people. Often these children are highly empathetic, and they can arbitrate differences between people or groups. They can easily pick up on the vibrations, the feelings of others. These children enjoy cooperative learning experiences and learn best in cooperative settings. (Bob Samples refers to this type of intelligence as synergistic personal.)

■7. Intrapersonal--deals with the ability to be somewhat insulated from ones peers; to have a strong sense of self; to have leadership abilities in reference to making decisions that may not be popular with others. This strong sense of self creates a certain amount of immunity from peer pressure. These children may be what are described as "loners". They may have gifts out the ordinary realm of human understanding--strong intuitive feelings, a sense of inner wisdom, or precognition. These children need learning experiences where they can focus on their inner being and activities that allow them to work by themselves on material and projects of their own choosing. (Bob Samples refers to this ability to be synergistic-natural.)

(The above descriptions have been compiled from the works of Howard Gardner, Bob Samples, David Lazear, and Thomas Armstrong. See References for full citations.)

Howard Gardner's work adds new depth to understanding the multifaceted and varied dimensions of human intelligence. Under the umbrella of Gardner's definitions, American schools seemingly have few problems meeting the needs of students who have verbal/linguistic or logical/mathematical intelligences. Even in special programs that are designed for "gifted" students, many of Gardner's intelligences are not recognized or acknowledged as important or valued gifts. As a result of this ancient, and very Western, cultural mindset, some children are elevated while others are must go wanting. And although physical giftedness appeared in the initial definitions concerning federal mandates governing gifted education, during the 70's that form of giftedness was removed from successive definitions. This was done reportedly because schools meet the need of physically gifted children through expensive sports programs. While that is undoubtedly true for those students displaying physical traits compatible with the narrow needs of established sports, it is not true that all kinesthetically/bodily gifted students are served by schools' athletic programs. Students having kinesthetic gifts in areas such as dance, mime, gymnastics, small muscle kinesthetic proficiencies, performance arts, table tennis and so forth, are virtually ignored by school programs.

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The Eighth Intelligence: Naturalistic Intelligence

From: *Journeys: Inside Out, Outside In.*

by Leslie Owen Wilson

Recently Professor Howard Gardner of Harvard has begun to herald, describe, and publicize the addition of an eighth intelligence (naturalistic intelligence or nature smart) to his Multiple Intelligence Theory. MI was first put forth in his groundbreaking book on redefining aspects of human intelligence, *Frames of Mind*, in 1983.

As many educators know, one of the great strengths of Gardner's initial work on redefining intelligence was that he could accurately pinpoint parts of the brain as these correlated to each described intelligence - verbal/linguistic; mathematical/logical; spatial; kinesthetic; musical; interpersonal; and intrapersonal intelligence. He designated site locations by using findings from research in neurophysiology. Part of Gardner's contentions for considering the redefinition of intelligence were strengthened by the fact that he noted that humans could actual lose an ability or intelligence through disease or injury.

To date, (Fall '97), Gardner's publicized descriptions of naturalist intelligence have been sketchy and void of any direct correlations to related neurological sites. I do not honestly know what rationalization will be forthcoming in Gardner's final justification for existence of "nature smarts." I can only venture a guess that eventually the descriptions of this intelligence will relate to sites of the brain responsible for recognizing patterns, for making subtle connections, and to those areas responsible for acute sensory perceptions, and to sites related to object discrimination and classification. Like many others, I eagerly await Gardner's full description of "nature smarts," especially in light of several questions I

have about the context for the recognition of this intelligence.

Questions:

1. If there is such a thing as "naturalist intelligence," how will it manifest itself and develop in populations and students which are primarily urban? And
2. How does, or would, naturalistic intelligence differ from a more expansive intelligence -- say, cosmic intelligence or awareness? (I would define cosmic intelligence as: the recognition and ability to discern, subtle and overt patterns in the activity of natural elements, other species, and humans. Cosmic intelligence would also include the ability to recognize universal connections and patterns. Or it might include an acute awareness of universal changes and the possibility of spiritual or cosmic links in which one is both aware and respectful of the interconnectedness of all life forces.)

In discussions on these issues, many of my students appear to have mixed opinions as to whether there is a specific eighth intelligence, or if that eighth intelligence is appropriately labeled and described as "naturalistic," as opposed to something larger like "cosmic intelligence."

General Descriptions and Indicators for Being Nature Smart

For parents and teachers interested in more detail on how "nature smarts" might be recognized in children, I have tried to process, project and conceptualize Gardner's ideas and come up with apt descriptors. Many of the aspects listed below are from conversations I have had with parents of children who appear to exhibit acute awareness of patterns in nature at an early age.

Description

Naturalist intelligence deals with sensing patterns in and making connections to elements in nature. Using this same intelligence, people possessing enhanced levels of this intelligence may also be very interested in other species, or in the environment and the earth. Children possessing this type of intelligence may have a strong affinity to the outside world or to animals, and this interest often begins at an early age. They may enjoy subjects, shows and stories that deal with animals or natural phenomena. Or they may show

They will appreciate the Northern sections of the T. Islands. They may want to visit a pond in Brockton or Nolan Park.

unusual interest in subjects like biology, zoology, botany, geology, meteorology, paleontology, or astronomy. People possessing nature smarts are keenly aware of their surroundings and changes in their environment, even if these changes are at minute or subtle levels. Often this is due to their highly-developed levels of sensory perception. Their heightened senses may help them notice similarities, differences and changes in their surroundings more rapidly than others. People with naturalistic intelligence may be able to categorize or catalogue things easily too. Frequently, they may notice things others might not be aware of. As children these people often like to collect, classify, or read about things from nature -- rocks, fossils, butterflies, feathers, shells, and the like.

If your child:

- Notices patterns and things from nature easily,
- Has keen senses and observes and remembers things from his/her environment and surroundings,
- Likes animals and likes to know and remember things about them,
- Really appreciates being outside and doing things like camping, hiking or climbing, even just like sitting quietly and noticing the subtle differences in the world of nature, or
- Makes keen observations about natural changes, interconnections and patterns,

then this child may be nature smart.

Primary examples of notable people having naturalistic intelligence are John Muir, Rachel Carson, and Charles Darwin. Examples of cultural groups possessing and valuing this form of intelligence are many Native American Tribes and Aboriginal Peoples.

Possible Traits Exhibited by Children with Naturalistic Intelligence

Children having naturalistic intelligence may exhibit some of the following characteristics:

They may:

Have keen sensory skills - sight, sound, smell, taste and touch.

Readily use heightened sensory skills to notice and categorize things from the natural world.

Like to be outside, or like outside activities like gardening, nature walks or field trips geared toward observing nature or natural phenomena.

Notice patterns easily from their surroundings -- likes, differences, similarities, anomalies.

Are interested and care about animals or plants.

Notice things in the environment others often miss.

Create, keep or have collections, scrapbooks, logs, or journals about natural objects -- these may include written observations, drawings, pictures and photographs or specimens.

Are very interested, from an early age, in television shows, videos, books, or objects from or about nature, science or animals.

Show heightened awareness and concern of the environment and/or for endangered species.

Easily learn characteristics, names, categorizations and data about objects or species found in the natural world.

About the Author Currently, Leslie Owen Wilson is an assistant professor of education at the University of Wisconsin-Stevens Point where she teaches courses in educational psychology, theories of learning, curriculum, and creativity. She has also been a classroom teacher, reading teacher and teacher and developer of programs for highly able and creative learners for over thirteen years in Maryland, Georgia and Oklahoma. Her doctorate is from Oklahoma State University in Curriculum and Instruction with additional emphasis in gifted and talented education and educational foundations. In addition to her varied scholarly and professional pursuits, Leslie has also written the book, *Every Child, Whole Child: Classroom Activities for Unleashing Natural Abilities*. 1994. Tucson, Ariz.: Zephyr Press, and has just completed the manuscript of another book, *Journeys: Inside out, seeking wholeness*. Both books bridge theory into practice for teachers and use multiple intelligence theory and holistic learning as their foundations. She has also contributed a chapter on the importance of educational rites of passage experiences in *Perspectives on the unity and integration of knowledge* for Peter Lang Publishing. UW-SP has recognized her outstanding contributions in the area of instructional delivery with an university teaching excellence award.

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Interpretation

Presents multiple points of view
Honestly presents facts that lead the audience to a revelation
Is not afraid to present complexity
Treats the audience as a group of intelligent people
Encourages dialogue
Allows audience members to express and maintain their own perspective regardless of any desire or attempt to change them

Interpreganda

Ignores multiple points of view
Dishonestly skews facts toward a forgone conclusion
Oversimplifies facts
Comes from a perspective that the audience is ignorant
Communicates in one direction by discouraging dialogue
Attempts to force the audience members into seeing only one perspective

Interpretainment

Stereotypes multiple points of view for effect
Arranges facts around a punch line
Oversimplifies facts
Comes from a perspective that the audience isn't truly interested in the meaning of the resource
Allows dialogue only when it's shallow and contributes to the entertainment value of the show
Doesn't care what the audience thinks - just how it reacts to the material

Interpredata

Presents multiple points of fact
Honestly presents the facts and nothing but the facts
Provides great detail to the facts
Believes the audience is only interested in information
Encourages factual dialogue
Allows the audience to maintain their own perspective – as long as it is factual

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- **Is not afraid to present complexity**
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The Grand Dimensions of the Grand Canyon

Geology Walk or Talk

Theme: The Grand Canyon is immense in all dimensions, including the fourth dimension (time) and the fifth dimension (meaning).

Goals:

- To comprehend the immensity of the Grand Canyon.
- To understand how the canyon was formed.
- To realize that the Grand Canyon is meaningful to people around the world.

Objectives:

- To state the relationship between the river and the canyon.
- To list one bit of evidence that shows that the Grand Canyon has significance to many people.

Props:

- Geologic Time Yard Stick
- Quotes

Introduction:

- Welcome, self, safety, logistics
- What is your impression of the canyon: (BIG)
- The dimensions of the Grand Canyon can help us relate to the Canyon

Part 1/Stop 1:

- Knowing the three physical dimensions (length, width, depth) gives an idea of how immense the Canyon is.
- Length: 277 river miles (140 linear miles)
- Width: Average 10 – 16 mi. Min: <0.5 mi. Max: 18 mi.
- Depth: Average 1 mi. (5,000 ft). Min: 2,000 ft. Max: 6,000 ft.
- > 1,000 mi³ of debris removed from the Canyon.
- GRCA may not be the biggest canyon in the world, but is the “grandest” canyon with large size in all three dimensions and color and varied terrain. (Hells Canyon, OR/ID is deepest in USA)
- Definition of “grand.”
- Dutton’s quote: “...The sublimest thing on earth. It is so not alone by virtue of its magnitude, but by virtue of the whole – it’s ensemble.”
- Next will talk about how Canyon formed.

Part 2/Stop 2:

- How was this big canyon formed? (The Colorado River)
- The Colorado River is approx. 300 ft (1 football field) wide below Yavapi.
- Colorado River is not a very big river, it is nowhere near the largest river in North America.
- Largest River in North America: Mississippi R.
- Comparison between Colorado R. and Mississippi R.

	<u>Miss. R.</u>	<u>Co. R.</u>
Width	0.5 – 1 mi.	80 – 300 ft.
Length	2,350 mi.	1,450 mi. (277 mi. in GRCA)
Drainage Area	1.2 million mi ²	0.25 million mi ²
Average Discharge	630,000 cfs	20,000 cfs (historically 5,000 – 100,000 cfs; max 300,000 cfs)

- If the Miss. R. is so much larger than the Co. R., why hasn’t it carved a “grander” canyon? (Or, how did such a small river carve such a big canyon?)
Answer: Gradient, elevation change. Miss. R. elevation change of 1,200 feet. Co. R. elevation change of 14,000 feet (2,200 feet in GRCA). Gradient gives rivers power to downcut because rivers run on gravity. The greater the gradient, the greater the ability of a river to downcut.

- The Co. R. also has another trick up its sleeve (or down its channel): sediment load. ("Too thick to drink, too thin to plow.") Sediment load like teeth in a saw, it grinds rock against rock, like diamond tip on a drill. Before GLCA dam, approx. 380,000 tons/day moved through the Canyon on a given day.
- River explains depth, but not width of the Canyon: Width of Canyon is the result of cliff retreat (hard and soft layers), rockfalls, side drainages, and fault lines to aid erosion.
- Now that we have a grip on the size of the GRCA in three dimensions, we'll talk about the fourth dimension next.

Part 3/Stop 3:

- The fourth dimension in time. Geologists talk about deep time. (The Canyon is deep in more than one way.) The earth is 4.6 Ga (evidence: every dating technique, moon rocks, isotopes, etc.)
- Oldest rock in the Canyon: The Vishnu Schist (point it out) - 1.7 Ga. Oldest is at the bottom.
- Youngest rock we are standing on: The Kaibab Ls - 250 Ma. Youngest is on rim.
- Age of rock is when rock formed (metamorphic—change shape; sedimentary—deposition (Kaibab marine).
- To put in perspective, the Yardstick of geologic time. 1 in. = 127 Ma.
Vishnu Schist - 13.4 in.
Kaibab Ls - 2 in.
Tapeats Ss - 4.3 in.
Some time missing: unconformities.
- Two ages here: 1, the age of the rocks; 2, the age of the Canyon. Which is older? (the rocks)
- Canyon carved in last 6 Ma after formation of Gulf of California.
- Time gives us another perspective with which to view the Canyon, in addition to the three physical dimensions. Next, we will talk about the "fifth dimension."

Part 4/Stop 4:

- The fifth dimension is the Canyon's meaning, impact, value, significance. I propose that GRCA is meaningful to a lot of people.
 - Approx. 5 million people visit/year.
 - GRCA is a National Park—nationally significant.
 - GRCA is a World Heritage Site—internationally significant.
- The meaning of Grand Canyon may be different to each person. The meaning is impossible to quantify, unlike the other dimensions, and even hard to qualify.
- I will share meanings from two writers:
- Colin Fletcher, The Man Who Walked Through Time: "To understand man's significance, I saw, you must first accept his insignificance. Only then could you focus him into importance against his stupendous, unshuggable background."
- Edward Abbey, desert rat, "nature writer," GRCA fire lookout, ARCH park ranger: "...a landscape that has to be seen to be believed and even then remains a little beyond complete belief, a strain on human credulity.
Comprehensible, yes.... And yet when all we know about it is said and measured and tabulated, there is something in the soul of the region, the spirit of the whole, which cannot be fully assimilated to the human imagination.
My terminology is far from exact; certainly not scientific. Words like "soul" and "spirit" are poor vague shabby gestures toward an effort at understanding. But I can offer no better. The land here is like a great book or a great symphony; it invites approaches to comprehension on many levels, from all directions."
- I ask you to spend some time while you are here thinking about what the Grand Canyon means to you.