

Talking Rocks

A Simulation on the Origins of Writing

by Robert F. Vernon

Teacher's Manual

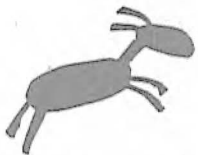
FOREWARD

The bones, spear points, axes, pottery and ruins found throughout the world testify to the presence of a prehistoric people. Most dramatic are the pictographs and petroglyphs left in remote caves and crevasses by ice age men and women. It is ironic that just as we are beginning to understand what some of the drawings may mean, the drawings themselves are rapidly disappearing. Entrepreneurs have looted sites of invaluable petroglyphs and sold them for large sums to private and public collectors. As the sites become more accessible to campers, hikers and persons in off-road vehicles, they become vulnerable to destruction. Even the remote deserts in the American southwest, so abundant in prehistoric drawings are not immune. In our travels to collect material for this simulation, my wife Katherine, and I saw ancient panels mutilated forever by mindless twits armed with spray cans and picks.

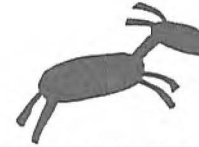
As we erase our image of "primitive" people as "noble savages" at the mercy of their environment and stomachs and learn to value their sophistication, their talent, their ability, we begin to understand their heritage. Hopefully this simulation teaches respect for this heritage.

Many people have helped in creating TALKING ROCKS. Katherine Vernon aided me immensely with ideas and editing assistance. Garry and Cozette Shirts and Joann Furse of Simile II offered much good advice, criticism, and patience. Catherine Whitaker Davidson of the Abraxis Free School, San Diego, and Ray Conrad at the University Laboratory School, University of Hawaii, greatly helped in the testing of the first version. Further modification and testing were carried out in California by Judy Dinnsen at the Del Mar Shores Elementary School, Del Mar, Nancy Harrell Peabody at the Monte Vista High School, Spring Valley, and Dale Buboltz and Louise Crittendon at the Murchison Street School in Los Angeles. The inspiration for the debriefing techniques was provided by Ron Stadskev of the Institute of Higher Education Research and Services, University of Alabama, in his book, **EIAG, A Basic Debriefing Model, Handbook of Simulation Gaming, Part I**. To all these people, and the others who helped, thank you very much.

Robert F. Vernon

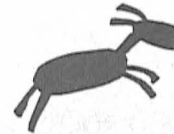


Graphics: Bert Kersey



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AN OVERVIEW

Participants Become "Eagle People"

Participants are divided into small groups or bands of "The Eagle People" prehistoric shepherds who live in groups and seasonally migrate in search of new pastures. The Eagle People do not live together but communicate with each other by leaving messages near abandoned campsites. These messages contain vital instructions for survival.

"Write" Survival Messages

In the simulation, each group creates Survival Messages for the other groups to interpret. Once these are written, the groups rotate or "migrate" around the room to each other's campsite and attempt to translate the drawings left behind by the former inhabitants of the campsite. The Survival Message must be understood or all of the participants in the group "die" and no longer participate. After several migrations, a crude but effective picture-writing system usually evolves. The teacher and the students then analyze the events of the game.

Grade Level And Uses Of TALKING ROCKS

TALKING ROCKS was designed for pupils from the fifth through eighth grades, but may be used by high school and college groups studying literature, grammar, and sentence structure, communications, anthropology, ethnography, linguistics, and art. TALKING ROCKS was designed for classroom-sized groups, but as few as six people can play and, with a little extra help, it can accommodate several classrooms at once. It can be divided into several separate consecutive sessions lasting about forty-five minutes each, or it can be played and analyzed in one session lasting 2 to 3 hours.

OBJECTIVES

After playing TALKING ROCKS, and then discussing it, it is expected that the participants will:

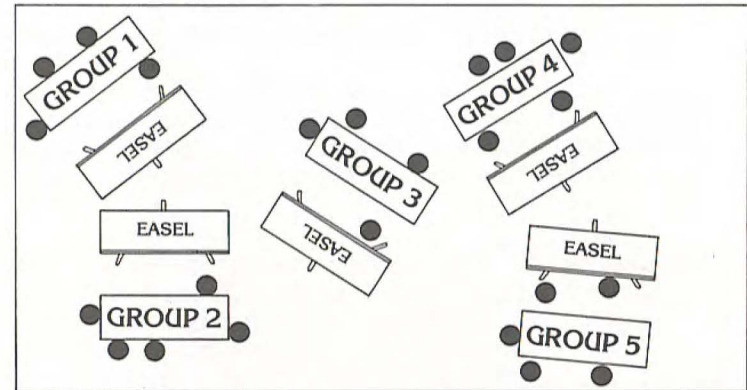
- (1) develop an image of prehistoric or non-literate peoples that is more complex, sophisticated, and empathetic than conventional stereotypes.
- (2) be able to identify and define "petroglyphs" and "pictographs."
- (3) understand how writing as a form of communication may have evolved.
- (4) gain a better understanding of how humans survive in adverse environmental conditions.
- (5) be able to identify some essential elements that are needed in making up a writing system.
- (6) be better able to identify, isolate, and analyze symbols.
- (7) be better skilled in assimilating, criticizing, analyzing, and generalizing from information about prehistoric peoples.
- (8) experience and use the basic parts of speech, grammar and syntax.
- (9) have the opportunity to increase their appreciation of primitive art.
- (10) have an opportunity to define tasks, organize groups, divide workloads, draft maps and orient ideas into spatial concepts.
- (11) have a basic grasp of the concept of hunting magic and primitive religion, if optional scenarios are used.

SPACE

Before Simulation Begins

Isolate each group as much as possible. Arrange the space so that the content of the Survival Messages will not inadvertently be discovered. When available, use room dividers, chalkboards on rollers, etc.

If you are playing in an average-size classroom with about thirty students, divide the room in such a manner:



A Suggested Room Arrangement for TALKING ROCKS.

DIVIDING THE GROUPS

There should be no more than 5 students in a group. If there were 29 students in a classroom for example, they could be divided into 5 groups of 5 students each and 1 group of 4. If there were only 15 persons in the class, they could be divided into 5 groups of 3 persons each. Keep the groups as small as possible to insure that everyone can participate.

MATERIALS YOU WILL NEED

- (1) Teacher's Manual
- (2) Survival Messages
- (3) Large sheets of unlined newsprint and wide felt markers.*
- (4) Scratch paper for each group.*

*not supplied with simulation



INTRODUCING AND RUNNING THE SIMULATION

Beginning

Begin by telling the participants that they are going to become Eagle People and write Eagle messages to one another without using words or modern symbols. Tell them they should try to survive as long as possible, and that there can be no talking between groups.

Hand Out Survival Messages

Hand out one Survival Message to each group as you give the instructions. Put the number of the Survival Message on the back of each group's newsprint pad to help you avoid giving a message to a group more than once.

Instructions For Students

Here are the instructions you should give. "You are the Eagle People, a great nation made up of small groups of families who live together in bands. You all speak the same language and share the same customs and traditions. You have flocks of sheep and goats which give you meat and milk for nourishment, leather and wool for clothes, moccasins, rope, and blankets. Each group of Eagle People lives apart from every other group and is separated by a journey of many days over high plateaus and arid deserts. You help each other whenever you can. When you move your campsites, you leave helpful messages behind for the next band of Eagle People who camp there. You do this by carving the messages onto large flat rocks with stone tools.

You Are Eagle People

You Live Apart

You Leave Messages

Three Rules

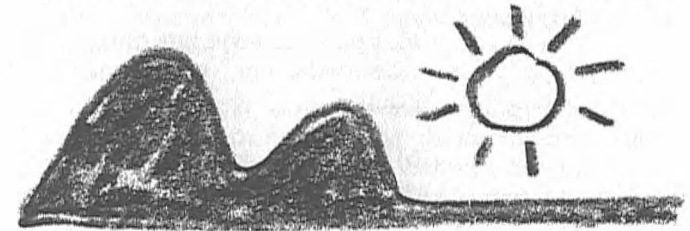
Each of you has a message to leave for those who follow you. You have several minutes to write this message down. There are three rules: (1) Use only pictures. Do not use words, modern symbols, or numbers. (2) Do not share the message with any other bands in the room. (3) Do not talk to any other bands."

During The First Round

Once the session has begun, you should circulate around the room and act as a time keeper. It is important to get the groups working on the assignment as soon as possible, but you should refrain from giving advice and suggestions. If one group completes the Survival Message sheets much faster than the others, have them attempt a second version and then have them select the best of the two. Each group should be made to feel responsible for its own survival.

Ending The First Round

The time allowed participants to complete their drawings is a matter of judgement. When the best or only pictures that are going to emerge during the first round are almost complete, give a three minute warning. Generally, the first round will last about twenty minutes. Subsequent rounds will likely be shorter.



Migration

Call time. **Collect the Survival Messages** to keep them from unauthorized groups. Tell each group to move to the next campsite, taking their personal possessions with them but leaving their drawings behind. Once they arrive at their new territories, tell them it is important for their survival to interpret the pictograph left by the preceding group. Give them five to seven minutes to do this. The commentary should be as follows:

"You have just migrated into a new territory. The trek was long and hard, over many miles of burning desert. You are very tired and hungry. If you do not find food and water for yourself and your flocks, you are going to be in deep trouble very soon.

**Allow 5-7
Minutes To
Interpret
Drawings**

Sometimes your lives depend on messages left by other bands. This is one of those times. Nearby, you found a message chiselled onto a cliff. You must figure out what it means.

You have several minutes to translate the pictograph in front of you. Remember that this message is important for your survival, so be careful in deciding exactly what it means."

Judgement

Call time and evaluate and judge whether or not the groups have correctly interpreted the picture's message. You are the sole judge and arbitrator in this. To judge:

- (a) Each message has one survival element, such as "poisoned water," which must be understood by the group.
- (b) Each message has some sense of direction, such as "go east," which must be understood.
- (c) Each message has some sense of **time and distance**, such as "a half day's journey," which should be understood for full translation.

Refer to the Survival Message sheets in making your judgement. A summary of their contents by number is presented on page 24.

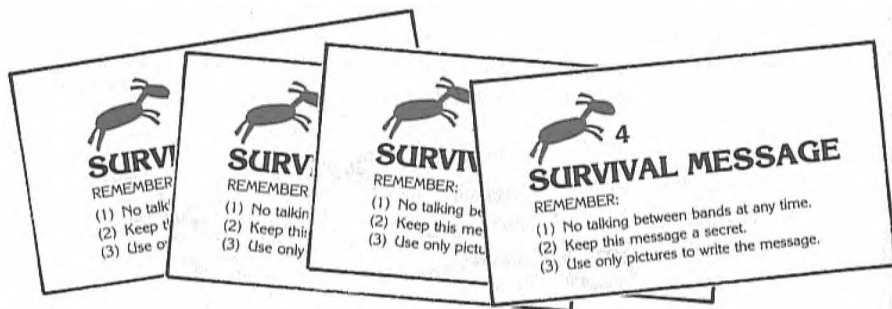
Groups who have correctly interpreted the pictures are allowed to continue playing. Groups who misinterpreted the message are assumed to have followed their false understanding and died out. Announce your decisions to the groups and make the necessary adjustments.



**Alternatives To
"Dead" Groups**

If it is impractical or undesirable to have "dead" groups wandering around while the simulation is still going on, there are several alternatives:

- (a) Allow each group a second chance; a "three strikes and you're out" approach.
- (b) If only one group "dies", have the members assist you in running the simulation.
- (c) Assign specific observer duties to the members of the "dead" groups that will help during the discussion period, such as observing the patterns of work in successful groups, group leadership patterns, the evolution of symbols, etc.
- (d) Have "dead" groups join living groups as "ghosts" or "ancestral spirits". These spirits consult with the living. Ultimately, two groups evolve, each trying to understand the other.



Repeated Rounds

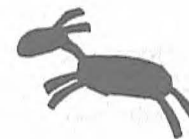
Pass out new Survival Message sheets to the remaining participants, and continue the process. The simulation can be repeated through many migration cycles, as long as you have time, continued interest by the groups, and unused Survival Message sheets. A typical session will incorporate three to four migrations. As a rule, later messages take less time to generate in the groups because participants have mastered the order and the tasks, have formed cohesive groups with specific divisions of labor, and are adopting common successful symbols. Reasonably complete and flexible writing systems emerge about the fourth round. The details of the drawings become less ornate and serve only to communicate the message.

Extended Play

If the simulation is to be played on several occasions, such as during the same class period for several days, simply end each session after the judgement stage, just before the class period ends. Collect the materials and instruct the groups to re-form at the next meeting.

Ending Play

End the simulation when desired, either because of time limits, player fatigue, or the emergence of a successful writing system. A typical session uses four migrations, which take up about two hours of time, and a third hour devoted to analysis.



VARIATIONS

Addition Of Religious, Art, And Hunting Magic Messages

With able students or the second time the simulation is played with the same class, you might want to add religious, art, and hunting magic messages to the Survival Messages. This variation is much more difficult for the participants and the director: difficult for the participants because they are deprived of the advantages and clues which come from knowing the message is concerned with survival; for you, because judging whether a particular interpretation would affect the chances of survival becomes much more difficult when non-survival messages are included. Suppose, for instance, one group draws a picture in which there are many deer. They intend the drawing as a form of hunting magic to increase the probability of killing numerous deer for food during the next hunt, but the second group interprets the pictures as directions for finding deer. Does their misinterpretation affect their chance for survival? Probably not. But what if the perceived directions were to take them into dangerous territory?

The value of this variation is that it helps the students realize that petroglyphs and pictographs were probably drawn for a variety of reasons and that interpreting them is extremely difficult when the motive behind the drawing is not known.

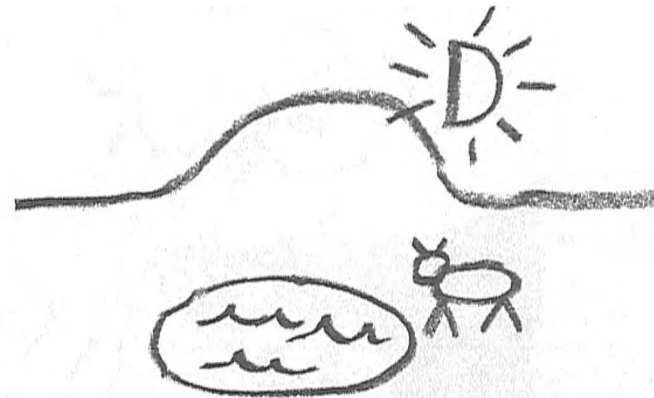
Some suggested religious art and hunting magic messages are presented on the following page.

**Examples Of
Non-Survival
Scenarios About
Religion**

1. In the beginning of the world, the people came from underneath the earth. The people came from out of the ground through a sacred hole.
2. We, the Eagle People, believe that we are all sacred to each other. Each of us is as important as the next, and we are dependent on each other.
3. Lightning is the great, all powerful spirit. It was the Lightning Spirit who gave fire to the Eagle People.
4. The Wolf-God is our enemy. Wolf-God makes war on us and our flocks of sheep. We keep our dogs trained to herd our sheep, but our dogs also keep Wolf-God howling in the distance.
5. All that is alive is sacred. Sacred are the winds. Sacred is the sun. All that is alive is sacred.

**Examples Of
Non-Survival
Scenarios About
Hunting
Magic**

1. Tomorrow we will travel east towards the mountains for a day. There we will hunt the bear, sacred and dangerous animal. We hope to return happy, alive, and well.
2. We will journey to the south for two days across the desert. Once in the mountains, we will hunt the deer. We hope to kill many, enough for our families.
3. The wild geese are flying to the south now. We hope to kill many for their meat and their feathers so that we can make warm blankets for the winter.
4. We will journey to the west for three days into the mountains. There, in the great lake, we will catch fish. We hope to catch many fish, which we will dry in the sun and save to eat in winter.
5. Today we travel east to the land of the golden arches. There we will seek the sacred deer with the giant horns.



**Writing
Survival
Messages
For Specific
Ethnic Groups**

You may wish to devise new Survival Message sheets that are based on specific ethnic groups under study. The author has created the Eagle People from several ethnographic sources. To tailor the simulation around a specific group, simply create new Survival Messages that:

- (a) contain one survival element.
- (b) contain some sense of direction and time.
- (c) contain some sense of distance.

Keep Survival Messages fairly simple and straightforward. Even the most simple sentence can be pictured in many different ways.

Give two groups the same Survival Message, either at the same time or during different rounds, but don't tell the group that you have done so. This will usually result in two totally different interpretations of the same message, and may prove interesting during the discussion period. It also works if the groups want to continue playing after the supply of Survival Messages runs out.



Using TALKING ROCKS With Young Children

While TALKING ROCKS can be easily mastered by sixth graders and older groups, it has been effectively played and enjoyed by bright groups of children as young as first graders. In order to do this, a slight modification has to be made:

(1) Before actually playing the game and using the enclosed scenarios, make up a practice run and take the group through a round of playing with it.

The practice run is made by making up new scenarios which are based on the school where the children attend classes. Phrases such as "go to the north fence on the playground" will, through initial practice, introduce the game effectively for younger players.

(2) Depending on the age or the experience of the participants, it may be necessary to review the vocabulary in the scenarios prior to playing. Unless the groups adequately understand the meaning of words such as meadow, marsh, flocks, graze, pasture, etc., they may unintentionally lead each other astray.



ANALYZING THE SIMULATION RESULTS

Giving Students A Chance To "Ventilate"

If possible, allow a break or short recess between playing and discussion. Players invariably need to "ventilate" and resolve personal events of "who did what to whom." A short break will allow this to happen. Unless these personal events and issues are resolved early in the discussion or break, it may be difficult to proceed to more abstract levels of analysis.

Two Approaches To Discussion

Small Group Discussion

If the participants are capable of small group discussion, one of the best methods of helping them analyze the experience is to divide them into discussion groups made up of different members than the simulation groups and have each group complete the statement: **Anyone playing this game will likely come to the following conclusions.** Ask each group to generate at least ten conclusions. Give them one or two suggestions to get them started such as: "It is hard to write a message about time."

Reporting Their Conclusions

When they finish the assignment, ask each group to spend a few minutes and decide which is the most important conclusion, the second most important, etc. Then, as the groups report their most important conclusion, discuss the idea with the entire group using the procedural and content suggestions listed later as a guide to the discussion.

Large Group Discussion

With groups which do not do well with small group discussion, conduct a general discussion of the experience. Some procedural hints for conducting the discussion are presented below followed by a list of evocative questions.

Techniques For Discussion

Individual To Group

Analyze actions and events of individuals first, proceed to analyze these events in terms of the small groups, and finally analyze in terms of the whole class. For example, if the evolution of the writing system is being examined, begin by having the individuals who suggested specific symbols, such as using the sun for direction or time, explain how they came up with the idea. Next, trace how the small group adopted the symbol in its context. Finally trace how the symbol became universal for the entire group of all surviving participants.

Experience, Identify, Analyze, Generalize

Proceed through the discussion in a regular series of organizational steps:

- (1) Have the group recall a specific experience that happened in the game which is immediately applicable and relevant to the learning objectives.
- (2) Have the group identify the key elements that contributed to the experience or event.
- (3) Have the group analyze what happened. Why did the event happen in the way that it did? What roles did the key elements play?
- (4) Have the group generalize from the analysis to other similar or imagined events. Have the group draw conclusions about the event based on analysis, criticism, and generalization.

Questions For Large Group Discussion

Some questions that may be used as the basis for a large group discussion of the simulation are:

Questions About The Nature Of Being Human

(1) "What were tribal people really like? Competitive? Cooperative? Both? When? Where? How? Why?"

Stereotypes Of Tribal People

(2) "What are our common stereotypes of tribal people? What do we see on the television? Are these stereotypes the same as, or different from, those in the game?"

The Writing System

(3) "What are the similarities between the writing system that evolved during the game and our own? What are the differences?"

Note: In the simulation, a crude writing system usually evolves after several rounds of play. The evolution of primitive writing systems probably took centuries and included more involved types of interaction than can be represented here. In other words this is a simulation designed to raise questions and issues and not to be an absolute replication of reality.

The Writing System

(4) Have the group post all of the successful drawings where everyone can see them. Have the group discover and decide which symbols are always included. For example, drawings of sheep, the sun, and water invariably occur. Have the group make a list of these symbols and determine their meaning and how they were used to communicate that meaning. For instance, drawings of sheep can represent nouns, verbs, adverbs and adjectives. A simple sheep may mean simply, "This is a sheep." A fat or smiling sheep may mean "Good." A group of sheep walking towards something may mean "Go this direction." Sheep walking up-hill may mean "Go up." This procedure will greatly help when analyzing the evolution of the writing system.



PROCEDURE AND PREPARATION CHECKLIST

- (1) Study the manual and insure that you have:
 - (a) newsprint and wide felt markers for each group.
 - (b) a suitable room (see diagram on page 9.)
 - (c) one Survival Message sheet for each group.
- (2) Decide how many groups will be used in the simulation according to room and class size.
- (3) Set up room in advance (see diagram on page 9).
- (4) Divide participants into small groups.
- (5) Pass out the Survival Messages, one per group. Mark the number of each group's message on the back of its newsprint pad.
- (6) When a group begins to work, facilitate as needed, act as a time-keeper, and take notes for discussion period.
- (7) End first round. **Collect Survival Messages.**
- (8) Facilitate rotation or "migration" of groups.
- (9) Allow time for groups to analyze the messages.
- (10) Visit each group and judge their decision on what the message means.
- (11) Announce your decision.
- (12) Continue playing as desired.
- (13) Announce the end of the simulation.
- (14) Have a short break. Review notes and plan the discussion period.
- (15) Discuss the simulation.

BIBLIOGRAPHY

Section I

Countless examples of cave drawings and petroglyphs can be found in many anthologies and books devoted to the subject. To list all available would not be possible. A few consulted for TALKING ROCKS are:

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Smithsonian Institution Report, 1936
Julian H. Steward
Facsimile reproduction, 1972:
The Shorey Book Store
Seattle, Washington 98104
2. "Prehistoric Rock Art of California"
Robert Heizer and C. W. Clewlow, Jr.
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Ballena Press, 1973
P.O. Box 711
Ramona, California 92065
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Museum of New Mexico, 1965
4. "The Rocks Begin To Speak"
La Van Martineau
KC Publications, 1973
Box 14883
Las Vegas, Nevada 89114
5. "Rock Drawings of the Coso Range"
Campbell Grant, James W. Baird, J. Kenneth Pringle
Maturango Press, 1968
Maturango Museum Publication No. 4
6. "Picture-Writing of the American Indians"
Garrick Mallery
Tenth Annual Report of the Bureau of American Ethnology, 1886
Washington, D.C.
7. "Rock Art of the American Indian"
Campbell Grant
Thomas Y. Crowell Company, 1967
New York, New York



A SUMMARY OF SURVIVAL MESSAGES

Each of the Survival Messages is abstracted here as a guide for facilitating the simulation. The numbers listed here correspond with the numbers on the messages for easy reference. Words in bold type in this summary are key ideas or elements which must be translated by the group and understood for their continued survival. All of the messages are about equal in difficulty.

- (1) Travel east, **turn south**, to **water** and **pasture**.
- (2) Travel west, follow a **stream south** to **pasture**.
- (3) Travel west, flat-topped **mountain**, go **behind** to **water** and **pasture**.
- (4) Two **ponds**: one to **north**, one to **south**. Go to **north pond**, because the **south pond** is **poisoned**.
- (5) Travel west to a flat-topped **mountain**. **Trail** there leads to a **cave** with **water** and **pasture** nearby.
- (6) Travel **south** to **river**. **Turn west** to a **pasture**.
- (7) Travel **north** to two flat-topped **mountains**. **Between mountains** is a **well** and **pasture**.
- (8) Travel **south** to **mountains**. Go to **tallest mountain**. **Turn east** until you find a **trail**. Follow **trail behind mountain** to **pasture** and **water**.
- (9) **Do not camp** in this **valley** by the **river**. **Flash floods**.
- (10) Travel **south** to the **mountain** with **two peaks**. There is a **marsh** and **pasture** there.
- (11) Two **trails**: **east** and **west**. Go **east** to **river** and **meadows**. **West** is cut by **landslide**.
- (12) Go **north** to **creek-bed**. Follow **west** to **pasture** and **water**.



SURVIVAL MESSAGE

REMEMBER:

- (1) No talking between bands at any time.
- (2) Keep this message a secret.
- (3) Use only pictures to write the message.



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SURVIVAL MESSAGE

From this place you can see two huge ponds across the valley, one to the north and one to the south. Both of the ponds look good, but the one in the south is poisoned, and anyone who drinks from it will catch fever and die. Travel to the north pond.

SURVIVAL MESSAGE

Drive your flocks across the deserts for one day towards the east. You will see a tall flat-topped mountain. There is a trail at the base of the mountain that leads to a large cave. Inside the cave is a big pool of fresh water, and near the mouth of the cave is a large meadow.

SURVIVAL MESSAGE

Travel south across the desert from here for two days. You will find a river. Follow the river to the west for half a day and you will find a huge pasture.

SURVIVAL MESSAGE

To the east is a valley where there is good water and pasture for your sheep. To get there, travel east for a day until you come to some badlands of lava beds, where you can go no further. Turn south and travel along the edge of the lava beds. You will find a trail across the badlands that leads to the valley.

SURVIVAL MESSAGE

Travel west across the desert for one day. You will find a small stream that flows toward the south. Follow the stream until it disappears into the ground. Keep on going beyond where the spring disappears and in the same direction for a half day. You will find a huge pond and pasture.

SURVIVAL MESSAGE

Across the desert, one day's journey to the west, is a large flat-topped mountain. The mountain stands alone in the middle of the wilderness. Behind it is a small lake where the water is good and there is a pasture nearby.

SURVIVAL MESSAGE

Across the desert from here, one day's journey to the south, there is a marsh where a stream comes down from the mountains. Travel to these mountains. The marsh is in front of the mountain with two peaks. There is good pasture and water.

SURVIVAL MESSAGE

There are two trails from here. One goes east. The other goes west. Both lead to a pleasant valley where there is a river and meadows, but the west trail has been cut off by a landslide. To get to the valley and meadows, take the east trail for one day.

SURVIVAL MESSAGE

There is an old, dry creek-bed about one day's journey from here, going north. When you get there, follow the creek-bed to the west. You will find a large pond and pasture nearby.

SURVIVAL MESSAGE

Travel north across the desert from here for one day. You will come to two flat-topped mountains. At the base where the two mountains meet is a huge pond which is always filled with rain water. There is a pasture near this place too.

SURVIVAL MESSAGE

Look to the south. You will see high mountains. Behind the tallest mountain is a huge pasture with a spring nearby. To get there, travel for one day towards the mountain. This will bring you to the base of the mountain. Turn east and go on until you find a trail that goes up the mountain. Follow the trail to the pasture.

SURVIVAL MESSAGE

We have been camping in this valley for several months and have learned a sad lesson: do not set up camp in the bottom of this valley by the river. Flash floods come through there without warning, destroying everything in their path. We know this because we lost one flock of goats in a flash flood there.