

October 29, 1986

Polynesian Voyaging Society  
P.O. Box 19000-A  
Honolulu, Hawaii 96817

Aloha Pinky,

After carefully reviewing your packet, dated September 27, 1986, the following summation was reached:

ITEM #1

All the food provided on our trips have been nutritional and exceeds our daily requirements. The situation has been that some crew members can not eat or do not like the food provided. These are the same people that complain the most and help the least to better the situation. We have planned for the majority and will continue to do so.

All the menus were worked out by our Dieticians and Roy Benham. The menus were based on a variety of canned foods available and complemented with fresh vegetables or fruit.

We are limited to the amount of fresh vegetables the canoe can carry. They will not keep long, because the canoe has no refrigeration. Some fruits will keep without refrigeration and we try to stock up as best we can. So our recourse is canned vegetables and fruits, after the fresh stuff runs out.

We feel the solution is a pre-designated cook and a very creative one at that.... We feel this is important to make a controlled menu work as well as making the food a hell of a lot more tastier....

NOTE: As I look back at the trips that I have been on, I must concede that our Dieticians solution to the food situation is a valid one. On the trips that we had a designated cook, We had steady meals three times a day. The cook was put on the second watch, so his schedule would put him in a position to handle all the meals without losing any sleep time.

ITEM #2

The drinking water requirements are set at one (1) gallon a day per crew member. We ration all fresh water, when the canoe is at sea.

*Handwritten notes:*  
Markus  
 we need a meeting with  
 Harry, Willy, Lina wa  
 & myself, he fine  
 Re: Supplies, Equip ment &  
 Ryais  
 Note: what about Canvas &  
 will for free to send  
 canvas - ?  
 Let's also get a meeting re:  
 Documentation  
 who are these people  
 Re: medical requirements  
 with out on fresh vegetables  
 we can peel

*Handwritten notes:*  
 Re: making  
 water with clove  
 1/2 cap.

Continued:

ITEM #3

The food cost allowance for the upcoming trips is \$4800.00 with a contingency allowance of \$1200.00. The total budget is \$6000.00.

ITEM #4

We do not have a cost for shipping food stores or supplies between Papeete, Rangiroa and Nuku Hiva. I will try to handle this in January when Nainoa and I go down to check the canoe in Tahiti.

*Talk to  
Tina when  
she comes.*

ITEM #5

I am listing the items, that we need to purchase to replace broken, used up or lost items. This list has a tendency to grow with each trip but we have a pretty good handle on the situation. The budget is set at \$1000.00 with no contingency.

<u>ITEM:</u>	<u>Quantity</u>
18" sq. Tupperware containers ( \$8.00 ea.)	12
5 Gal. Water Jugs ( \$5.00 ea. )	6
3/16" Dacron Line / 1000 ft. roll (\$38.00 ea.)	1
ACR LGA Beam Gun (\$54.95 ea.)	1
Olin 25 mm Meteor Flares/Red 3 pack (\$22.50 ea.)	2
Olin 25mm Parachute Flares/Red 1 pack (\$17.50 ea.)	2
Duracell "A-A" Batteries/2 pack (\$1.50 ea.)	24
Duracell 6 volt Lamp Batteries (\$3.50 ea.)	6

NOTE: Nainoa and Wally will probably add to this list later.

Please feel free to call me if you have any questions regarding this Report.

Mahalo Nui Loa,

Harry A. Ho

## HOKULE'A DOCUMENTATION '85

The documentation effort for the '85 voyage has two major divisions. One of these I think of as 'soft' documentation, in the sense that it involves pictorial and descriptive material more than numerical data. The primary goal will be one or more TV/film documentaries on the voyage, including training and other preparation.

This can be an exceedingly valuable product of the PVS '85 effort. The success in this area will depend entirely on the talents of the people chosen to do the work; it is so far outside my own area of competence that I hardly feel qualified to comment. It seems clear that the navigator and the captain should be the primary consultants.

The second major division is the 'hard' documentation, which is itself split into two sub-divisions - navigation and canoe performance. (These sub-divisions of course overlap to some extent.)

Navigation Documentation - Basically, we want to repeat what was done on the '80 trip, but (based on that experience) to do it more thoroughly and more efficiently.

The goal is to allow the navigator, in his post-voyage analysis, to recall all reasons behind his estimates and the basis for his decisions; that is, to be able to re-create (and describe for others) the whole process of navigation. To do this, we need to record his observations (sun, moon, stars, wind, waves, course and speed, etc.); his thoughts (relation to reference course; expected current set; anticipated changes in weather or current and their effect on the present course; etc.); and, of course, his position estimates.

These records will again be done in a regular taped interview format, with standardized questions plus opportunity for unlimited comments.

At the same time, of course, the ARGOS beacon (together with navigation data from the escort) will provide an accurate record of the canoe's true track.

Canoe Performance Documentation - Performance data were not previously collected in any regular manner, so this will largely be a new effort. The goal is to provide accurate data on the sailing ability (especially, the upwind sailing ability) of the canoe over long distances, in a seaway, while fully loaded for voyaging.

3

- 2 -

Standard information should include true wind, relative wind, canoe heading and speed, wave and swell direction, period, and height, sail adjustment, steering method, canoe trim, leeway estimates, etc. Several of these items will require simple (non-electronic) instrumentation aboard the canoe.

Someone other than the navigator should take the main burden of these observations, but such items as wind and waves should be cross-checked with the navigator's observations.

Note that the escort vessel should be equipped (instrumentation plus trained personnel) to make the full suite of standard marine meteorological observations on a regular basis.

Dixon Stroup  
July '84



**OCEAN WAYFINDING: (treatment  
for PVS documentary)**

The idea is to capture Nainoa Thompson's mental representation of his navigational system in a form which allows the technical details to become visually accessible to a wide audience. We propose to use computer simulation, wave tank demonstrations and the planetarium in addition to real footage of the voyages as means of visually explaining navigational technique. We propose two distinct products: (1) a 28 minute general overview piece aimed at PBS broadcast; (2) a series of detailed segments, one on each of the components mentioned below, to become a visual encyclopedia of Nainoa's navigational knowledge. The latter product is the true documentation of the details of ocean wayfinding.

The various components which would become topics for each segment include: (1) star knowledge; (2) ocean current knowledge; (3) bird knowledge; (4) wind and cloud knowledge; (5) how different (and possibly conflicting) pieces of information are combined to make decisions; (6) how Nainoa learned and created his system - the unfolding of knowledge through study, insights, experience, the communication of traditional systems; (7) how the knowledge is represented in Nainoa's mind (verbal rules, visual images, intuition, calculational formulas, etc.). The latter three points are meant to cover the technical details of the psychology of navigation, particularly interesting here since Nainoa seems to have created his own unique system.

In addition to real footage of the voyages, we propose using visual techniques which allow the demonstration of ideas and communicate a sense of movement across the various ocean forces. The planetarium could be used to demonstrate the star compass and the change in the sky over distances.

Wind and cloud knowledge could be demonstrated in a simulation using a computer paint system. A model canoe in a wave tank could be used to demonstrate knowledge about the ocean currents. We plan an extensive use of speeding up these simulated images (waves, wind, sky, etc.) in order to create a sense of the forces which are involved in navigating a voyaging canoe.

# RESEARCH AND DOCUMENTATION

## FOCUS: "POLYNESIAN PUZZLE"

Time frame: 2,000 years of seafaring

Geographical area: 10,000,000 square miles of Polynesian Triangle,  
1,000 times more water than land (excludes New Zealand)

### I. GOAL

Compile research information into "How the Seafarers Bridged the Scattered Islands Together with a People of Common culture, Language and Tradition, into the Largest Nation in the World"

The given is that it happened. Early European explorers found almost every inhabitable island people of common language and culture - a direct link of common heritage.

It would be an unachievable task to claim that we will be able to say how the Polynesians accomplished such a seafaring heritage. Simply, too much has been forgotten. The intent should be that the more we learn of the subject the better we will be able to make logical inferences.

The deeper I get into the project, the more I learn, the more I feel that I have been taking certain steps that maybe the early Polynesians may have made.

### II. OBJECTIVE:

1) Trace through time the migration patterns of Polynesian people, starting in Tonga and Samoa.

Base: Present archeological and anthropological evidence  
The survived oral tradition of today

2) Re-Discover

The possibilities of the mind, the character of ancient seafarers

Imply into the knowledge base of the traditional sciences of early Polynesian explorers (knowledge they would have had to know)

#### Focus:

##### Navigation

astronomy  
geography  
scope of nautical sciences  
oceanography: physical  
oral transmission & retention  
climatology  
etc.

(Attitude: not how much did they know (no one knows for sure) but rather how much could they have known. I believe there are parallels in how we learn and how they learned)

##### Canoe

needed performance. abilities of vessel  
cargo capacity (people, food, etc.)  
needed materials vs. materials available

##### Course

length of legs (distance and time)  
general weather patterns

### III. PROCEDURES

Take each leg as it follows archeological base  
Combine work of experts in fields of:  
1) archeology and anthropology  
2) oral tradition  
3) sailors  
Combine evidence and data  
Bridge three areas of study

#### IV. CONCLUSION - A book, An anthology

The combined writings of experts in the fields that relate to the subject from the modern sciences to ancient verbal knowledge and the practices of implied traditional sailing techniques. The anthology will become the most comprehensive and complete research document on the subject of Polynesian Seafaring.

#### RESEARCH AREAS

Archeology and Anthropology - carbon dating will give the newest most accepted information on the general movements in terms of time and place of man into the Pacific.

Basis of the evolutionary process, the spans allotted for the development in the capabilities to sail farther: a perspective, example: the 1,000 year stay in the Tonga-Samoa area.

#### Other science areas:

Geography, oceanography, climatology of Pacific areas can provide a basis of the magnitude of the Polynesian achievement once you understand the ocean environment. Such environmental factors combined with archeological and anthropological data can set the frame work for developing a knowledge base into inferring what the Polynesian had to know in order to achieve what they did.

We may be able to best infer into the knowledge needed to do the sailing they did.

#### Examples:

- astronomy
- geographical knowledge
- ability to memorize information
- ocean survival
- seamanship
- quality and ability of their canoes
- ability to transport necessities to colonize islands

#### Oral Tradition (of Polynesian heritage)

May help provide more specific information into the actual voyages, who were the navigators. Maybe genealogies can help trace such historical events and a guess to the time period. Such evidence may not prove to be solidly substantial but I feel the importance is in making available what information we can. In other parts of Polynesia, oral tradition maintains a much stronger part in the community than Hawaii and it needs to be respected in terms of our sail plan. If at all possible part of our sail plan should be designed by the reliable traditional sails. A word of warning: the farther back we go in history, especially in a history of what was not written down, the more difficult to accurately trace events, the more is probably lost, and the least reliable the information. When we attempt

to trace into the period of the ancient voyager we are tracing all the way back to the origin of new settlement.

#### Sail Plan

The sail plan should be a designed research effort into gaining a solid knowledge base through first hand experience of the problems the Polynesians needed to solve in order to accomplish populating almost inhabitable island in tropical Pacific. When you look at it in the perspective of how large an area these people travelled within a time of mankind's history with available resources that they were able to use, it is a magnificent achievement of human effort. By accomplishing the designed sail plan we will learn a tremendous amount of information through our experiences that will allow us to make logical assumptions of what they would have had to have known.

Nainoa Thompson  
7-10-84

## NAVIGATION COURSE OUTLINE

Purpose: To perpetuate and teach the art of navigation and the sailing of Hokule'a and to expand the existing knowledge base.

### CELESTIAL INFORMATION

#### **I. STAR COMPASS**

- houses
- bearings
- pairings

#### **II. STARS**

- identification
- steering stars
- land stars
- storm stars
- north pointers
- south pointers
- equatorial
- ecliptic
- latitude stars
  - synchronized rise/set
  - meridian pairs
  - equidistance
  - zenith

#### **III. SUN**

- bearings through the year
- azimuth changes with altitude
- altitude at meridinal passages
- line of light on the water
- when and when not to use
- latitude and declination changes
- times rise and set

#### **IV. MOON**

- bearings through the year
- azimuth changes with altitude
- altitude at meridinal passages
- line of light on the water
- when and when not to use
- latitude and declination changes
- times rise and set
- identify position among steering stars
- cut of the moon
- relationship between moon and sun
- as night and day steering feature

#### **V. PLANETS**

- mercury, venus, mars, saturn, jupiter
- inferior and superior planets
- position among steering stars
- identify by color and brightness
- characteristics of inferior planets

## WEATHER

### **I. ANALYTICAL**

- A. Climatology (average weather patterns)
  - Hawaiian Island coastal sailing
  - deep ocean passages
- B. Meteorology
  - global meteorology (large scale systems)
  - tropical meteorology
    - high pressure/low pressure
    - fronts
    - ridges
    - troughs
  - tradewind belts
  - ITCZ
  - Doldrum belt
  - storm systems
  - cyclones
- Classification
  - depression
  - gale
  - storm
  - hurricane
  - major hurricane
  - thunderstorm
  - squall
  - squall line
  - cold front
  - warm front
  - lightning
- C. Humidity, Air Temperature, Barometric Pressure
- D. Cloud Classification
  - surface
  - mid-level
  - high
  - jet streams

### **II. SENSE PERCEPTIONS**

- A. Visual Clues
  - sunrise/sunset
  - clues -- sun and moon
  - twinkle of stars
  - feel of wind
  - road of the wind/cloud path
  - fighting wind
  - clean wind
  - humidity

- B. Open awareness to perceptions  
    judge wind speed by character of the sea  
    true wind  
    apparent wind  
    feel of the wind  
    observaiton of water spouts, rain squalls
- C. Observation of weather phenomena

Additional sections:

History  
Sailing  
Storm sailing  
Course  
Course strategies  
Latitude  
Geography  
Mental preparation  
Commitment (Philosophy /psychology of the experience)  
Old navigators  
Hokule'a -- history and mechanics of sailing  
Mau Piailug  
Sailing canoes -- Polynesia and Micronesia  
Sea Survival  
Safety

Notes:

- \* Academic activities would relate to ocean and outdoors
- \* Use local environment to learn star compass
- \* Students would adapt activities and application  
    to what they normally do
- \* Titles for levels of accomplishment would relate  
    to sailing and weather

To Nelson

MEMO

To: Dixon, Lee and Will, Ben

From: Pinky

Re: Attached material

Please review and call in your manao to Laura or me by 10-31-86. Am asking Marlene to set up ~~and~~ Documentary Committee meeting at a time convenient to all to:

Refine our present planning

Develop approaches to meeting our "On Board"

video objectives

Thank you.

See you then.

10-26-86



Draft Summary of Meeting of Documentary Committee

10-24-86 w/ Dixon Stroup, Lee and Will Kyselka, Ben Finney

Purpose: To review existing "on board" film and video cassettes to determine what more on board filming is needed for documentary and or/educational purposes.

Cassettes reviewed: - "On board footage"

1. 1985 Tahiti leg
2. Cook Island leg
3. New Zealand leg
4. Tahiti - Loganbill

Tahiti Leg - At 10 minutes, there were shots of rain and evidences of wind but these types of filming <sup>e</sup>need to be refined in future filming. At 19 through 21 minutes, there were shots of low lying islands and atolls, again future clarity is necessary as well as commentary as to sighting possibilities, distances and so forth. This video does not include navigational or steering materials.

Cook Islands Leg Generally the shots were not fixed on a particular scene or subject long enough to gather any sequential educational materials. Zooming and panning interfere with gaining usable materials. There were interesting shots of Mitiaro islanders and the exchange of food. The contrast of clothing or lack of such, between islanders and Hokule'a crew was interesting. This is noted from 30 seconds through 2 minutes. Between 3 and 6 minutes there are some interesting shots of sail raising and adjustments. At 9 minutes there were some but too short shots of waves. This film points out the need for filming of Hokule'a in full sail under varying sea conditions, taken from another vessel. Also there is the making of sequential filming of a particular topic -- fish catching, prep,

cooking, meal, etc.

The thought that shooting scripts should be prepared before we undertake the last three legs was introduced. Question was raised as to whether 2 cameras would be useful. For instance, when a steering paddle is raised, what does it do to direction change if any of the canoe, etc. Also in terms of course setting and course maintenance by crew, this sequential filming is necessary and should be planned for in the next 3 legs.

New Zealand leg This material is interesting for use from the following time frames:

1. 1 minutes - canoe preparation before launching is good
2. 15 - 17 minutes - discussion between Mike and Bruce re: fishing equipment
3. 24 minutes - fish prep by Bruce
4. 25 minutes - sequential possibility of fish catch from 24 through 25 and 26 re: cooking, etc.
5. 33 - 41 minutes - "back wind" shots and steering requirements are interesting and need commentary. Life aboard and Stanley's contribution is to be noted. This film shows "wing on wing" (?) of sails.
6. 44 minutes - squall and change of clothing is noted
7. 50 minutes - shots of whale pod
8. 56 minutes - war canoe

Tahiti - Larry Loganbill The overall film, beginning 106 minutes and through 213 minutes, is excellent for documentary and educational purposes. This cassette should serve as our basic "on board" film. The concensus was that this material provides:

1. the base for detailed development of shooting scripts

sequential topic filming of such subject as:

- a. life aboard -- waking, full day activities of one person
- b. changing of sails, sizes, types and reasons for such
- c. navigational decisions as affected by environmental conditions:

- 1). cloud conditions
- 2). wave action
- 3) birds, etc
- 4). locating landfall and sequential steps to final sighting

2. Excellent material to be reviewed by documentary people as well as educators before the next sail to elicit structuring as well as what more is needed.

3. Future opportunities to avoid mistakes in filming. A comparison between this material and the other three leg materials points out the rationale for avoiding zooming and panning. Also time concentration on subject matter is necessary.

The committee also felt that more shots are needed in areas such as:

1. navigation and all of its ramifications. Narration would be helpful. A cordless mike might be attached to navigator as much as possible in order to document related action to theory.

2. steering in all aspects and its effects on canoe performance.

- 3. sails management and their effects on canoe performance.
- 4. long held shots of ocean under different winds, sun angle.
- 5. convey evidence of motion; bow plunging, etc.
- 6. some shots of severe weather

7. narration of what's happening is important

Conclusion -- that we must produce more "on board" filming based on detail "shooting scripts". That we secure professional assistance in the production of the shooting scripts and filming of the on board activities.

10-25-86 by M.B. Thompson

**AREAS OF DOCUMENTATION AND DISSEMINATION OF INFORMATION**

1. Science articles
2. Lawrence Hall of Science/Bishop Museum exhibits
3. Television (general public)
4. Catalog of film on sailing and navigation, archival and  
life at sea
5. Curriculum development/up date LHS and Bishop Museum
6. A book

**Focus**

1. How did early Polynesians discover the vastly scattered  
islands of Polynesia
2. Sailing and navigation

**-----Breakdown**

1. Pre-history of Polynesia (historical content)  
archeology, anthropology, linguistics, ecology, botany,  
zoology, oral tradition  
Best answers where the polynesians came from and the  
general movement into the Pacific and the time frame  
for their routes.
2. Sailing of Hokule'a throughout Pacific should be directed  
at demonstrating how it may have been accomplished.

-----  
Our efforts in documentation and dissemination of the sailing  
of Hokule'a should, although at different levels and directed  
at different audiences, work toward the two areas of  
breakdown.

1. Science articles- major authors:

(2)

Ben Finney, Will Kyselka, *DIYSON STAMP*

Co-authors: Chad Babayan, Bernard Kilonsky, Richard Rhodes  
Paul Frost, etc.

Continue to complete the articles on each leg.

2. Lawrence Hall of Science/ Bishop Museum exhibits:

Will Kyselka, Cary Sneider

Add information to up-date exhibits

3. Television (general public) KGMB, Elisa and Cliff

Document for public audience at least one leg from point  
of departure to arrival at an island.

4. Catalog of films: (film, video, stills)

Collect footage at sea for ongoing areas of documentation  
and future needs.

For Larry Loganbill's treatment for PVS documentary  
Kamehameha Schools, KGMB

5. Curriculum development (Suzanne Ramos)

Develop education materials for DOE, UH, etc.

6. Book - final document - a resource document (focus)

1. Polynesian pre-history

2. What we learned from sailing Hokule'a ( to answer how  
Polynesian sailing accomplishments)

3. Life at sea aboard Hokule'a - navigation, sailing, a  
of photos to describe the elements of navigation and  
sailing. I feel it should be an anthology. Hopefully  
experts in the areas will be willing to write about their  
specific area and combine these essays. Much of sailing  
and navigation can be best described through pictures  
with small written captions. This will necessitate a

23

③

review of the photos we hve already and decide specifically  
what we need to get from the next three legs.

11-25-86

Nainoa

Pinky, As requested, attached  
are copies of reports from the Research  
Committee.

mar

25



# POLYNESIAN VOYAGING SOCIETY

BOX 19000-A / HONOLULU / HAWAII 96817

## RESEARCH COMMITTEE

Thursday, August 28, 1986

MEMBERS PRESENT: Dixon Stroup, Ben Finney, Nainoa Thompson  
Will Kyselka, Myron Thompson

The purpose of the meeting was to:

- a) Review and expand on the goals of the committee
- b) Define a format for publication

The members agreed on the following:

## THE JOURNAL OF THE POLYNESIAN SOCIETY

- a) Six articles will be written and compressed into one and submitted to the above publication.
- b) Ben Finney will be responsible for the overall project.
- c) The writers will be:
  - 1) Dixon Stroup - Hawaii to Tahiti
  - 2) Will Kyselka - Tahiti to Cook Islands
  - 3) Ben Finney - Cook Islands to New Zealand
  - 4) Nainoa/Will - New Zealand to Tonga/Samoa
  - 5) Ben Finney - Samoa (C.I.) to Tahiti. This leg will be treated as two separate units. Nainoa will get the log sheets from Samoa to Aitutaki.



Page Two  
Research Committee

6) Dixon/Ben - Tahiti to Hawaii (via Rangiroa/Marquesas)

Comments: a) The committee hopes to have all interviews completed and a draft written by Christmas 1986.

b) Nainoa suggested the importance of doing a separate chapter on the performance of the canoe. He will put together a rough draft presenting his ideas regarding this subject.

c) Finney suggested that the topic of Hokule'a's performance be best saved for the final volume which could also include the whole cultural and motivational impact of the voyage. Legends could also be utilized.

#### OTHER

- The committee will review on-board footage to determine needs for research.
- Alfred Meyer from the Smithsonian will be contacted to determine his interest in participating in the sail.
- When all logs have been studied from the last two legs, it was suggested that a press conference be scheduled to discuss the significance of these sailing legs.
- Nainoa suggested that a daily weather analysis be obtained to assist with documentation. Bob Worthington will be contacted to obtain the name of the individual in charge of the weather station.

#### CONCLUSION

- The committee envisions the end product being utilized in the school systems as well as the Lawrence Hall of Science and Bishop Museum.

To: Research Committee  
From: Ben Finney

April 5, 1985

#### RESEARCH GOALS

- 1) To learn from first-hand experience about sailing problems over prehistoric migration routes. In particular:
  - a) Tahiti/Raiatea to Cooks to New Zealand
  - b) Western Polynesia to Eastern Polynesia
  - c) Marquesas to Hawaii
- 2) To increase our knowledge of the working of the non-instrument navigation system. For example:
  - a) etak reckoning
  - b) orientation from swells
  - c) bird behavior and landfinding
  - d) swell pattern disruption and landfinding
  - e) tacking to windward

#### METHODOLOGY

- 1) Migration routes
  - a) Search literature (legends, archaeology, linguistics, ethnographic) for evidence on these routes, including anything about sailing conditions, star courses, etc.
  - b) Correlate the above with oceanographic and meteorological data along routes
  - c) Map out feasible routes for Hokule'a and ascertain star compass courses
  - d) Document performance of the canoe from satellite fixes; record cloud cover, wind and swell information from canoe and escort vessel; record tacks, sail changes and sailing problems
  - e) Analyse data from the voyage, and integrate with traditional and anthropological information as soon as possible after completion of each route
- 2) Navigation
  - a) Have Mau and Nainoa work together, not independently, in order to maximize learning
  - b) Develop methods for precise communication with Mau so that we can get as close to his way of thinking as possible
  - c) Record star course headings, wind and swell observations, current and leeway estimations, dead reckoning calculations,

bird sightings and other landfinding observations, as well as all navigational decisions and reasons for them.

- d) Analyse data as soon as possible after completion of each leg both for a more complete record, and in order to be able to determine gaps to be covered on next leg.

#### PUBLICATION

Rather than wait for the completion of the entire voyage to analyse and publish the data, I propose that a strategy for speedy publication of the preliminary results of the voyage be developed. One possibility would be to prepare an article on each major leg of the voyage and send it off to press before sailing on the next leg. For example, after arriving in New Zealand, do an article on the Tahiti/Raiatea-Cooks-New Zealand leg. Then, after arriving in Eastern Polynesia (after having sailed from Samoa to the Cooks or wherever the first landfall in Eastern Polynesia might be) do an article on that major leg. Finally, upon arrival back in Hawaii, write up the Marquesas to Hawaii segment. I would further suggest that The Journal of the Polynesian Society be the logical place for these articles. This journal, published in New Zealand, is the leading journal for Polynesian studies. Since its inception in the last century this journal has focused on problems of Polynesian migrations. Moreover, they have a policy of reprinting articles in book form. For example, we might be able to take the three articles on the major legs of the voyage, plus the article in preparation on the 1980 voyage, put them together with an introduction and conclusion, and have The Polynesian Society publish them together as a separate book.

We have an obligation to inform our members, the scientific community and the public of the results of our endeavors. This publication strategy would enable us to get the basic material out in a reasonable period of time and have it widely available without publication or distribution costs to us.

At the same time, such a strategy would not preclude the parallel or later publication of popular articles or a popular book, or of more detailed and focused scientific articles.

BRIEFING PAPER  
HOKULEA'A  
"VOYAGE OF REDISCOVERY"

Q. Why the third trip?

A. Hawaii has the rare opportunity now to gain more information as to how the Polynesians inhabited as Captain James Cook put it "the largest nation on earth" having a common language and a common heritage.

Q. Didn't the last two trips prove the how?

A. Partly, we proved that the Polynesians were able to sail without modern instruments between Hawaii and Tahiti. Noted modern archaeologists, anthropologists and linguists point out that the seven major migration settlements of the Polynesians have involved ocean travels to all points of the compass. Learning by ~~experiencing~~ and documenting more about scientifically relevant migration routes today will provide more definitive knowledge about how we got to where we are today.

Q. Why did you say that the opportunity to do what you propose is rare?

A. Because:

1. We have a performance replica of an ancient vessel, the Hokule'a, which will be in excellent sailing condition by June of 1985;
2. We have a crew, most of whom are Hawaiians and most of whom have had 10-years of sailing with the Hokule'a. The entire crew is intensely committed to the idea of finding out more about from "whence we have come."

3. We have a Hawaiian "wayfinder" a navigator who is a proven performance replica of an ancient Polynesian navigator. As with his ancestors, he has developed a system which utilizes all of his natural senses in constant interaction with what is happening environmentally.
4. We have interested scientists, some of whom have developed and documented through their discoveries, the latest theories of the migration settlements of the Polynesians, they are supportive/<sup>and are</sup> participating in this effort.
5. The combination of these four elements, brings together a powerful force for success.

Q. Why not next year? How about later?

A. Next later possible - later doubtful. The combination is ready now.

Q. How do you plan to find out more about the How?

A. By retracing at least 4 and hopefully 5 of the major ancient migration routes as outlined in Jennings book "Prehistory of the Polynesians." We will be sailing into all points of the compass. Our routes include:

- o Hawaii, Tuamotu Islands, Tahiti
- o Tahiti, Raiatea, Cook Islands, New Zealand
- o Samoa, Cook, Raiatea, Tahiti, Marquesas
- o Marquesas, Hawaii

Q. How many stops will be made on the way?

A. 8 major stops.

Q. How many crew members will be travelling?

A. 12 per leg and there are eight legs. Of the 12 members per leg, 3 members, the Captain, Hawaiian navigator, and Micronesian navigator will probably sail all of the legs. The rest of the crew will be changed at each leg.

Q. Will there be any women on the Hokule'a?

A. Yes, at least 3.

Q. How long is the sail?

A. We will leave Hawaii in July of '85 and return home no later than June 1 of 1987.

Q. How much will it cost?

A. \$1,000,000.

Q. How much money have you raised so far?

A. We have in cash \$242,000

We have in pledges 369,000

Total \$611,000

This amount will carry us through 12/31/85. We need to raise an additional \$400,000 to complete the trip by June 1987.

Q. Who have contributed?

A. The following:

1. Membership	\$ 66,000
2. State of Hawaii	120,000
3. Gerbode Foundation	25,000
4. Hawaii Committee on Humanities	<u>31,000</u>
Total	\$ 242,000

Briefing Paper

Page 4

Q. Who have made pledges?

A. Polynesian Voyaging Society Fund Raiser

Hawaiian Musical Concert	\$ 119,000
Hawaiian Maritime Center	<u>250,000</u>
Total	\$ 369,000

Q. What will be produced from this archaeological experiment of finding out about the How?

- A.
1. Materials for educational programs for children and adults.
  2. Materials for scientific journal publication.
  3. Materials for further scientific inquiry.
  4. Materials to produce a public "participatory" museum exhibit for the Bishop Museum of Hawaii and the Lawrence Hall of Science of the University of California. This exhibit will give students and people an opportunity to experience a little of the How it might have been when the Polynesians populated the vast Pacific.
  5. A video documentary of the experiment including the cultural interchange between Hawaii and the other Polynesians.
- 39



HOKULEA VOYAGE OF REDISCOVERY 1985-1987

TAHITI TO RAROTONGA (COOK ISLANDS)

Departed Rarotonga on Monday 26th August 1985 for Tahiti in French Polynesia, I was met at the Airport by the Tahitian liason officer for the Hokulea Taua Cowan, of the Cultural Affairs of French Polynesia, and was taken to the Royal Papeete Hotel for the night. Moved out the next day to the Government Hostel where the Hokulea crew that will arrive on the Tuesday evening will be staying.

Wednesday morning all the crew was called in to a meeting and introductory session, then travelled to the canoe Hokulea to do some final preparations for the journey that will take us through some islands of French Polynesia then to Rarotonga. Wednesday and Thursday were spent on preparing the sail, food, water etc. and extending the aft mast by an extra 4 feet to take in the big main sail for the rest of the journey to the Cook Islands.

At 10am on Friday, the 30th August 1985 the voyage started, but after we were farewelled by the Mayor of Papeete and some distinguished guests. Arrived in Moorea at 12.30 pm and was met by some people from the Marae which is about half mile up the road, - we travelled to the Marae by cars etc. and was met by the marae orator in the meeting house, after the speeches we were treated to a big umukai.

As part of the trip is to lift the Tabu on the Ava-moa on Raiatea, we were required to cleanse our-selves by participating in the traditional fire walking and kava ceremony's which takes place on Saturday morning

in the early hours. All day Saturday was taken up in preparing the canoe for the next leg of the journey that will take us from Moorea to Huahine a distance of about 100 miles and we departed at 9pm on that Saturday evening. The trip to Huahine was excellent we passed Maiao on the way but didn't stop, and arrived in Huahine 1pm Monday morning. Stayed in Huahine till Wednesday morning then travelled to Raiatea a distance of 20 miles. Welcomed on the Marae by the Mayor of the island and about 300 people - the main speaker was an orator of the Marae and time we spent at looking at the marae on the site of Taputapuatea, then the canoe left through the lagoon to the main anchorage where we stayed overnight and left early the next day via Tahaa for BoraBora a distance of 25 miles, and arrived there at 2pm the same day Thursday 5th September.

Friday and Saturday was spent on BoraBora waiting for the bad weather to clear and also a time for the navigator Nainoa Thompson to study the star compass that will take us on the final leg of the trip to the Cook Islands.

Sunday 8 September 1985 we were farewelled by about 100 people and set sail at 10am heading for the bigger than Rarotonga target of Nga-Pu-Toru. As we were sailing south westerly the aft mast had to be moved back about 5 feet to lift the bow of the canoe up when travelling with the wind behind. From BoraBora we travelled west to Maupiti a distance of 26 miles and passed the island at night fall and headed straight for Maupihaa south west and distance of 100 miles which we passed about 10pm on Monday night September 9th.

.../3

The trip from Maupihaa to Nga-Pu-Toru took us till Thursday when we sighted Nukuroa (Mitiaro) at 11am and anchored at 2.30pm as the weather had deteriorated very badly with heavy rain and wind. The weather lifted at about 6pm to give us about 3 or 4 stars to navigate and set us off for Atiu the trip to Atiu was a classic as we passed Atiu about 10.30pm with about 2 hours 20 minutes of sailing we were really moving. Sighted Rarotonga about 5pm Friday and arrived opposite the Avarua Harbour about midnight, we then set sail to Nikao and waited the rest of the night out, before we were welcomed by some early fishermen and escorted to Avatiu Harbour for the very big welcoming ceremony.

The trip itself in my own words is excellent with the crew helping each other when the need arises and every one was working as a team, like the Captain had said before we departed Papeete for the journey, That we give ourselves to the sea and we must work together for the good of the Polynesian people. When we sailed from Papeete to Moorea there were 23 people on the canoe and four stayed behind in Moorea and the others have to stay off in BoraBora.

The crew list are as follows:

Gordon PIIANAIA	Captain
Mau PIALUG	Navigator
Nainoa THOMPSON	Navigator
Gild BAYBAYAN	Assistant Navigator and Documentation

Leon Pacia STERLING	First Mate
Abe PIIANAIA	Crew Captains Father
Chad PIIANAIA	Crew Captains Son
John KRUSE	Crew
Mike TONGG	Crew
Pat AIU	(Doctor) Crew
Snake AH HEE	(Cook) Crew
Peter SAPELALUR	Crew
Mel PAOA	Crew
Victor LIPMAN	Reporter Crew
Clifford WATSON	Photographer Crew
Andrew TUTAI	Crew

Navigating by Star, Moon, Sun and other elements is a new thing to me and it is very interesting how they do it as we were hitting the islands as planned and estimated.

The two watches for the trip of four hours on and four hours off comprises of;

Leon PACIA (Watch Captain)	Mike TONGG
Pat AIU	John KRUSE
Snake AH HEE	Andrew TUTAI
Clifford WATSON	Victor LIPMAN
Peter SAPELALUR	Melvin PAOA

Steering the canoe is decided by the Navigator, if the wind direction is from the Port side the port side steering paddle is used and the

same goes for the Starboard side and the third steering paddle is mostly used when entering or leaving harbour passages. When your four hour watch is up you wake the next crew which you share the same sleeping compartment to take over while you have a rest with the remaining of the team in your watch. Cooking is mostly done by Snake Ahe Hee with some help from some of the crew and so as the washing of dishes. There's plenty of food which is rationed for the crews daily useage.

With this Mr Minister I would like to thank you and your Staff for the help given to me before I ~~went~~ to join the Hokulea in Tahiti.

45

MEMO

To: Dixon, Lee and Will, Ben

From: Pinky

Re: Attached material

Please review and call in your manao to Laura or me by  
10-31-86. Am asking Marlene to set up and Documentary Committee  
meeting at a time convenient to all to:

Refine our present planning

Develop approaches to meeting our "On Board"

video objectives

Thank you.

See you then.

10-26-86

46

Draft Summary of Meeting of Documentary Committee

10-24-86 w/ Dixon Stroup, Lee and Will Kyselka, Ben Finney

Purpose: To review existing "on board" film and video cassettes to determine what more on board filming is needed for documentary and or/educational purposes.

Cassettes reviewed: - "On board footage"

1. 1985 Tahiti leg
2. Cook Island leg
3. New Zealand leg
4. Tahiti - Loganbill

Tahiti Leg - At 10 minutes, there were shots of rain and evidences of wind but these types of filming need to be refined in future filming. At 19 through 21 minutes, there were shots of low lying islands and atolls, again future clarity is necessary as well as commentary as to sighting possibilities, distances and so forth. This video does not include navigational or steering materials.

Cook Islands Leg Generally the shots were not fixed on a particular scene or subject long enough to gather any sequential educational materials. Zooming and panning interfere with gaining usable materials. There were interesting shots of Mitiaro islanders and the exchange of food. The contrast of clothing or lack of such, between islanders and Hokule'a crew was interesting. This is noted from 30 seconds through 2 minutes. Between 3 and 6 minutes there are some interesting shots of sail raising and adjustments. At 9 minutes there were some but too short shots of waves. This film points out the need for filming of Hokule'a in full sail under varying sea conditions, taken from another vessel. Also there is the making of sequential filming of a particular topic -- fish catching, prep,

cooking, meal, etc.

The thought that shooting scripts should be prepared before we undertake the last three legs was introduced. Question was raised as to whether 2 cameras would be useful. For instance, when a steering paddle is raised, what does it do to direction change if any of the canoe, etc. Also in terms of course setting and course maintenance by crew, this sequential filming is necessary and should be planned for in the next 3 legs.

New Zealand leg This material is interesting for use from the following time frames:

1. 1 minutes - canoe preparation before launching is good
2. 15 - 17 minutes - discussion between Mike and Bruce  
re: fishing equipment
3. 24 minutes - fish prep by Bruce
4. 25 minutes - sequential possibility of fish catch from 24 through 25 and 26 re: cooking, etc.
5. 33 - 41 minutes - "back wind" shots and steering requirements are interesting and need commentary. Life aboard and Stanley's contribution is to be noted. This film shows "wing on wing" (?) of sails.
6. 44 minutes - squall and change of clothing is noted
7. 50 minutes - shots of whale pod
8. 56 minutes - war canoe

Tahiti - Larry Loganbill The overall film, beginning 106 minutes and through 213 minutes, is excellent for documentary and educational purposes. This cassette should serve as our basic "on board" film. The concensus was that this material provides:

1. the base for detailed development of shooting scripts



sequential topic filming of such subject as:

- a. life aboard -- waking, full day activities of one person
- b. changing of sails, sizes, types and reasons for such
- c. navigational decisions as affected by environmental conditions:

- 1). cloud conditions
- 2). wave action
- 3) birds, etc
- 4). locating landfall and sequential steps to final sighting

2. Excellent material to be reviewed by documentary people as well as educators before the next sail to elicit structuring as well as what more is needed.

3. Future opportunities to avoid mistakes in filming. A comparison between this material and the other three leg materials points out the rationale for avoiding zooming and panning. Also time concentration on subject matter is necessary.

The committee also felt that more shots are needed in areas such as:

1. navigation and all of its ramifications. Narration would be helpful. A cordless mike might be attached to navigator as much as possible in order to document related action to theory.

2. steering in all aspects and its effects on canoe performance.

- 3. sails management and their effects on canoe performance.
- 4. long held shots of ocean under different winds, sun angle.
- 5. convey evidence of motion; bow plunging, etc.
- 6. some shots of severe weather

7. narration of what's happening is important

Conclusion -- that we must produce more "on board" filming based on detail "shooting scripts". That we secure professional assistance in the production of the shooting scripts and filming of the on board activities.

10-25-86 by M.B. Thompson

## VOYAGE OF REDISCOVERY DOCUMENTATION

### DESIGN

The Voyage of Rediscovery will provide the information necessary to better answer the question of how the Polynesians were able to colonize and settle the islands of Polynesia and ever more important, how man was able to survive in such a widely scattered island environment.

I recommend that we proceed in the documentation of the navigation and certain parts of the mechanics of sailing ~~Hokule'a~~ Hokule'a in the following manner.

### BACKGROUND

In the context of modern archeological and anthropological research it is generally agreed that the major colonization of distinct Polynesian groups came in seven different movements.

Within the two year voyage of Hokule'a we will be attempting five of them. It is in this process of the actual sailing of those legs that through the experience we will gain a better insight to the Polynesian's ocean heritage.

It is from this framework that the sail plan has been designed and the navigational components are being developed

### NAVIGATION

I envision the documentation process to be designed and implemented so that the end product be a clear document that not only explains what happened on the voyage and its results, but also what kind of effort is required to accomplish this.

By the "process" I mean the more explicit portion of the navigation, its discription, the data recorded on the voyage as well as its conclusions.

By the effort required I mean the more implicit internal elements of the learning process and human effort. The following is an outline that describes the areas and elements of the documentation of the navigational process and effort.

#### A. Breakdown of navigational knowledge

Development of the course and the course line.

The organization of the elements involved in developing the mental construct upon which each sailing leg is based.

#### B. Direction

The clues of the natural environment, be it ocean, sky or astronomical which are used to continuously maintain the desired course.

ILLEGIBLE

#### C. Latitude

The astronomical knowledge used in determining the latitude of Hokule'a and island targets.

#### D. Targeting

The clues used to pin point land areas once Hokule'a is in the general vicinity of its island target. This would include, but not be limited to, birds, swells, clouds.

#### E. Weather Prediction

From the ocean environment the reading of the clues in the ocean, the atmosphere and astronomically which help predict near future weather conditions important to survival at sea.

#### F. Survival at Sea - Storm Sailing

Procedures taken to deal with storm conditions. The use of "reefing" sails or steps taken in giving "bare pole" and strengthening the canoe for the storm.

#### G. Canoe Performance

From certain tests we will determine generally the speed of the canoe, windward performance, lee drift, etc. at different sailing conditions. Such information is vital in determining the strategies of certain particular legs. But even more important is if we accept Hokule'a as a performance accurate Polynesian vessel, its capabilities will greatly increase our understanding of the Polynesian voyaging potential.

### THE SAILING ROUTES

Each of the seven sailing legs are different and each poses different conditions to both the sailing of Hokule'a and navigation.

Basically the sail plan for each of the sailing legs was determined by the following criteria, keeping in mind the two years time limitation of getting Hokule'a back to Hawaii and also completing the five major historical legs.

#### A. Climatology of Polynesia

1. Tropical cyclone
  2. Winds, speed and direction
  3. Cloud cover/ rain
  4. Air temperature
- 2

B. Oceanography of Polynesia

1. Currents
2. Swells
3. Sea state

C. Astronomy of Polynesia

1. Clue for direction
2. Clue for latitude

D. Geography of Polynesia

1. Distance en route
2. Spacing of island targets
3. Types of islands
4. Etc.

E. Human Element (navigation)

1. Environment's effect of human judgement:
  - fatigue
  - moods
  - need for physical conditioning
  - etc.

STEPS OF THE NAVIGATIONAL DOCUMENTATION

PHASE I

Develop a knowledge base for the physical aspects of Polynesia, navigation and Hokule'a to set the foundation for the 1985-1987 voyage (in terms of navigation).

A. Physical Polynesia

1. Geography
2. Climate
3. Ocean
4. Human element

Information has been collected from various resources: books, charts, climatologists and people who have sailed in the Pacific area as well as the data from the 1976 and 1980 voyages.

B. Navigation

1. Course
2. Direction
3. Latitude
4. Targeting
5. Weather prediction
6. Storm sailing

Enough is known to make the round trip between Hawaii and Tahiti. The information is well documented and is the basis of the navigational process that will be applied to all the legs of the 1985-1987 voyage.

### C. Hokule'a

1. Canoe performance
2. Canoe capabilities

During sea trials, prior to the June 20-22 departure, Hokule'a performance capabilities will be tested in order to get an understanding of how Hokule'a behaves with the new sails. This new information will be combined with the experience of sailing Hokule'a in the past.

Basically the information needed to sufficiently complete the above categories is already known at least enough to set the sailing strategies for the upcoming voyage. The responsibility of collecting the information for the physical Polynesia and navigation will be Mau and myself.

Canoe performance data will be collected by Dixon Stroup and Dick Rhodes.

### PHASE II

Testing the developed knowledge base at sea during the seven legs of the 1985-1987 voyage:

Each leg poses different physical sailing conditions, therefore different sailing strategies need to be developed in terms of navigation and sailing Hokule'a.

Certain legs will emphasize certain areas of the navigation different than others. Therefore, each sailing leg will be approached differently and much more will be learned on these different legs. The lessons are enormous. But keep in mind that the difficulty we will face at sea may have been the same for the early Polynesians.

On board documentation will be of the similar format to the 1980 voyage. Adaptations to the content of recording will be made in accordance to the emphasis on different areas of the navigation on different legs.

The canoe's progress again will be tracked by satellite.

Mau and I have discussed the voyage in length. In order for us, and mostly myself, to learn as much as possible it is best that I do all of the navigation. In the areas that I will need help I will ask Mau. We both know where my weaknesses are and we feel this is the best way to strengthen them. The learning gained from each leg will be compiled and completed along with the past developed knowledge base during the lay over periods between legs. The responsibility of collecting and compiling such information will be the on-board documentors, Mau, myself and the research committee.

I really believe above all other description of the elements of sailing and navigating Hokule'a that the sailing is best described from the context of an ocean story first and the navigation from the context of an art practiced for possibly over a thousand years prior to modern instruments. Polynesian navigation will best be told by Mau, myself and the ones who sail Hokule'a.

### PHASE III

#### Post Voyage Documentation

Discussion, analysis and evaluation: What has been documented and learned on the 1985-1987 voyage. Final additions to the knowledge base.

The final work shall combine the theory and the practice of sailing and navigation into a comprehensive piece of work. This will be completed by myself, the research committee and competent writers.

In order to make this work complete another whole part of the story needs to be expressed. This is the part of Polynesian voyaging and sailing tradition that remains.

Oral tradition and early accounts of western explorers would be very valuable view points to better describe the sailing feats of the Polynesians.

Oral tradition will be best expressed by each of the island groups to which it applies. I feel it would be a valuable for the island groups that we visit to be able to contribute to Hokule'a's sailing effort by expressing their tradition as the way they view it without any worry of ridicule or exterior judgement passed upon their views. Exactly how this can take place I am not sure. But I recommend to the research committee and the board that they attempt to put something together. This is our attempt to bridge the old and new, our common meeting ground, our ocean heritage, thousands of years of human effort.

Since 1977 Will Kyselka and I have worked well together. We will continue this relationship throughout all phases of this voyage. Will shall especially work on the more implicit, internal process of the human element side of the navigation, the effort required to sail and navigate between islands. the learning, the training, the committment, etc. I also see Will and I continually working together on other parts of navigation also.

Nainoa Thompson  
5-1-85

### Orientation and Wayfinding

A plan for creating public interest and understanding in a proposed third voyage of Hokule'a into the South Pacific in 1985-86.

The Polynesian Voyaging Society will host a conference on orientation and wayfinding in the summer of 1984.

**Orientation and Wayfinding** will bring to the attention of the general public the work of the Polynesian Voyaging Society in furthering our knowledge of human navigation.

For forty-thousand years human navigation enabled Pacific peoples to reach remote destinations. In fact, only within the last few centuries have navigational instruments been used. The chronometer is only two centuries old. And only the Polynesian Voyaging Society is systematically studying human navigation in voyages of Hokule'a over 15,000 kilometers of open ocean voyaging.

We call it wayfinding--the art of reaching a remote intended destination, trusting mind and senses within a cognitive structure correctly to interpret nature's signs as the way for maintain continuous orientation.

Chant, legend, dance, song, and story have long told of voyaging between Tahiti and Hawaii. Documenting that movement is evidence from the disciplines of archaeology, anthropology, botany, and linguistics. But how is finding islands over vast oceanic distances possible without navigational instruments?

**Orientation and Wayfinding** addresses that question.

The 1976 voyage of Hokule'a showed that not only could a replica of a double-hulled Polynesian voyaging canoe hold "close to the wind" and reach Tahiti but also that the wayfinding art could assure successful landfall, Mau Piailug from the island of Satawal guiding the canoe on that trip.

Hokule'a 1980 showed that it is possible for a person (Nainoa Thompson) to generate navigational knowledge in a planetarium, learn the ways of the sea from Mau Piailug and develop a wayfinding system uniquely his own that allowed him to maintain continuous orientation over 10,000 kilometers of open ocean voyaging.

The conference will bring together Pacific Islanders, scientists,



and humanists in consideration of the fusion of mind and vessel that enabled Polynesians of old to settle a huge portion of this planet.

**Orientation and Wayfinding** will involve authorities in the fields of culture, science, and the humanities:

- chanters, dancers, singers, and story-tellers familiar with generating, storing, retrieving, and transmitting knowledge.
- workers with dolphins, whales, migratory birds, and turtles...entomologists who know bees to navigate by polarized light and by tiny magnets within their minds.
- oceanographers who know sea scapes and El Nino...marine engineers who quantify the windward capability of the double-hulled voyaging canoe.
- historians who find in the double-hulled canoe the culmination in art form and engineering design of Oceania, and in Polynesian voyaging the ultimate intellectual assertion of oceanic peoples.
- archaeologists who find in pottery shards along the old Lapita trail clues to 40,000 years of human mind and movement in the Pacific.
- researchers in human sensitivity to magnetic fields...investigators in right-left brain learning...theorists interested in cognitive structures and heuristic processes.

\$\$\$

Polynesian Voyaging Society; Box 19000a; Honolulu HI 96819;  
941-4856.

TO: PVS  
FROM: Ben Finney  
SUBJECT: Proposed Routes

Hōkūle'a was conceived and built to sail from Hawaii to Tahiti and return in order to test both traditional canoe design and navigation methods. The issue was the nautical ability of the ancient Polynesians: could they have undertaken long, deliberately navigated, voyages, or did deficiencies in their technology prevent them from making deliberate voyages of more than 300 miles? The Hawaii-Tahiti-Hawaii route was ideal for addressing that issue, for it is the longest route within Polynesia over which there is good evidence for deliberate two-way voyaging.

Now that Hōkūle'a has made the voyage twice, and the issue has been fairly well resolved, is there any need for further voyages? An argument can be made that Hōkūle'a should stay in Hawaii and be used for educational purposes as intended. Still, the open Pacific beckons. Although the best case for additional voyages can perhaps be made on cultural grounds, it would be interesting to investigate other routes in Polynesia. Let me make some comments on candidate routes.

72

Polynesia is generally divided on linguistic and cultural grounds into:

- 1) Western Polynesia: The nuclear area formed primarily by the major archipelagoes of Tonga, Samoa and Fiji, plus some adjacent islands and the tiny outliers to the west.
- 2) Eastern Polynesia: The wide expanse of the Polynesian triangle, from Hawaii to Easter Island to New Zealand, and these archipelagoes within: Cook Islands, Austral Islands, Marquesas Islands, Society Islands, Tuamotu-Gambier Islands.

Western Polynesia was settled first, around 1500 BC. Eastern Polynesia was settled from Western Polynesia. So far, the first evidence of that settlement comes from sites in the Marquesas dated around 200 BC. The settlement of the rest of East Polynesia seems to have been largely derived from this initial Marquesan settlement, with Tahiti in the Societies as a supplementary settlement center, although some archaeologists deny that we can really trace any definite routes and directions of settlement within Eastern Polynesia.

A voyage made from Western to Eastern Polynesia, say from Tonga to the Marquesas or Tahiti, would therefore retrace a route critical to the establishment of Polynesia as a widespread oceanic culture instead of one just confined primarily to a few major archipelagoes in the central Pacific.

But, wind and current patterns, and the lack of evidence for frequent between Western and Eastern Polynesia, would argue that such a voyage would not be easy. However, that makes it all the more challenging and significant.

Within Eastern Polynesia the most exciting migration routes are those long trails leading from the center---the Marquesas, Societies, or both---to the peripheral points of Hawaii, Easter Island and New Zealand.

1) Marquesas-Hawaii. Linguistic evidence strongly links Hawaii to the Marquesas; the archaeological and cultural evidence is more suggestive than definitive. Furthermore, the winds are ideal. A voyage from the Marquesas to Hawaii would therefore be historically appropriate and eminently feasible. Needless to say, it would be locally significant.

2) Marquesas/Tuamotus/Hangareva-Easter Island. The exact derivation of the Easter Islanders is still debated, although the the leading candidate is the Marquesas, or one of the islands settled from there. However, to tack directly to Easter Island, or get a wind shift that might carry you there, would seem out of the question. A route south to 35 degrees or so, out of the trades and into the westerlies, would allow a canoe to make the necessary easting---but what a long and dreary route.

74

3) Societies/Cooks-New Zealand. Although Tonga and other Western Polynesian islands may be closer, linguistic, archaeological and cultural evidence indicates that New Zealand was settled from central Eastern Polynesia, probably from the Societies, or the Cooks, or both. Given the great Maori interest in their legendary origins going back to Hawaiki (thought to be Raiatea by many), the arrival of Hōkūle'a off the shores of North Island would create quite a stir, although getting mixed up in debates over Maori origins would be anything but uncomplicated. A voyage made in the tradewind season might get the canoe all the way to North Island without undue hardship or mishap.

As for two-way voyaging over these routes, all look difficult in sailing terms. Furthermore, evidence for any regular, two-way, voyaging is lacking. (Tahiti is, of course, more favorably aligned than the Marquesas for two-way voyage to Hawaii.) Of course, there are tales of return voyages from New Zealand to Hawaiki, but these are vaguer and more problematic than the comparable Hawaiian tales of voyaging between Hawaii and Kahiki. Nonetheless, a New Zealand to Societies voyage might be worth a try---but beware of wind and weather.

However, there is another two-way voyage within Eastern Polynesia which seems both historically appropriate and neither too difficult nor dangerous: Raiatea-Rarotonga. There is legendary evidence from both sides for such voyages. The distance is not too great. And, either

using a westerly wind shift, or tacking, or some combination of the two, could probably get to canoe to the Societies.

On the basis of the above considerations, I would rate the following routes as the best for Hōkūle'a to attempt:

- 1) Western to Eastern Polynesia
- 2) Marquesas to Hawaii
- 3) Societies/Cooks to New Zealand
- 4) Raiatea-Rarotonga, two-way.

Of these, # 2 would probably be easiest; # 3 and 4 of medium difficulty; and # 1 of great difficulty. As for the critical voyage from Western to Eastern Polynesia, it would be worth a separate expedition, both because of its historical significance and because whichever strategy your use---waiting for westerlies or tacking---is likely to be time-consuming, nerve-racking and just plain difficult.

To complete these sails would constitute a major accomplishment, one that would certainly earn wide respect for Polynesian mariners ancient and modern. However, the project as presented so far seems very costly and yet only sketchily defined.

74

DOCUMENTATION

Hawaii Public Television's basic documentation objectives are:

1. Basic documentation includes production of broadcast quality film and audio materials that are suitable raw material for:
  - (a) Museum exhibits
  - (b) Educational displays
  - (c) Instructional films and audio tapes
2. Production of a one hour broadcast documentary for the national and international viewing audiences.
3. Raw material for development of children's programming.
4. Broadcast film and audio resource material for acquisition by national and international media.

**BUDGET SUMMARY "REDISCOVERY"**  
**DECEMBER 1984 - FEB. 1987**

	<u>KHET CONTRIBUTION</u>	<u>AMOUNT REQUESTED</u>
I. PERSONNEL	\$24,800	\$210,528
II. OPERATIONAL EXPENSES	\$3,100	-0-
III. MAINLAND FUNDRAISING	-0-	\$15,000
IV. AIRFARE	-0-	\$42,448.80
V. PER DIEM	-0-	\$58,920
VI. EQUIPMENT PURCHASE/ INSTALLATION/TRAINING	-0-	\$15,000
VII. PRODUCTION	\$16,466.80	\$83,718.40
VIII. MATERIALS/SUPPLIES/ PROCESSING	-0-	\$230,353.75
IX. PROMOTION (partial local promotion)	-0-	\$7,000
X. INSURANCE	-0-	<u>\$26,518.75</u>
 TOTALS	 \$44,366.80	 \$689,487.70

THE TOTAL PROJECT COST IS: \$733,854.50  
 KHET IN-KIND CONTRIBUTION IS: 44,366.80  
 THE ACTUAL COST OF PROJECT IS: \$689,487.70

78



BUDGET: "Rediscovery" December 1984 - Feb. 1987

I. PERSONNEL

	(Cost)	(KHET in-kind contribution)	(ACTUAL COST)
A. Executive Producer EDWARD J. ROBELLO (25 months-10 hrs./week)	\$24,800	\$24,800	-0-
B. Producer/Project Director CHRIS CONYBEARE (25 months-30 hrs./week)	\$75,000		\$75,000
C. Director/Editor JOY CHONG (25 months-30 hrs./week)	\$75,000		\$75,000
D. Associate Producer MARLENE AMONG (25 months- half time)	\$29,200		\$29,200
E. Production Assistant (25 months-15 hrs./week)	\$15,000		\$15,000
F. Writer	\$5,000		\$5,000
G. Researcher (s)	\$5,000		\$5,000
H. Secretary	\$6,328		\$6,328
	<hr/> \$235,328	<hr/> \$24,800	<hr/> \$210,528

	(Cost)	(KHET in-kind contribution)	(ACTUAL COST)
II. OPERATIONAL EXPENSES (Office supplies, telephone, postage, copying costs, etc.)	\$3,100	\$3,100	-0-
III. MAINLAND FUNDRAISING (consultant services, print & video presentations, travel, and expenses)	\$15,000		\$15,000
IV. AIRFARE			
1. Scouting/Pre-production planning: Locations-Tahiti, Marquesas Cook Islands, Fiji, Tonga, New Zealand 3 persons: PRODUCER, DIRECTOR, ASSOC. PRODUCER	\$11,811		\$11,811
2. Production on Outer Islands: 6 crew members: PRODUCER, DIRECTOR, ASSOC. PRODUCER, CAMERAPERSON, AUDIO, GRIP	\$1,102.80		\$1,102.80
3. Production in South Pacific: 6 crew members: PRODUCER, DIRECTOR, ASSOC. PRODUCER, CAMERAPERSON, AUDIO, GRIP	\$29,535		\$29,535
	<hr/>	<hr/>	<hr/>
	\$60,548.80	\$3,100	\$57,448.80

	(Cost)	(KHET in-kind contribution)	(ACTUAL COST)
V. PER DIEM			
1. Scouting	\$6,300		\$6,300
2. Production - Outer Islands	\$1,620		\$1,620
3. Production - South Pacific	\$51,000		\$51,000
VI. EQUIPMENT PURCHASE/ INSTALLATION/TRAINING (Cameras used onboard Hokule'a, portable tape recorders used onboard Hokule'a, special waterproof housings, & training sessions with crew for use of equipment)	\$15,000		\$15,000
VII. PRODUCTION			
1. Locations Technicians	\$46,808.80	\$2,905.60	\$43,903.20
2. Post Production Technicians	\$2,876	\$2,105.60	\$770.40
3. Land Transportation (Cars, vans, follow boats, helicopter/ planes for aerial shots)	\$14,763.40	\$120	\$14,643.40
	<u>\$138,368.20</u>	<u>\$5,131.20</u>	<u>\$133,237</u>

	(Cost)	(KHET in-kind contribution)	(ACTUAL COST)
4. Equipment Rental (Production)	\$12,896.40	\$2,763.20	\$10,133.20
5. Equipment Rental (Post-Production)	\$13,840.60	\$8,572.40	\$5,268.20
6. Animation	\$6,000		\$6,000
7. Special Effects	\$3,000		\$3,000

VIII. MATERIALS/SUPPLIES/PROCESSING

1. Film Stock (\$82.35/11 minutes)	\$70,656.30		\$70,656.30
2. Audio Tape/Supplies	\$14,405.45		\$14,405.45
3. Film Processing	\$37,732		\$37,732
4. Audio Transfer	\$7,800		\$7,800
5. 16mm film transfer to videotapes	\$63,640		\$63,640
6. Videotapes	\$31,120		\$31,120
7. Reels/Film Cans	\$2,000		\$2,000
8. Postage/Handling for film & video processing and transfers	\$3,000		\$3,000
	<u>\$266,090.75</u>	<u>\$11,335.60</u>	<u>\$254,755.15</u>

	(Cost)	(KHET in-kind contribution)	(ACTUAL COST)
IX. PROMOTION (partial local promotion)	\$7,000		\$7,000
X. INSURANCE (4% of Budget)	\$26,518.75		\$26,518.75

Total Cost \$733,854.50  
KHET in-kind contribution \$44,366.80  
ACTUAL COST \$689,487.70

# University of Hawaii at Manoa

Department of Oceanography

## MEMORANDUM

March 12, 1984

TO: Myron B. Thompson  
President, Polynesian Voyaging Society

FROM: Edward D. Stroup *Dis*  
Chair, Research Committee

SUBJECT: Suggestion Regarding 1985-87 Research

There is an aspect of the research program for the proposed long voyage of Hokule'a which is giving me more and more concern, and, in this concern, I have a specific proposal for the Board's consideration.

My worries come from the very unusual nature of the navigation "research" being supported by the PVS; that is, it is all going on inside the head of one individual. It is well understood and accepted that Nainoa is the only person learning non-instrumental navigation. The point that needs better appreciation is that Nainoa is therefore the only person who can supervise preparation of the results for publication.

By accepting public support for the project, we commit ourselves to publication of Nainoa's techniques, together with the analysis of their use during the voyage. The success of the research will be measured by this dissemination of knowledge, not by the trip itself. Success thus depends critically on Nainoa's ability to commit substantial amounts of time and effort after the voyage is over. Everyone else is replaceable; he is indispensable.

My proposal to the Board is this: To insure completion and timely publication of the navigation research in fulfillment of our obligations, the '85-'87 voyage budget should include at least one year of post-voyage financial support to allow Nainoa to devote a large fraction of his time to the project.

The presently ongoing efforts to finish the work-up of results from the last Tahiti trip illustrate all too well the problems inherent in trying to operate in conflict with our other job commitments, with their inevitable crises and unusual demands. The body of data which would result from the long voyage will be much larger and more complex. If we try to handle it in the same way we are now operating, I think the danger of failure--that is, of never adequately disseminating the information so painstakingly gained--would be unacceptably large.

EDS:jhm

AN EQUAL OPPORTUNITY EMPLOYER

84

9/15/80

## CURRICULUM POLYNESIA

### Short Term Project

Completion of "An Ocean in Mind," to be published in the fall of 1981 by University Press Hawaii.

### Nainoa's Project

To develop a curriculum for school children. Age? Content? He would like to use a target group, the Hui Nalu youngsters about 11 to 14 in age. He would work with this group, trying out ideas on them, developing sequences, networks, plans. Purpose: to explore widely the possibilities of a way of learning non-instrument navigation with a group of motivated youngsters. The next step would be expanding and modifying that curriculum to suit a wider group of young people.

### Elements in a more comprehensive curriculum

Hokule'a is a scientific investigation as well as a cultural identity. The vessel is the culmination of engineering design of the ancients and their ultimate art form. The voyage itself is the ultimate intellectual endeavor. Those elements will be well represented in a curriculum.

Elements in a curriculum could include:

Geography--relationship of various islands. Latitude, longitude, celestial navigation.

Oceanography--currents, winds, countercurrents, temperatures, movement of waters, coriolis. The animals of the sea and the birds of the air.

51

9/15/80

Sailing--moving over the water. Stability, buoyancy, vectors, windward capability, leeward drift, course made good, reading what's beyond the horizon, weather, swells, clouds, concept of easting.

Archaeology--poi pounders, adzes to shape wood, improvisations on a form, regional variations in isolation, toolmaking.

The Mind--from data, to information, to knowledge, to testing by voyaging. Cognitive mapping. Memorizing and mnemonic devices.

The Stars--motions of sun, moon, and planets, celestial mechanics, precession, ecliptic, annual variations

Noninstrument navigation--"with mind and senses" sailing thousands of kilometers to intended destinations. The practical use of the stars in wayfinding. Star pairs, meridional stars, and synchronous pairs for latitude determination. Reading of swells and the problems of steering. Clouds, birds, winds.

Research--transponder data, satellite weather mapping, crew logs of voyage, comparison of position with perceived course, nutrition, psychological, social, anthropological views of experience of isolation and of hooponopono and ohana.

Transmission of knowledge--chant, dance, hula, story, legend, oral tradition, a working back into the mind of the ancient Polynesian by inference. conveying to others the raw data of experience, making the significance of the event comprehensible to others.

Contrasting cultures--right and left handed approaches to understanding, two men and two cultures, dealing with contingencies at sea, measurement and metaphor, forging metaphoric hunch into hypothesis; concepts, language, metaphor, myth, formulae. The intrinsic, self-contained logic characterizing mental operations of two navigators. The internal dialogue.

75



8/15/80

F.M.Pottenger's formulation

He sees the raw data of experience: the sociological, psychological, and anthropologic data as the basis of a curriculum at highschool level. Students would work with journals, identify with crew members, look for objectivity and subjectivity, compare with other famous voyages, relationship to isolation experiments, effects of deprivation, uncertainties in determining position, pre- and post-anxieties. All this as a way of entering into the process. The process is, in a sense, more important than the product--the successful landfall. Chance to shape raw data with hunches and insights.

Will Kyselka  
September 15, 1980

**To Performing Artists:**

A great event hasn't really happened until it passes through the minds of creative artists. The event becomes comprehensible as storytellers, singers, chanters, and dancers explain its significance.

The voyages of Hokule'a, for instance: The 1976 voyage was sung about. It gained epic proportion and is still lively today in song. The 1977 Kealaikahiki research venture, though highly significant, is unsung. It is not in our common memory. We do remember the 1578 voyage that started with high hopes in high winds and ended in the tragic loss of Eddie Aikau. The 1980 voyage, deliberately a low-key event, is as yet unsung.

The 1980 voyage was well planned and carried out. Plenty of hard work went into it in the preparations by people you seldom hear about. Nothing spectacular on the voyage except for the breaking of the boom. But the research data is revealing details of an event of heroic proportion.

It is an intellectual feat of highest order--one that has not occurred for 7 or 8 centuries--for a young navigator to guide a double-hulled canoe over vast oceanic distances to tiny islands and return, using only mind and senses.

The success of this quiet venture is having a salutary effect upon the Polynesian Voyaging Society

itself, moving it gently along the way of accomplishing its goals.

Now is the time to sing. It is the time to put the event in perspective, to explain it, to encode navigational data into chant so that it can be transmitted to other navigators as it was done in ancient times.

For those who see a convergence between their own artistic endeavors and the goals of this project, we are providing two one-hour sessions at the Planetarium for a general look at the sky, its celestial mechanics, its changes on the voyage to Tahiti, and a demonstration by Nainoa Thompson of his system of non-instrument navigation.

Call Marlene Among, Polynesian Voyaging Society office, 841-3966, to let her know of your interest.

Houlu Cambra & Will Kyselka

#### THE TRANSMISSION OF NAVIGATIONAL KNOWLEDGE

Hokule'a Navigation Project  
Polynesian Voyaging Society  
July 3, 1980

Will Kyselka

How is navigational knowledge generated, then transmitted to others without the use of the written word?

Nainoa Thompson and I have gathered a great deal of information at the Bishop Museum Planetarium on the use of stars in navigating without the use of instruments. We developed several methods. Nainoa tested them in the 1980 voyage of Hokule'a to Tahiti and back.

How can we encode that navigational knowledge into chant and dance so that another navigator could learn and repeat the voyage as it must have been done in ancient times?

Our investigation has five general areas. Four have to do with the generation of knowledge. The fifth--and we invite you to become involved here--has to do with the transmission of that knowledge.

- Gathering data
- Translating data into information
- Converting information into knowledge
- Testing by voyaging
- Transmitting navigational knowledge

-2- 7/3/80 Navigation

#### Gathering Data

For nearly three years Nainoa and I worked at the Bishop Museum Planetarium sailing back and forth between Hawaii and Tahiti on a truly dry run. We explored the sky widely, searching for clues to the ways that the ancients might have used the stars in their voyaging. We generated some methods that were probably not available to the ancients for we were using a sky simulator that could run time forward and backward more than a thousand years. Some ideas, such as precession, need further investigation.

#### Translating Data into Information

Nainoa filled notebooks with data. He analyzed the data and searched for patterns. Some appeared, and the picture became clearer. He learned the Right Ascensions and Declinations of stars. Data became information as he came up with clarifying frameworks.

#### Converting Information into Knowledge

Information became knowledge as he internalized it. He put the sky in his mind and personalized it. No longer was he struggling with a seemingly chaotic array of points of light in a dark sky. He got to know the shape of the sky.

#### Testing by Voyaging

A hypothesis needs testing. The ultimate test of navigational knowledge is survival at sea and the safe arrival at an intended landfall. The 1980 Hokule'a voyage was the test. The results: brilliant.

-3- 7/3/80 Navigation

Transmitting Navigational Knowledge

How can Nainoa's knowledge be transmitted to another navigator? The ultimate test in such transmission is for another navigator to learn a chant and dance, then make a successful voyage over this longest route used by the Polynesians of old.

Discussion

We see it in two areas; there may be more. One is primarily technical--the content and form of the mnemonic device for retaining the information. The other, the dissemination of the Hokule'a experience to others in song, dance, and story. The star compass might well lend itself to dance; so, too, the breaking of the boom.

We're interested in hula that interprets the mood and feeling of being on a long voyage of Hokule'a. In chant that carries the knowledge of the way to the islands. In song that gives poetic names to the stars. In story that tells of the contingencies of the voyage and how they are dealt with. In forms of expression that convey the relationship of stars, sea, wind, and the movement of Hokule'a. In tales of the hopes of those within that circle of the sea, sailing on fresh winds, gliding gracefully toward distant lands spoken of in song--lands lying far beyond the limit of that circle.

We are looking for those who see a convergence between the expression in their own art form and

-4- 7/28/80 Navigation

the goals of this project. We're interested in artists applying their own particular skills in shaping the results of research into forms of expression that communicate to wider audiences.

We will meet at the Planetarium for a few sessions in learning the stars. Nainoa will demonstrate his system of navigation. Authenticity springs from experience, so we will go sailing on Hokule'a and feel what a sea-kindly craft it is.

The research base of the 1980 voyage is strong. Perhaps new modes of expression will blend. Or emerge. A modern literature and art may appear as knowledge is shaped in unique ways, adding clarity and richness to concepts.

Certainly there is a generative aspect, for the several voyages of Hokule'a have added to our knowledge of the ways of the Polynesians of old. New effort may lead to new insight.

## RESEARCH AND DOCUMENTATION

### FOCUS: "POLYNESIAN PUZZLE"

Time frame: 2,000 years of seafaring

Geographical area: 10,000,000 square miles of Polynesian Triangle,  
1,000 times more water than land (excludes New Zealand)

#### I. GOAL

Compile research information into "How the Seafarers Bridged the Scattered Islands Together with a People of Common culture, Language and Tradition, into the Largest Nation in the World"

The given is that it happened. Early European explorers found almost every inhabitable island, people of common language and culture - a direct link of common heritage.

It would be an unachievable task to claim that we will be able to say how the Polynesians accomplished such a seafaring heritage. Simply, too much has been forgotten. The intent should be that the more we learn of the subject the better we will be able to make logical inferences.

The deeper I get into the project, the more I learn, the more I feel that I have been taking certain steps that maybe the early Polynesians may have made.

#### II. OBJECTIVE:

1) Trace through time the migration patterns of Polynesian people, starting in Tonga and Samoa.

Base: Present archeological and anthropological evidence  
The survived oral tradition of today

2) Re-Discover

The possibilities of the mind, the character of ancient seafarers

ImPLY into the knowledge base of the traditional sciences of early Polynesian explorers (knowledge they would have had to know)

##### Focus:

##### Navigation

- astronomy
- geography
- scope of nautical sciences
- oceanography: physical
- oral transmission & retention
- climatology
- etc.

(Attitude: not how much did they know (no one knows for sure) but rather how much could they have known. I believe there are parallels in how we learn and how they learned)

##### Canoe

- needed performance. abilities of vessel
- cargo capacity (people, food, etc.)
- needed materials vs. materials available

##### Course

- length of legs (distance and time)
- general weather patterns

#### III. PROCEDURES

Unique & Special Hawaii National  
nearly interesting Provincial reflects  
& several about himself - gain the feelings -  
Internal External Philosophy - Francis -  
Frank Tilman - Jim Yancy -  
Doug Self -

Take each leg as it follows archeological base  
Combine work of experts in fields of:

- 1) archeology and anthropology
- 2) oral tradition
- 3) sailors

Combine evidence and data  
Bridge three areas of study

#### IV. CONCLUSION - A book, An anthology

The combined writings of experts in the fields that relate to the subject from the modern sciences to ancient verbal knowledge and the practices of implied traditional sailing techniques. The anthology will become the most comprehensive and complete research document on the subject of Polynesian Seafaring.

#### RESEARCH AREAS

Archeology and Anthropology - carbon dating will give the newest most accepted information on the general movements in terms of time and place of man into the Pacific.

Basis of the evolutionary process, the spans allotted for the development in the capabilities to sail farther: a perspective, example: the 1,000 year stay in the Tonga-Samoa area. *NEED time for polynesians to evolve the sailing capabilities. (Time is an important factor)*

#### Other science areas:

Geography, oceanography, climatology of Pacific areas can provide a basis of the magnitude of the Polynesian achievement once you understand the ocean environment. Such environmental factors combined with archeological and anthropological data can set the frame work for developing a knowledge base into inferring what the Polynesian had to know in order to achieve what they did.

We may be able to best infer into the knowledge needed to do the sailing they did.

#### Examples:

- astronomy
- geographical knowledge
- ability to memorize information
- ocean survival
- seamanship
- quality and ability of their canoes
- ability to transport necessities to colonize islands

#### Oral Tradition (of Polynesian heritage)

May help provide more specific information into the actual voyages, who were the navigators. Maybe genealogies can help trace such historical events and a guess to the time period. Such evidence may not prove to be solidly substantial but I feel the importance is in making available what information we can. In other parts of Polynesia, oral tradition maintains a much stronger part in the community than Hawaii and it needs to be respected in terms of our sail plan. If at all possible part of our sail plan should be designed by the reliable traditional sails. A word of warning: the farther back we go in history, especially in a history of what was not written down, the more difficult to accurately trace events, the more is probably lost, and the least reliable the information. When we attempt

Several ways

- a. spiritual - how to communicate is an artistic combined with documentary
- b. some are skeptical - is this more to jumbo. same person to have two sides
- c. how is this transmitted to next generation

essentially -

charts -

convey the richness - interdisciplinary -  
humanities  
even lips  
how to convey - steps

All levels

not to phrase truth -

Search for identity -

element of this story - continuity BO -

analogues - to other of the arts - emission  
what the insight through analogue -  
sense of space & orientation -

Navigation may have a similar analogues -

Screen play outline - Rough - Group together  
all the topics - stark - main idea -

Robert Young - use of language -



to trace into the period of the ancient voyager we are tracing all the way back to the origin of new settlement.

#### Sail Plan

The sail plan should be a designed research effort into gaining a solid knowledge base through first hand experience of the problems the Polynesians needed to solve in order to accomplish populating almost inhabitable island in tropical Pacific. When you look at it in the perspective of how large an area these people travelled within a time of mankind's history with available resources that they were able to use, it is a magnificent achievement of human effort. By accomplishing the designed sail plan we will learn a tremendous amount of information through our experiences that will allow us to make logical assumptions of what they would have had to have known.

Nainoa Thompson  
7-10-84

using actual Footage - tying it up with something -  
of Touch - How Polynesian imagined - using  
a narrator - Have to get at the inner  
man - Transmit <sup>personality</sup> info - no verbal explanation -  
Japanese - Traditional art - orally - observing  
Traditional culture surrounded more people.

Some kind of conscious mess - find a place  
for it -  
logical framework - convey - one presents  
another framework - something is lost.  
Narrator - invite viewer - people in film  
looking for insight - people arise &  
get into the insight. - invite to  
get into the poetic consciousness. -  
Documentary - People going on the voyage  
Scientific but not the same as the  
lost mode -

begin to understand the ecosystem -  
Takes the viewer into the insights of what  
is experienced -

film - a sense of identity & pride - no  
film by polynesian for polynesian - exposed  
us - Respected culture in a way audience -  
fits us in ground w/ the spirit of the material  
Filming Doesn't have to have -  
International for local - spiritual truths -  
Combination - window into the past -

February 5, 1984

DRAFT

PVS Conference

## A C o n f e r e n c e

### Orientation and Wayfinding

A draft of a plan for creating public interest and understanding on a proposed third voyage of Hokule'a into the South Pacific in 1985-86.

The Polynesian Voyaging Society will host a conference on orientation and wayfinding in Honolulu during the summer of 1984.

Orientation and Wayfinding will bring to the attention of the general public the work of the Polynesian Voyaging Society in furthering our knowledge of human navigation and the wayfinding art.

The conference will bring together peoples of the Pacific and scientists interested in navigation and wayfinding in deeper understanding of the phenomenon that fused mind and canoe into a reality that enabled the people of old to find tiny islands over vast oceanic distances.

Chant, legend, dance, song, and story tell of repeated voyaging between Tahiti and Hawaii. Documenting that movement is evidence from the disciplines of archaeology, anthropology, botany, and linguistics.

But how is such long-distance voyaging possible?

Orientation and Wayfinding addresses that question.

Hokule'a 1976 showed that a replica of a double-hulled Polynesian voyaging canoe could hold "close to the wind" and reach Tahiti. It also showed that it is possible to reach Tahiti without the use of navigational instruments, Mau

Piailug guiding the canoe on that voyage.

Hokule'a 1980 showed that it is possible for a person to generate navigational knowledge, then to successfully test it over 10,000 kilometers of open ocean to two successful landfalls with Nainoa Thompson guiding the canoe on that voyage.

The conference will involve authorities in the fields of culture, learning, and psychology:

- chanters, dancers, singers, and story-tellers familiar with the activity of generating, storing, retrieving, and transmitting knowledge.
- investigators in right-left brain dichotomies... learning theorists interested in cognitive structures ...and educators interested in heuristics.

Also investigators in the biological and physical sciences:

- researchers in human sensitivity to magnetic fields...workers with dolphins, whales, migratory birds, turtles...entomologists studying bees that navigate by clues from polarized light and tiny magnets in mind.
- oceanographers who know of patterns in the sea important to the modern wayfinder...archaeologists who find in pottery shards along the old Lapita trail clues to 40,000 years of human mind and movement in the Pacific...marine engineers who wonder about the windward capability of the ancient double-hulled voyaging canoe.

Finding distant lands without the use of instruments is an ancient art. In fact, it is in only within the last few centuries that humans have been relying on instruments. And only the Polynesian Voyaging Society has studied the methods of human navigation over so long a distance--15,000 kilometers of ocean voyaging.

We call it wayfinding--the act reaching a remote, intended destination, trusting mind and senses within a cognitive structure to process nature's signs along the way and maintain continuous orientation.

Hokule'a is action research, addressing questions and seeking answers with an emphasis on culture.

Conference guests might include: Erickson, University of

Colorado, on Right/Left brain dichotomy. Maxwell, University of South Pacific and editor of the 1982 conference proceedings, Thinking. Stea, UC at San Diego, co-author of Maps in Mind. Baker, University of Manchester, investigator in human sensitivity to magnetic fields, author of Human Navigation and the Sixth Sense. Bruner, psychologist, Harvard, author of On Knowing: Essays for the Left Hand.

#### Bibliography

- Edelstam, C. and Palmer, C. (1950) Homing behaviour in gastropodes.
- Ferguson, D.E. (1971) The sensory basis of orientation in amphibians.
- Frankel, R.B., Blakemore and Wolf (1979) Magnetite in freshwater magnetotactic bacteria.
- Leask, M>J>M (1977) A psycio-chemical mechanism for magnetic field detection by mirgratory birds and homing pigeons.
- Magarey, A.T. (1899) Tracking by the Australian aborigine.
- Moore, F. (1977) Geomagnetic disturbance and the orientation of nocturnally migrating birds.
- Moore, F. (1978) Sunset and the orientation of a nocturnal migrant bird.
- Olton, D.S. (1977) Spatial memory.
- Papi, F. (1974) Olfactory navigation of pigeons; the effect of treatment with odorous air currents.
- Rebach, S (1978) The role of celestial cues in short range migrations of the hermit crab.
- Richardson, W.J. (1978) Timing and amountof bird migration in relation to weather; a review.
- Saila, S.B. and Shappy, R.A. (1963) Random movement and orientation in salmon migration.
- Schmidt-Koenig, K. (1979) Avian orientation and navigation.
- Schmidt-Koenig, K. and Keeton, W.T (1978) Animal migration, navigation and homing.
- Sotthibandhu, S & Baker, R.R. (1979) Celestial orientation by the large yellow underwing moth.
- Supa, M. (1944) Facial vision: the perception of obstacles by the blind.
- Walcott, C (1978) Anomalies in the earth's magnetic field increase the scatter of pigeon's vanishing bearings.
- Wiltschko, W. (1976) Interrelation of magnetic compass and star orientation in night-migrating birds.