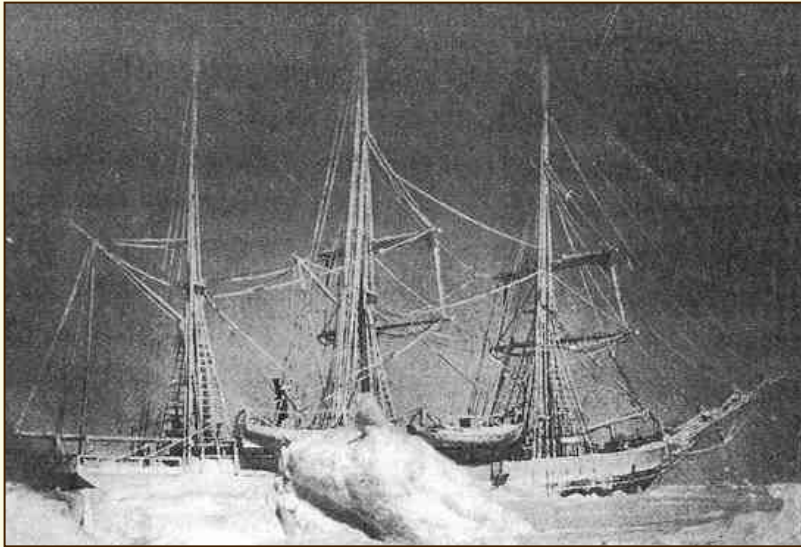


# The Relevance of Previous Expeditions to Future Space Exploration

Jack Stuster, PhD, CPE  
Anacapa Sciences, Inc.  
Santa Barbara, California

# Belgian Antarctic Expedition



The *Belgica* Locked in the Ice

- 📄 Commandant  
Adrien de Gerlache
- 📄 1898-1899
- 📄 First Expedition to  
Winter-Over in  
Antarctica
- 📄 Multi-National Crew

“Insanity and disease stalked the decks of the *Belgica* that winter.”

# Belgian Antarctic Expedition

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📄 Frederick A. Cook, MD  
Expedition Physician



Before



After

# Norwegian Polar Expedition

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- 📄 Fridtjof Nansen
- 📄 1893-1896
- 📄 Theory of Polar Drift
- 📄 13 Norwegians
- 📄 Egalitarian Approach
- 📄 Good Habitat Design
- 📄 Methodical Testing
- 📄 A Model for Future Space Expeditions



# Norwegian Polar Expedition

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Departure of the *Fram*

# Norwegian Polar Expedition

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The *Fram* En Route



The *Fram* Above the Ice

# Norwegian Polar Expedition

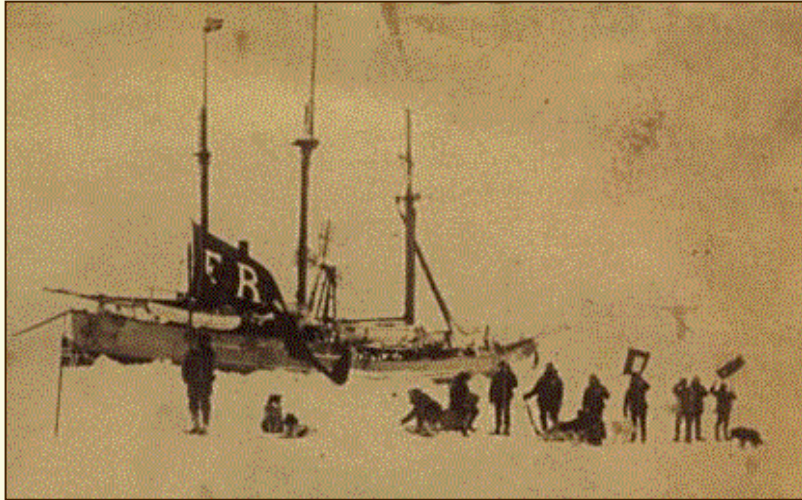


Conducting Research During the Expedition



# Norwegian Polar Expedition

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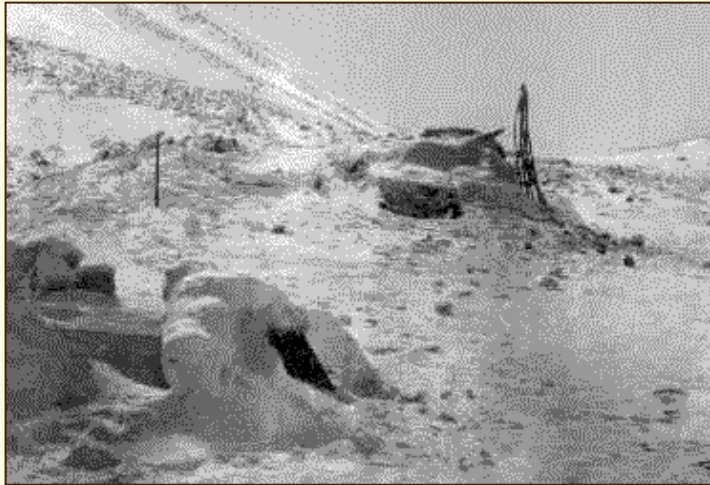


Life Onboard the *Fram*



# Norwegian Polar Expedition

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Entrance to the Hut



Life in Our Hut, by Fridtjof Nansen

Nansen and Johansen lived for nine months in a 6-foot by 10-foot hut made of stones and walrus hides.

# Norwegian Polar Expedition

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Nansen and Johansen in the Kayaks



Nansen After Meeting Jackson

# Norwegian Polar Expedition

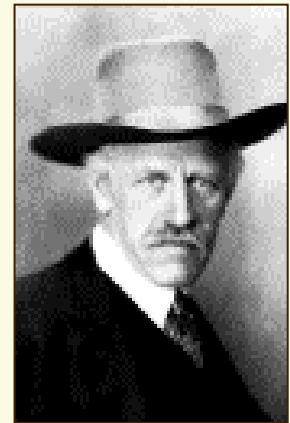
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Nansen and the crew of the *Fram* were greeted as if they had just returned from another planet.

# Fridtjof Nansen

- 📄 Artist
- 📄 Explorer
- 📄 Neurologist
- 📄 Oceanographer
- 📄 Champion Skier
- 📄 A Founder of Norway
- 📄 International Statesman
- 📄 Recipient of the Nobel Peace Prize



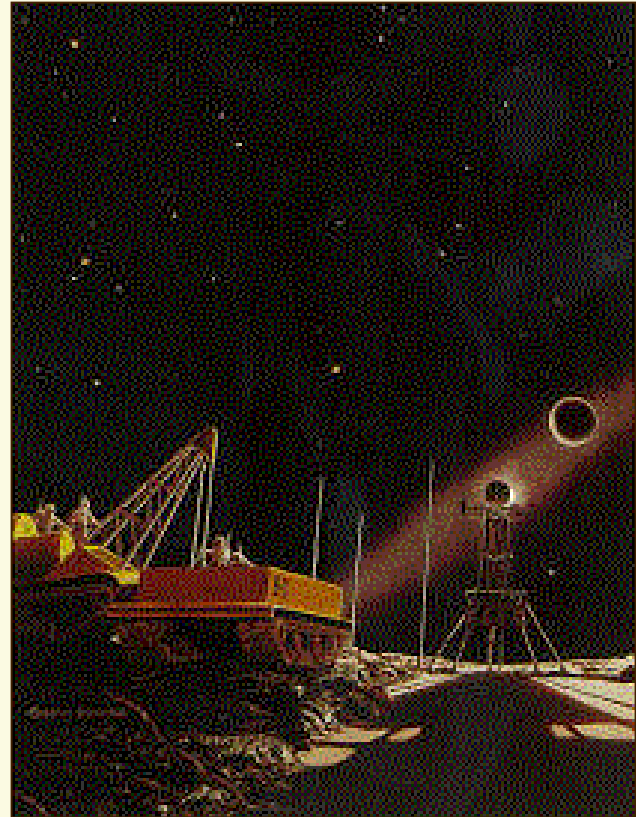


# Previous and Future Expeditions

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The *Fram* in the Ice  
By William Gilkerson



Lunar Expedition  
By Chesley Bonestell

# Learning From Previous Expeditions

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# Other Expeditions/Conditions

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# Other Expeditions /Conditions

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Skylab



Amundsen-Scott South Pole Station



# Roald Amundsen

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“The human factor is three quarters of any expedition.”  
– Roald Amundsen



# Roald Amundsen

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- ☞ Mate on the *Belgica*
- ☞ Northwest Passage
- ☞ South Pole
- ☞ *Norge*
- ☞ Dorneirs
- ☞ Nobile Rescue

# Ernest Shackleton

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British Trans-Antarctic Expedition, 1914-1916



The *Endurance* in the ice



Shackleton and Crew at Patience Camp

# Ernest Shackleton

British Trans-Antarctic Expedition, 1914-1916



Castaways on Elephant Island



Launching the *James Caird*



# Ernest Shackleton

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“For scientific leadership give me Scott; for swift and efficient travel, Amundsen; but when you are in a hopeless situation, when there seems no way out, get down on your knees and pray for Shackleton.”

# Richard E. Byrd

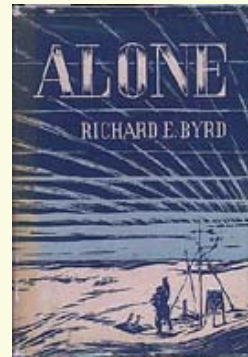
## Byrd's Expedition to Little America, 1933-1935



Life at Little America



Byrd at Advance Base



# Main Themes

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- ☞ There are highly predictable behavioral responses to isolation and confinement.
- ☞ Minor problems are common, but serious problems are avoidable.
- ☞ Future space expeditions will more closely resemble sea voyages than the test flights that presently serve as models.

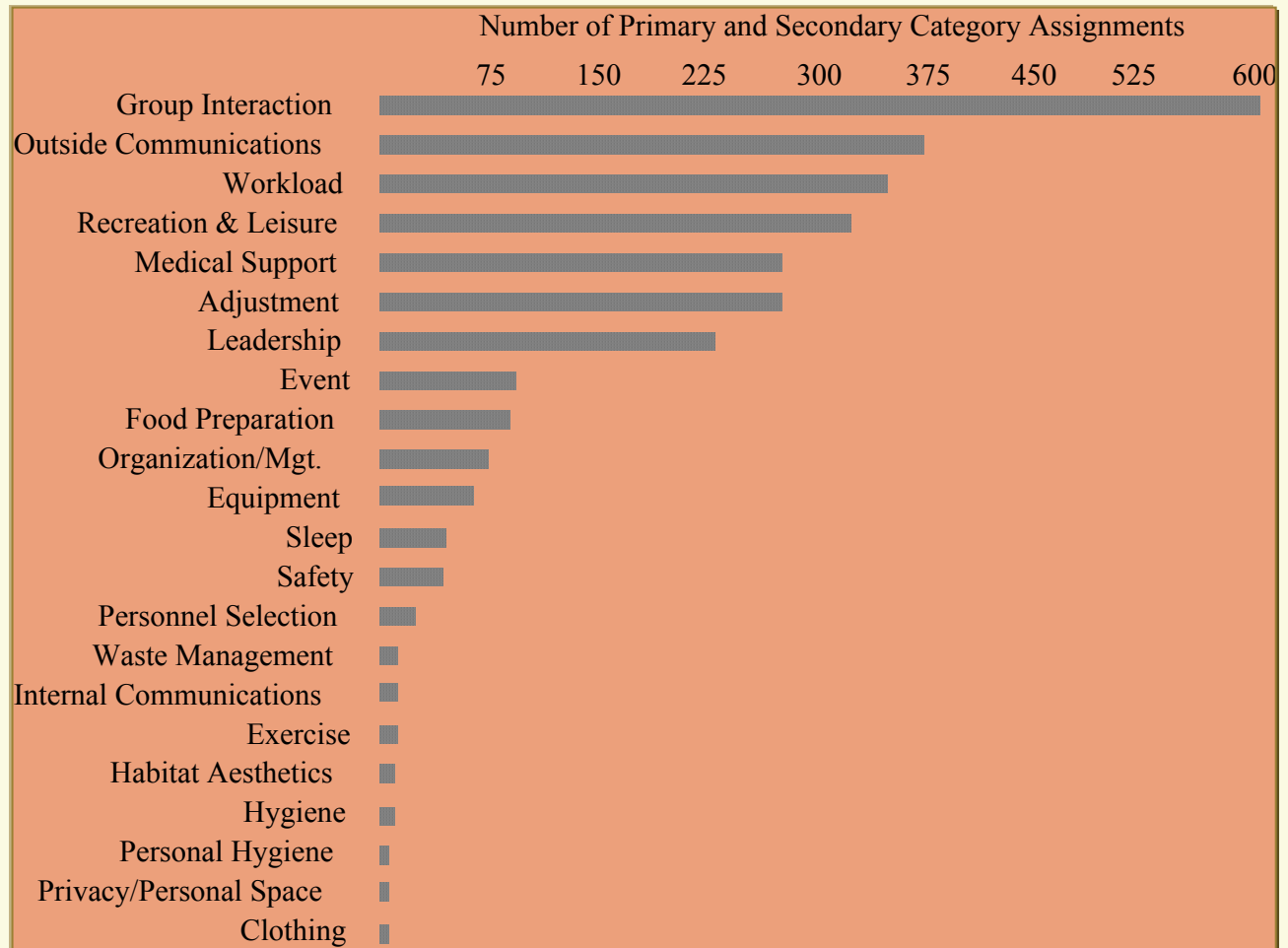
# Main Themes

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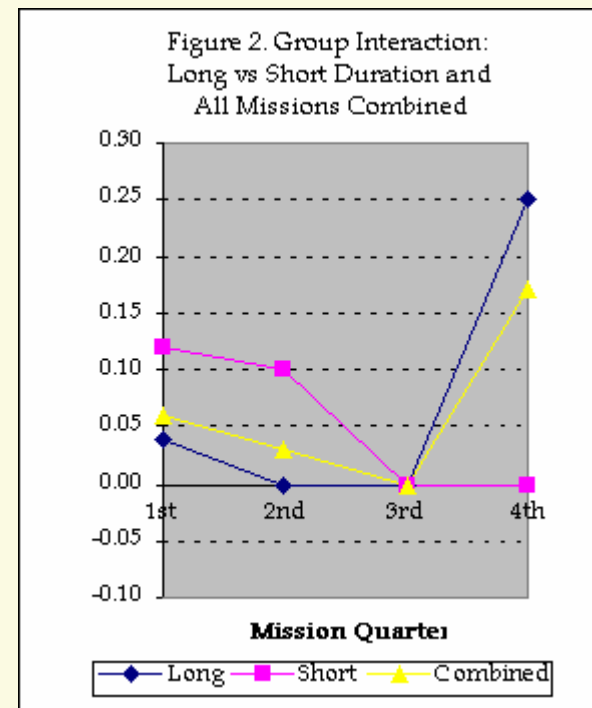
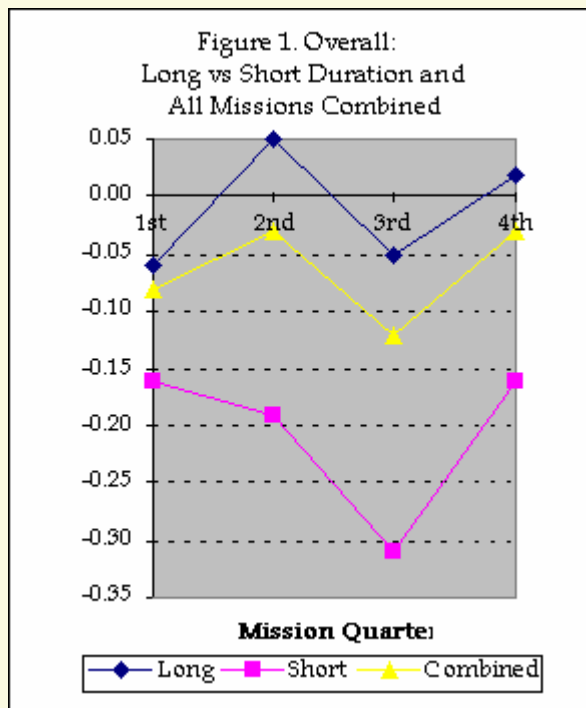
- 📄 Important lessons concerning the design and conduct of future expeditions can be learned by studying the experiences of remote duty personnel and previous explorers.
- 📄 Humans can endure almost anything.



# Content Analysis: Behavioral Issues

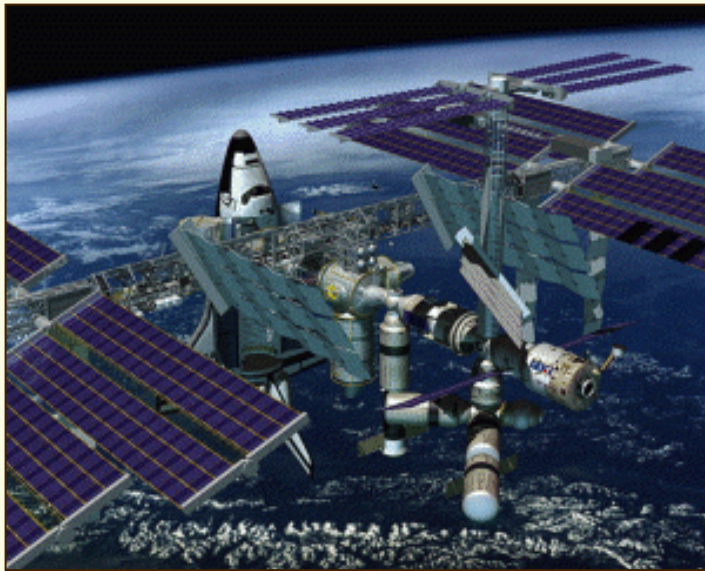


# Content Analysis: 3rd Quarter Phenomenon



# Behavioral Issues

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# Behavioral Issues

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The conditions are different, but most of the problems that will confront future space explorers are the same problems that troubled explorers in the past.



# The Future...

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Exploring Mars  
By Chesley Bonestell