

Midterm 2 - INTD255

Dr. Jordan Hanson - Whittier College Dept. of Physics and Astronomy

April 11, 2025

1 Reading: Last Place on Earth, ch. 21-32

1.1 Chapter 21 - Scott Sails On

- As the *Terra Nova* sailed to New Zealand and on to Antarctica, how did they find out about the *Fram* expedition? How did they react?

They got a message when they reached Australia. They gained sort of a competitive attitude to get there first.

- The *Terra Nova* expedition had settled on ponies for transport. Where were they obtained? Describe how Meares had to transport them to New Zealand.

I believe they came from Manchuria, which is SUCH a stupid idea, no less since it's about as far away as possible. I don't imagine they flew.

1.2 Chapter 22 - The Base at Framheim

- List the advantages and disadvantages of setting the main Norwegian base, *Framheim*, at the Bay of Whales, as opposed to Cape Evans (Ross Island).

not only closer but better geography compared to Cape Evans

- What are some innovations the Norwegians created at *Framheim*? For example, their boots had to be altered four times. What else did they make or build?

- On the depot-laying journey, the Norwegians were creating future stores of food for the return journey from the South Pole during the next season. What sort of safety margins did they assume when deciding how much food and supplies to move to the depots?

They were especially generous, including plenty of flags in case their heading was slightly off

1.3 Chapter 23 - Sledging with the Owner

- To lay depots, the British team had to get across McMurdo sound (sea ice). Having constructed their winter hut further South than the *Terra Nova*, they had to move several tonnes of gear across sea ice. In the end, however, they had to *put it all back on the ship, and sail it across*. Why?
They tried to sled with too much shit.
Besides, they used horses as if they were cowboys and lacked basic cold survival info.

- Discuss the advantages and disadvantages of having a chain of command. For example, when Scott issued orders, they were to be followed literally. Without orders, his men knew not to change plans without consulting the Captain. How did this differ from the Norwegian leadership style?

There was no question who made the decisions. However, they were unable to adapt to new ideas caused by this closed-mindedness. The Norwegians could input, then the leader isolated and contemplated.

1.4 Chapter 24 - The Pole Seeker Prepares

- Explain the significance of a *single point of failure* in a complex system. Name several examples from the Norwegian and British expeditions that represented single points of failure.

failure of a single component would end the mission.
Brits relied on horses who died and motors which sank.
Also, something about a bilge pump.

- (a) Describe the effect that the cook, Lindstrom, had on the company morale. (b) What other leadership tricks did Roald Amundsen use to boost morale during the Antarctic night?

a) Good food = good morale. Sense of togetherness.
b) keeping occupied/busy, celebrating achievements, etc.

1.5 Chapter 25 - Wintering at Cape Evans

- What forms of polar travel had Captain Scott selected for the journey South? Which was to be the one used

- ultimately to arrive at the South Pole? What is the significance of this decision?

Motors, horses. They both failed (died).
Then they had to use ... MANUAL LABOR!!
disgusting!

2. What is your impression of the leadership structure at Cape Evans, given the presence of Navy officers and enlisted Navy sailors? What would you have done differently? What winter tensions existed at Framheim?

Pre-existing Navy structure. News flash;
irrelevant! Every thing different; listen to opposing
views, consider all options. They didn't like
each other.

1.6 Chapter 26 - False Start

1. What major error on the part of Roald Amundsen gives this chapter its title? As a result of this error, who had to forgo the South Pole trek, and why?

He tried to start outside the season.
Some suffered frostbite/injury and had
to stay back... lucky bastards.

1.7 Chapter 27 - Scott's Caravan

1. During this chapter, there are signs of self-delusion in the leadership of Captain Scott. However, in the end, his party does reach the South Pole and travels almost all the way back. How does one recognize the early signs of leadership error? What makes addressing such errors difficult? (Give examples as necessary from the chapter).

Overconfidence in outdated/stupid methods
Reluctant/ignorant to warning/indications/crow

Confirmation bias/repercussions for truth(bitches!)

1.8 Chapter 28 - The Devil's Ballroom

1. What impressions of the Trans-Antarctic mountains do you recall from this part of the Norwegian journey? What kinds of terrain did they face, and how did they overcome it?

Extreme/unimaginable obstacle, until they reacted
properly. Treacherous caverns, etc.

2. What made fixing the latitude and longitude difficult this close to the pole? Was calculating the longitude worthwhile?

Sun/moon/magnetic poles not accurate.
calculations helped establish global scientific
average.

1.9 Chapter 29 - Man-Hauling Begins

1. How did Scott's men feel about man-hauling gear up the mountains? Were they able to be honest with the Captain about the risks?

It was stupid, and they thought it was, too.
Honesty not possible (how embarrassing!).

2. What were the advantages of going up the Beardmore Glacier, as opposed to the Axel Heilberg and Devil's Glacier for the Norwegians?

More direct, but still "commanded" by
Scott.
Norwegians were still more efficient.

1.10 Chapter 30 - The Race Won

1. Describe the meticulous calculations Roald Amundsen and team made to establish the location of the geographic South Pole. For reference, recall the story of Cook and Peary, and the uncertainty of their North Pole navigation.

They made calculations based upon multiple
solar positions. They double-checked.
Cook & Peary were bad at maths and had
no redundancy.

1.11 Chapter 31 - The Race Lost

1. After years of planning, 1200 miles of exploration on foot, ski, and sledges, and vastly different start times, what was the final difference in time between the Norwegian and British arrival at the South Pole?

Only a number of weeks/about a month.

2. How did scurvy begin to play a role in the trip home for the British? What vitamins did they lack?

It always does, especially dentally.
They needed (anything) fresh, like
vitamin C in citrus or seals.

2 Reading: Deep Survival, ch. 5-8

2.1 Chapter 5 - The Anatomy of an Act of God

1. In this chapter, two brothers and a friend set out to climb a rock face in Yosemite. With regard to the plan, what begins to go wrong? Why is the group unable to act on the information indicating the plan is becoming

increasingly dangerous?

Weather went wrong. They were too hard-assed on their plan.

2. For example: (a) why is cotton called "death fabric" by park rangers? (b) What is St. Elmo's fire?

- a) Because it stays wet. Doesn't seem deadly to me.
- b) Something about electrically-susceptible paint.

2.2 Chapter 6 - The Sand Pile Effect

1. In general terms, describe what a power-law effect is in nature. Why does a sand pile with a steady rate of new sand on top collapse regularly, even though basic physics does not predict when it will collapse?

It's an equation that remains constant.

But how all the stuff interacts is less known.

2. What is meant by the term "normal accidents?" On mountains like Mt. Hood, for example, there are accidents that occur predictable, despite safety preparations. How does the sand pile effect explain this?

Small problems accumulate to create bigger ones. But I've been just fine on Wy'East (commonly mis-named Mt. Hood)

2.3 Chapter 7 - The Rules of Life

1. Consider this quote from the chapter: "It is well documented that co-pilots aren't likely to challenge pilots in aircraft cockpits and sailors aren't likely to challenge captains, sometimes with fatal consequences. Experienced climbers may be reluctant to challenge others with experience ... doctors won't challenge doctors." How do the documented accidents in this chapter connect to the results of the South Pole expeditions?

Not quite sure since I would've told the truth no matter who tf is "in charge," but apparently others keep quiet.. which is deadly!

2.4 Chapter 8 - Danger Zones

1. Consider the following paradox: surfing can be a beautiful and joyful experience, but also extremely dangerous, depending on the conditions. What kind of experiences are necessary to do it safely? Recall, for example, how the Hawaiian lifeguard and his family interacts with the author.

Well it relies on technical, physical, and location-based knowledge. They were often to share local insight about these.

2. Compare the experience of the lifeguard to that of the CEO who survives winter blizzards for three days in Squaw valley, California. What characteristics helped him survive? How could he have avoided the experience in the first place?

Apparently he was smart / mentally agile.
Doesn't seem like it to me. He could make "good decisions under stress" but still visited a place named "Squaw Valley" ???

3 Scientific Studies

1. What is so striking about the discovery of life beneath the Ross Ice shelf? How far away from the sea ice does life extend? How was this life discovered?

There's no light! May dozens of km.
They only found it w/ ice radars.

2. What hunting techniques do Antarctic orcas display that demonstrate teamwork and social organization?

Coordination, strategy, synchronized swimming.

3. Neutrino Physics in Antarctica and Greenland

4. List some of the astrophysics experiments located in Antarctica and Greenland. Why are they located there, and for what are they searching?

Because they're so far from other radio interference/BS. Ariana, Kamiokande, Neutrinos!

5. What achievements are attributed to the IceCube Neutrino Observatory in the last 10 years?

High NRG neutrinos from outside our solar system

6. Paleo-climatology with Antarctic Ice Cores

7. Describe the process for measuring global average temperature using ice cores from deep boreholes in Antarctica. What gases or elements are used to make the measurements? How is this temperature measurement calibrated, using contemporary data?

It's the CO₂ mostly, contained in tiny bubbles in the ice. Once collected, they are plotted over other known temperature measurements.

4 Bonus: Solitude and Leadership

1. **Reflection on Leadership.** What makes a good leader, according to the essay “Solitude and Leadership?” (a) Reflect on one’s ability to *pass exams*, versus *think independently*. (b) How does the example of Gen. David Patreus play a role in this reflection? (c) What advantage to leadership decisions is afforded to those who filter out information that is ultimately unimportant? What forms of information *do you think* are the most important?

- a) Somewhat related, but if it's just memory retention and not real critical thinking, one's screwed themselves!
- b) He seems normal. People who look at facts and see patterns are unremarkable, in my HUMBLE opinion (imao).
- c) Thinking of what matters. Surroundings, circumstances, eventualities. If necessary, fuck protocol. Human safety is never to be discounted.