

Midterm 2 - INTD255

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1 Reading: Last Place on Earth, ch. 21-32 1.3 Chapter 23 - Sledging with the Owner

1.1 Chapter 21 - Scott Sails On

1. 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?

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

1.2 Chapter 22 - The Base at Framheim

1. List the advantages and disadvantages of setting the main Norwegian base, *Framheim*, at the Bay of Whales, as opposed to Cape Evans (Ross Island).
2. 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?
3. 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?

1. 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?

2. 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?

1.4 Chapter 24 - The Pole Seeker Prepares

1. 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.
2. (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?

1.5 Chapter 25 - Wintering at Cape Evans

1. 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?

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?

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?

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).

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?

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

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

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.

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

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?

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

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?
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?

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?

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.

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?

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

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?

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

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?

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?