

The Girl Who Broke the Sea

AUTHOR

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RECOMMENDED FOR: Lower to Mid Secondary



SYNOPSIS

Lily's emotional problems run deep—seven miles deep.

After she gets kicked out of school for her destructive behaviour, Lily agrees to an unusual fresh start: going with her scientist mum to live at Deephaven, an experimental deep-sea mining rig and research station located at the bottom of the ocean. Lily instantly regrets her decision: claustrophobic and isolated, it's hardly her idea of home. Turns out, Deephaven has problems of its own. The head scientist, they quickly learn, has disappeared—just as he was on the brink of a shocking discovery.

In the darkness of the deep, something is stirring . . . something dangerous. And it's calling out to Lily.

ABOUT THE AUTHOR

Adam is a former physicist and former child who likes writing stories and building unlikely, poorly thought through gadgets with his sons. He started his career as a physicist, building part of the Large Hadron Collider in CERN. He has also sold encyclopaedias in Chicago, worked for an investment bank, taught physics in Sudan, fitted emergency Wi-Fi in the refugee camps in Greece, and now works as an engineering manager in the Google Research team.

He lives in Hertfordshire with his partner, two sons, and a dog named Rosie.

STUDY NOTES

- Before reading the story, as a class discuss the book cover and title. Some things to include in your discussion could be:
 - Without looking at the title, what do you think the cover of the book is showing?
 - Does knowing the title of the book change your understanding of the cover illustrations? Why/why not and if so in what way and how?
 - What can you see happening in the cover artwork?
 - How has the artist represented the ocean?
 - What do you predict this story might be about?
 - Who do you think this book is aimed at, and why do you think this?
- The main action of the novel takes place far, far below the surface of the ocean, in a deep-sea habitat. A key aspect of Lily's new life is the fact that the water pressure at that depth is absolutely immense, because water is heavy.

Experiment with filling and carrying buckets of water, weighing them, and lying down with one on your stomach. As a class discuss what you found out about the weight of water.

- Experiment with the visible effects of water pressure.
 - Punch three small holes equally spaced up the side of an empty 2L soft drink bottle. When the bottle is standing up the three holes should be at different heights from the surface it is standing on.
 - Carefully cover the holes with a single piece of masking tape running vertically up the bottle.
 - Fill the bottle with water, or a water and food colouring mixture.
 - Make sure that the lid is OFF the bottle.
 - Holding the top of the bottle firmly, in one smooth movement remove the tape.
 - Observe the water coming out of the holes.
 - What can you see happening, and how do you think different water pressure at different depths is affecting how far the water travels from the side of the bottle?
 - You might like to repeat this experiment with three or more identical bottles, each with a single hole at a different height.
 - Measure the distance the streams travel, and compare it to the different amounts of water above the hole.
 - As a class, discuss your findings, and relate it to the effects of water pressure at depth in the ocean.
- Create a diver-in-a-bottle-toy to show the effects of changing pressure on the buoyancy of an air-filled compressible object. There are many simple instructions on how to make this toy online. Research both how to make this toy, and why it works, and present your final creation with a written explanation of the physics behind the toy. You might prefer to work in pairs or a small group, or to create several variations of this toy.
- What does the phrase 'He/She/They are under a lot of pressure' mean? How can the common phrase under a lot of pressure be related to the action of the book as a whole?
 - As a class, discuss how Lily responds to feeling under pressure, and how the literal pressures that Deephaven experiences are reflected metaphorically in the lives of its inhabitants. Individually write a piece exploring the link between the metaphorical and the literal in terms of the phrase under pressure and the action in the novel. Use evidence from the text to support your assertions.
- Discuss the Titan sub disaster, and relate it to the challenges that are faced by the inhabitants of Deephaven.
- Lily states at the start of the novel that 'everything's an interface really'. What is the dictionary definition of the term interface? Do you think that Lily is correct? Why/why not? Individually think of at least six examples of interfaces that you use in your daily life.
- At the end of Chapter 8, Lily is told of someone who could see the Earth's magnetic field. Would this actually be possible? Why/why not? What would the Earth's magnetic field look like if we could see it?
 - Look at the effects a simple bar magnet has on a handful of iron filings, then extrapolate to the Earth's magnetic field. Do you think that watching the Aurora Borealis or Aurora Australis would count as seeing the Earth's magnetic field? Why/why not?
- Describe Lily's need to break things in terms of emotional self-regulation. What might be some alternative coping strategies for her?
- How does the author build a sense of foreboding and impending doom throughout the novel? In small groups discuss this topic and identify at least two separate literary techniques used to increase plot tension throughout.
- While in her mother's office Lily states that she 'wanted the universe to see me, to understand me.' In your opinion, how universal is this desire to be seen and understood? In small groups write a brief analysis of Lily's problematic behaviours as interpreted through the light of this statement.
- Do you think that there might actually be intelligent life in the depths of the ocean? Why/why not? How much of the ocean's depths have we explored, and what is preventing us from going further/learning more?
- Compare what you know or can find out about the technology used on the Titan sub, to that found in the book. How far away are we technologically from creating a deep sea underwater habitat and mining rig like Deephaven?
- In small groups choose a dramatic scene in the novel, and report on it as if you were writing for a news publication. Write at least three separate news reports of the same event, one designed for a sensationalist tabloid-type publication, one for a mainstream evening news report and one for a professional scientific journal or magazine. As

a class, discuss the differences between the different reporting formats and how the intended audience affects the style, form and content of a news report. If you have enough time you might like to write three separate reports for each publishing genre, one where the reporter is sympathetic to Lily, one where the reporter is disapproving, and one that is neutral.

- Are fear and loneliness human universals? In your opinion are they shown as such over the course of the novel? If so why and in what way? Write a brief analysis of the role that fear and loneliness have as underlying motives for both the human actors over the course of the novel, and the non-human euglenoid.
- What would you describe as Carter's key motivation throughout the course of the novel? Write a letter home from his point of view describing some of the events where Lily causes him trouble.
- Lily tells Evan that 'Different is always scary.' (p 381) Do you agree with this statement? Why/why not? Write a 100–200 word opinion piece discussing this statement, whether you agree with it, and why or why not.
- What would you like to see happen in a sequel to this novel, and why?

AUTHOR OF NOTES

RAE CARLYLE