Sample Scenarios
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Natural Disasters
Future Problem Solving New Zealand

The noise was almost pretty at first. It sounded just like the chorus of thousands of insects that hummed every summer morning in the fields outside of tiny Oneroa. It sounded so normal that no one in Oneroa even noticed it until later that day. The children of Oneroa, playing outside on that hot summer afternoon, noticed it first. The insect chorus usually quietened down by mid-day. On that day, though, it was after 3:00 p.m. and the insects were still trilling. People thought it was strange, but went about their business, as usual.

Early on the second morning, adults in Oneroa noticed that the sound had never died down during the night. Also, along with sunrise, the sound got louder. People became a little concerned. On the third morning, the sound got louder again. By now, it was annoying. People bought earplugs to block out the noise. Animals acted restless. The District Council called in experts from Auckland University. People were worried now.

Just after the experts arrived on the fourth morning, a crisis occurred. The sound shot out of control. The loudness became almost deafening. The sound spread to a range of pitches, from very high to very low. Suddenly, people felt the sound. It seemed as if the air was vibrating and causing everything else to vibrate, too. The vibrations weren't just terrifying, they were painful, as well. People panicked.

Then, seven long minutes after the crisis started, both the vibrations and the sound suddenly stopped. Panicked people stopped and looked at the damage around them. Landslides had occurred on hillsides. Some buildings had quivered and collapsed. A number of hovercars on the hoverway just outside of town had crashed to the ground. Computer and other communications systems were knocked off-line. People and animals had been injured or killed by falling objects and collapsing structures. Some people had suffered heart attacks and other physical reactions to the stress of the sounds and the terror of the vibrations. Very little was left unaffected in the Oneroa district. Within 24 hours, the Prime Minister had video toured Oneroa and declared it a Civil Defence Emergency Zone.

Over the next few months, the "sonic shock" -- as it quickly came to be called -- struck eleven places, including nine small towns and two medium-sized cities throughout Northland and Waikato. People began to refer to Northland as the "Sound Tunnel."

Scientists, armed with advanced acoustic equipment, had rushed to the Sound Tunnel to study the sonic shock. Some people thought the shock was being created by humans doing secret research. Some people blamed a build-up of noise pollution. Some blamed power-cell surges; others the nuclear power stations which had recently been installed in South Auckland. Protesters who were concerned about the huge growth in the use of electronic media and the associated transmitters were convinced that they had at last proved the dangers of these installations. A few others even announced that aliens were attacking. After several months of investigations, most scientists agreed that sonic shocks were a natural event. They just didn't know what it was. In fact, they were even having a hard time figuring out where the sounds were coming from, let alone what was making them.

Then, on the first of October, scientists pointed out there had been no sonic shocks for a month. The sonic shocks might be over. By November, people in the Sound Tunnel began to rest a little easier, while they rebuilt the sound-shocked areas. Scientists went home to study their data and try to figure out what was going on. People everywhere in the country hoped they had heard the last of sonic shocks.

All that happened last year. Now, yesterday -- June 27, 2032, the Sound Tunnel's first sonic shock of the year may be starting. People in Hamilton are reporting the insect-like chorus. As people are rushing to leave Hamilton you can't help but think about all the people, places, and possessions that are affected by sonic shocks in the Sound Tunnel. What can be done about the problems and challenges posed by this new natural disaster?
An asteroid the size of a football field missed the Earth by just 120,000km last week, it has emerged.

The space rock passed well within the orbit of the Moon, making one of the closest known Earth approaches and described by one expert as a "close shave". Had it struck a built-up area the damage and loss of life would have been similar to that caused by a large hydrogen bomb.

The asteroid, given the name 2002MN, was travelling at more than 37,000kph when it was spotted by astronomers in New Mexico, USA. It was not detected until three days after it came perilously close to the Earth last Saturday.

Although a lightweight compared with some asteroids, 2002MN was big enough to have caused local devastation similar to an impact that occurred in Siberia in 1908. On that occasion an asteroid which exploded above Tunguska flattened 2,000 square kilometres of forest.

Dr Benny Peiser, from Liverpool John Moore's University, an expert on Near Earth Objects, said: "Whilst the vast majority of NEOs discovered do not come this close, such near misses do highlight the importance of detecting these objects.

"This reminder comes in a week when the UK telescopes on La Palma are being tested to search for NEOs."

The asteroid, which had a diameter of between 50 and 120 metres, was detected by astronomers from the Lincoln Laboratory Near Earth Asteroid Research Project (Linear). It was only the sixth asteroid known to have penetrated the Moon's orbit, and by far the biggest.

Brian Marsden, from the Harvard-Smithsonian Centre for Astrophysics said: "It was a close shave."

Currently, there is no dedicated program searching for NEOs approaching the southern hemisphere, and the American space agency Nasa only looks out for bodies bigger than a kilometre across.

What are some of the challenges which might be caused by this incident? Develop an underlying problem and come up with some solutions. Suggest a plan of action for the UN or NASA to follow.

Engineering Solutions, a group of engineers in Florida, have designed the “Freedom Ship”, which could soon become the largest vessel ever to sail the seven seas. Officials are in final talks with a US investment club interested in providing finance for the $US9 billion dollar vessel, and 70 acres of prime waterfront land has been leased in Honduras to start building it.

The ship will be nearly 2.5 long and will carry 115,000 people, many of them permanent residents, in 21,000 accommodation units. It will sail slowly round the world, anchoring off major cities, following the seasons and remaining permanently in the sun. Since it is too large to navigate the Panama Canal, Cape Horn will be part of its route. The Freedom ship is expected to spend 70% of its time lying offshore from major cities and the other 30% in transit.

The top deck will have a landing strip for small planes; there will be the world’s largest duty-free shopping mall, at least three hotels, a huge library, a 600 bed hospital and an entire schooling system from kindergarten to university. Several major US colleges have already expressed interest in running the curriculum. A small railway system will move people around the ship and there will be a 200 acre municipal park, cycle tracks and cinemas.

More than 20% of the apartments have already been sold. Residents will have to pay no taxes as the ship will be a tax haven. Deposits are 5% of the total cost of an apartment and most of those which have been sold so far are the most luxurious, ranging up to $US9 million. Ten times more deposits have been placed on luxury cabins that on more basic apartments so they have actually raised the prices of the luxury ones and added another level of cheap housing to redress the balance. The cheapest apartments start at $US179,000. The owners want a cross-section of society on board; the prices of some essentials such as staple foodstuffs, electricity and water will be fixed by the ship’s owners. They expect up to 10,000 day visitors when the ship is moored, so lower paid shop and tourism workers will be required. Many of the cheaper apartments are very small and ‘box-like’.

The owners see this as a utopia with a microcosm of the whole world from yuppies to professionals to retirees. Many people hope to escape the ‘sleaze’ and pressures of urban living. It is hoped to virtually eliminate crime with zero tolerance and videotaping of public areas. The ship will be equipped with state of the art defence systems probably including missile launchers and there will be a 2000 strong security force available.

The ship will be 25 stories high and use many of the technologies already used in the building of oil rigs. There will be 520 airtight cells, each 250 feet high and there will be dozens of 3,700 horse-power caterpillar diesel engines linked to a central supercomputer. The whole boat could be controlled by a single operator using two joysticks. It is 2 1/2 times as wide as it is high, and the draught is only 27 feet with the retractable engines going down another 15 feet. The ship, or floating city, is five times the length of the current largest cruise ships.

The ship should have impressive green credentials. The engines burn diesel rather than marine fuel, toilet waste will be incinerated in electric loos, ‘grey’ water from dishwashers, laundries, etc will be treated and converted into drinking water. Other waste products will be recycled or sold as scrap.

Generate a list of challenges (issues, problems, concerns) which might be associated with the development and use of this ‘city on the sea’. Develop one underlying problem, generate solutions and come up with a plan of action.
MOTHER GOOSELAND NEWS  
Future Problem Solving

A prominent member of our community, Mr Humpty Dumpty, was critically injured last evening when he fell from the wall surrounding Mary Q Contrary's garden. All the King's Men, the Mother Gooseland emergency medical team, arrived on the spot within minutes of the accident, but were unable to put Mr Dumpty back together again. The patient was transported to the Jack Sprat Memorial Hospital, where he is in a serious but stable condition with cracks to all parts of his body. Hospital spokesman, Mr Cottonbud has stated that Mr Dumpty is expected to make a full recovery, however he may never be able to scramble up walls again! Mr Cottonbud said that it is actually quite a crack-up to see Mr Dumpty in this state!

Witnesses say Mr Dumpty climbed up on the wall to sneak a look at the famed silver bells and cockle shells in Ms Contrary's garden. The aged mortar of the wall began to crumble due to the excessive weight of Mr Dumpty. Mr Dumpty struggled in vain to retain his balance, then tumbled into the crowd below.

Ms Contrary's garden has been off limits to the public since an incident last year when Little Miss Muffet trampled to death the "little maids all in a row" when fleeing a ferocious spider. Mr Dumpty has often been seen spending long hours sitting on top of walls around Gooseland, admiring the flowers which is one of his eccentric passions. Although Mr Dumpty means no harm, his appearance has worried a few of the local community members.

Upset by the destruction of her property and the money it cost her for repairing the cabbage patch destroyed by the Peter Rabbit family, Ms Contrary erected a high stone wall around her garden. Currently, only Ms Contrary and a few select visitors are able to view the spectacular display behind the garden wall. Public outcry has been great and disgruntled locals have lobbied to have the garden declared as a national heritage. The tourist industry in Mother Gooseland has fallen since the garden has been declared off limits as this was the real drawcard for visitors to the area, along with the mirror (reportedly used by the wicked stepmother to discover Snow White's location) housed in the nearby Museum of National Fairytales. Many of the members of the community are very upset by what they view as Ms Contrary's selfish attitude. They believe that Ms Contrary should be more community-minded and allow the council to take ownership of her garden so that they can once again enjoy it's beauty. In the past teams of workers had been rostered to help Ms Contrary keep her garden in such great condition and locals were happy to contribute large amounts of money and plants to help her maintain it, however many felt Ms Contrary became conceited and eventually she wouldn't allow anyone access to her garden, believing she could maintain it herself.

As members of the Mother Gooseland community, we must all pull together in order to help this situation. Use your problem solving skills to identify challenges and brainstorm solutions.
From: SteveP@springfield.net on 02-07-31 at 7:40 PM
To: solver@fpsp.org
Subject: Re: Come Visit?

Mike,

Sorry, I know I invited you to come spend some time in Stratford in the Christmas holidays, but I don't think that's such a good idea now. Things have become kind of crazy here. Everyone seems pretty worried as you might have heard. It's about our water. It's turning out to be kind of a big deal.

I know a lot of places have had really bad water shortages for years. My friend, Anne just moved to Marlborough, which is practically a desert wasteland, she says. In this part of Taranaki, we've been luckier, I guess. Some people have installed rooftop tanks to collect rainwater just like in the old days even though the summers have become much drier over the last few years. We have two very old underground reservoirs and people are pretty good about doing little things to save water when they are reminded, like not leaving the water running when they brush their teeth. Since they came out with those new ultrasonic showers and clothes cleaners, we haven't even had a little shortage in town. My family doesn't have one of those because they're pretty expensive. Some of my friends do and they're really cool. Guess they really save a lot of water, too.

Anyway, when they started digging at the construction site for the new school, near the South Reservoir, they found old barrels of chemicals buried there. I heard the laser dirt movers broke a couple of them before they moved them. On the e-news they say scientists haven't identified all the chemicals, but some of them are so toxic they haven't even been used since the 1980s! Gross!

Everyone's all worried that there might be even more stuff buried down there. There is proof that some kind of toxic goo has contaminated the ground water. They're testing the reservoir constantly, and at the first sign of pollution they're going to shut off the water supply. The mayor says the reservoir will shut down within four days. That's like half of our water, just gone all of a sudden.

Gee, how do they clean up stuff like that? We learned in school about how they have these genetically engineered plants that eat toxic waste out of the water, and my Dad says they might bring in some robots from Marsden Point that they've used to clean up oil spills. We're hearing terms like water stress and conservation, but I don't see any reports on solutions.

You know how you were telling me about that Future Problem Solving thing you do? Maybe you and your team could help me? I'm a little scared. People in other places have figured out how to deal with water shortages, but Stratford has never had to deal with anything like that. What kinds of problems do you think water shortages and the pollution will cause here? And what can we do about it?

Talk to you later,

Steve
This agency was set up in 2025, to report on the problems associated with the North Pacific Gyre, where enormous quantities of human garbage have collected over many decades in an area three times the size of New Zealand. Despite calls by environmental groups for less packaging and less use of plastics, most people use and discard plastics with little understanding of where they will end up.

Just as for many years people have lived on rubbish dumps in places like the Philippines, there is now a floating flotilla of up to 75 vessels that work the gyre. Many of them are rusty, obsolete fishing boats, whilst others are advanced plastics recovery vehicles. Some trawl with wide-meshed nets that only capture the largest pieces of plastic that are hauled aboard and sold to recyclers in China. Other groups operate small robotic submarines, which look specifically for collectible items that sell for large sums of money. Recently some rare items from the 2011 Japanese tsunami have been recovered and sold. This year one syndicate is experimenting with a new system that can harvest tonnes of plastic pollution and convert it into diesel fuel.

Despite these attempts, the impact on the ‘ocean soup’ has been minimal. The sun's rays break down some of the floating objects into particles, smaller than a pea, known as microplastics, releasing toxins from the chemicals used to manufacture the plastic. Other plastics floating below the surface that are not broken down by the sun’s rays, continue to float around for decades. Some plastics and other garbage simply sink to the bottom of the ocean.

There are still hundreds of kilometres of ghost nets and abandoned long lines floating in the gyre. These tangled masses trap plastics and wildlife. The greatest land impact has been on the islands of Hawaii where for decades dead birds and sea mammals have washed up on the beaches, their stomachs crammed with plastics or their bodies tangled in package strapping and similar rubbish.

In 2035, the Ola Kai (OK) Project was set up by NPGEPA, focusing solely on microplastics. Ola Kai floating laboratory crews weigh and test the microplastic debris samples collected and the researchers carry out in-depth examination of the effect of ocean soup on the ocean surrounding the islands. Scientists are shocked to have found plastics in the guts of fish and toxins from the plastic in their flesh. One of the aims of the OK Project is to find ways to safely remove microplastics from the ocean.

We are alarmed at the results of our research and fear that large parts of the Pacific are becoming marine deserts riddled with plastics. So far attempts to clean up the environmental disaster have made little difference, as the area is so large and the amount of ocean soup is so overwhelming. Governments are aware of this problem but so far no nation has been prepared to commit to attempting to stop the destruction of the marine habitat. They don’t feel responsible for a mess that is so far from their shores.

By the time of our next report we hope to report on significant improvements in the fight against ocean soup. Help us to do this by identifying the challenges surrounding ocean soup and select an important underlying problem to solve. Present us with a creative plan of action so that we can create a better world for the future. Good luck.