



Rough Waters The Effects of Pandemics at Sea

Dr. Ann Griffiths

Many states are beginning to loosen the restrictions that were imposed to reduce the spread of coronavirus/COVID-19 (the particular illness that comes from the novel coronavirus). As they start to do this, it has become clear that it is far easier to shut down an economy than it is to open it, particularly as it is being done piecemeal and under circumstances in which the future of the pandemic is still unclear.

The novel coronavirus pandemic has had major effects on lives. For years in the future, we will be measuring the mental, physical and financial costs to citizens. These costs will be financial – job losses, revenue losses, for example – but people will also have to deal with the death of family members or friends, restricted freedom, postponed surgeries, among other things. These costs are spelled out in the news every day. But what we do not hear about are the effects of pandemics on the industries and organizations that operate on the oceans. This may happen out of sight for most people, but the maritime industry has been hit hard as well. And these industries must be considered as we try to move beyond the pandemic. The problems on land will reverberate in the maritime industries, and the problems in the maritime industries will reverberate on land. The maritime sector may not seem like a place to look as we unwind the restrictions on land, but unless we consider the maritime sector, the effects of the pandemic will take longer to overcome.

The Cruise Ship Industry

It may seem frivolous to think about leisure activities while people are suffering from so many other stresses. But if we are looking at the effects of the novel coronavirus/COVID-19 on the oceans, the cruise ship industry is a factor. It would not be an understatement to say that the industry has been decimated. After a number of well-publicized cases of COVID-19 on board cruise ships, the industry has lost bookings by the thousands. Even assuming that people would still book trips, and that cruises were scheduled, many ports have now placed restrictions on cruise ship visits for the 2020 season. And indeed, the entire cruise ship season may be cancelled.

Despite the fact that many people enjoy cruises, given loss of income and health concerns, the last thing they are considering right now is taking a cruise. And that is understandable. But the cruise ship industry employs thousands of people directly – including booking agents, crews on the ships (both for ship operation and for passenger service) and maintenance personnel. Job losses just *directly* related to the devastation of the cruise ship industry will be substantial.

It is the indirect costs, however, that will have the biggest impact. The cancellation of cruise ship visits will have a huge impact on the tourism industry in ports where they stop. Cruise ships bring millions of tourists to ports. In these ports, they go on excursions, they visit local attractions, buy souvenirs, visit bars and restaurants. This provides income to thousands of local businesses and creates jobs.

Many places rely heavily on cruise ship visits. Los Angeles had over 70 cruise ship visits in January and February 2019, and in Miami 112 cruise ships visited in a single month – January 2019.¹ The United States has a huge economy, so a cataclysmic fall in the number of cruise ships stopping at ports represents only a small proportion of total Gross Domestic Product. But the general numbers in the United States will hide many smaller numbers, and the bottom line is that some places will be hit extraordinarily hard if the 2020 cruise ship season is cancelled.

The cancellation of the season will significantly affect places that rely on tourism for employment and revenue. The port of Vancouver had 280 cruise ship visits in 2019, with a direct and indirect impact of \$1.5 billion.² And the port of Halifax had 873,000 cruise ship passengers visit in 2019, with a direct and indirect impact of \$373 million.³ In its short season from mid-May to mid-September, Anchorage, Alaska, had 46 cruise ship visits in 2019.⁴ In Freeport, Bahamas, more than 45 cruise ships visited just in January 2019.⁵ In smaller places, like Halifax, or smaller countries, particularly in the Caribbean, the effects of cancelling the cruise ship season will be dire. Many Caribbean states rely heavily on tourism for their government coffers. When this money disappears, what will happen? The Bahamas is still trying to rebuild after a devastating hurricane, and international organizations and other states may be unable or unwilling to subsidize lost government incomes in the Caribbean. With loss of employment opportunities and government services, will criminal organizations step into the breach, will narcotics smuggling across the Caribbean into the United States increase, will mass migration occur?

This is not the first time that the cruise industry has been affected by a deadly virus on board ships. There have been well-publicized incidents of norovirus on cruise ships in the past, although very few cases in proportion to the total number of people traveling. Like coronavirus, norovirus is very contagious. You can get norovirus from contaminated food or water, an infected person, or by touching contaminated surfaces. The norovirus outbreaks led cruise lines to adopt strict protocols for cleaning, and the industry bounced back. But norovirus deaths are much less significant than the current situation. In the United States, the norovirus is responsible for 570-800 deaths annually, and only very few deaths per year occur on cruise ships.⁶ Furthermore, unlike norovirus, coronavirus is spread by droplets, so it is harder to stop the spread once it is on a ship. As well, COVID-19 tends to affect older people more seriously than younger people, and older people are often the demographic group that takes cruises.

When the dust settles from the coronavirus, it is hard to know what will happen with the cruise industry. But, in the meantime, people will be leery of taking cruises, and the economies of places relying on the visitors from cruise ships will be hit hard.

Shipping

A much more significant element for economies in general is the cargo/container shipping industry. Love or hate globalization, there is no denying that the world is interconnected and interdependent. That can clearly be seen if you watch global shipping.

In the past 30 years, there has been more and more global trade, and production and finance have become much more geographically fluid. This has led to states becoming interdependent in terms of production and distribution of goods. Where once an entire product was manufactured in one facility, it is quite probable that the same product now receives parts from a variety of sources around the country or, increasingly, around the world. Production has often relocated to where labour costs are low. Corporate owners, producers and end-product consumers may be scattered around the world. To increase efficiency, multinational corporations adopted global supply chains

based on the principle of ‘just enough, just in time.’ They adopted policies to keep inventories low and shipments timed to the exact production schedule. Prices of goods went down as companies reduced their costs by reducing labour costs, eliminating storage costs and creating economies of scale. Consumers flocked to buy the cheap goods in their stores.

What many consumers don’t realize is that these goods arrive via the oceans. What happens when something occurs to disrupt this finely choreographed dance? That is what we are experiencing now – a disruption caused by a pandemic. And as the pandemic spread, the choreographed dancers began to stumble.

When coronavirus/COVID-19 was first recognized in China in early 2020, the Chinese authorities locked down the city and province that was at the centre of the outbreak. They also shut down factories elsewhere in the country. Other Asian countries followed suit. What do we care that a factory is closed in China? Like it or not, a high proportion of the world’s manufactured goods is produced in Asia, China in particular. The economic effects of the shutdown in China began to ripple around the world. If factories are not operating, goods are not being produced. If goods are not being produced, ships are not being loaded with containers to transport across the oceans to the end-users.

The discombobulation of the shipping industry would have been complete if all countries had shut their economies at once. If that had happened both supply and demand would have been in sync, and the shipping industry would have had a better sense of the future. But the timing has differed around the world. First China shut down its economy, then other Asian states, then Europe, then the Americas, and now Africa. This affects the cargo shipments traveling around the world.

After a shutdown for roughly a month, shipping companies began transporting cargoes from China again, but now there were logjams at the destinations. Container ships arrived at ports in Europe and North America and in some places found bottlenecks in the once-smooth process of unloading the cargo containers and loading new containers for the return trip.

A problem that developed in Europe, despite the European Union, was that goods could no longer cross borders as seamlessly as they used to. Material unloaded at ports could not get to its final destination in what only a few months ago was a continent without borders. As well, moving cargo from ports via trucks became more difficult as truck drivers were understandably not willing to travel to areas where COVID-19 cases were high (for example, some parts of the United Kingdom, Italy, Spain, New York). And some communities along the truck routes closed ranks against outsiders, and became reluctant to fuel and serve long-haul truck drivers as they travel. Assuming that drivers could overcome the difficulties of travel, in some cases they could not get cargo for the return trip to the port because there was no outgoing cargo because no one was working at factories, or no one was working in the office to process incoming containers, or authorize the handover of outgoing material.

We began to see tangles in the smooth functioning of ocean transport. For the global trade system and shipping industry to work, there has to be some sort of rough balance of goods coming and going. This balance is not exact – i.e., even before the pandemic, trade in and out of countries was not equal. To vastly simplify a complicated system, here is what happens. Full containers, which are paid for by the receiving company, are loaded on to a ship. The ship transports the full containers to the destination where they are unloaded. The ship then receives a new load of containers full of some other material, again paid for by the receiving company, which the ship takes to another destination. In the best case scenario, the containers are moving back and forth full; they are not moving one way full, and then stopping. The dream scenario becomes a nightmare if some industries are shut down, and different states close and then open their economies at

different times. Containers are now arriving ports, but there are fewer full containers leaving. Shippers have little incentive to move empty containers – who will pay for the transport of empty containers? The receiving company may agree to pay for the transport in both directions, but not happily and not without passing along the cost to the end user.

Now instead of what was once a surprisingly smooth system, given its complexity, we now have a system that is increasingly out of whack. The bottlenecks and imbalance in what is incoming and what is outgoing creates logistical headaches for everyone. In particular, ports must now find a place to store all the empty containers that no one wants to ship. If enough of these containers build up, the port runs out of space to put them and this clogs up the ability of a port to operate, further messing up the logistics. Alternatively, in order to keep efficiency up, and costs down, shipping companies cancel sailings.⁷ But then you have the problem not of what to do with empty *containers*, but what to do with empty *ships*. Satellite images show hundreds of ships laid up – for example, docked or anchored in waterways around China.⁸

There is a relationship between air freight and ocean shipping and that relationship becomes clear when one part of the system is disrupted. High-value or perishable goods are often transported via air, not just via cargo planes but also in the cargo section of passenger flights. Air freight rates have increased markedly in the past months as airports limit and/or cancel flights. That means higher costs and less capacity so more goods are being transported by ships. This can be a problem for perishable goods because it takes longer – and they are subject to all the problems we have already discussed.

Travel restrictions during a pandemic are another element of the problems for shipping. In the past few months there have been restrictions on travel, including border closures, air travel cancellations and port quarantines. These measures affect the crews of shipping lines, and their effective operation. In many places the crews are not allowed to go ashore. This may seem like a small inconvenience, but it has implications. In this situation, often the crews cannot be changed because the old crew may not be able to fly home, and a new crew may not be able to fly in, and because of the need for a period of quarantine if anyone leaves the ship. Data compiled by the International Chamber of Shipping (ICS) and the International Maritime Employers' Council (IMEC) indicates that 150,000 seafarers were in need of crew change by May 15.⁹ This means the same crew is obliged to keep working all the time. Some crew members are over-worked and the other crews cannot get to work because of the travel restrictions. Aside from the humanitarian considerations, tired crews are not at their best, and their inattention may lead to accidents. And an additional problem is that in some places dock workers have been unwilling to deal with ships and unload them, particularly if the ship hasn't been at sea for 14 days (the quarantine period for COVID-19).

One more factor about shipping. One of the effects of the pandemic has been the collapse of oil prices. This, one might think, would be helpful to the shipping industry – i.e., cheaper oil, cheaper transport. And, indeed, that is an element of it. But there are other elements. As companies begin to crack under the pressure, credit becomes harder to get. Fuel vendors, banks and insurance companies are all assessing the financial health of their customers, and the credit lines they provide. No one wants to lend money to a company to buy fuel if that company will go out of business before the loan can be paid back. So credit terms become tougher and payment dates become shorter.¹⁰

The economic implications of the disruption of shipping are vast. The trading system is out of step. China has attempted to get its economy back to 'normal' by getting people back to work and the factories up and running. But the rest of the world is not yet back to work, and it may be some

time before people in the West are buying consumer goods like they were just a few months ago. China is now producing goods for which demand may no longer exist, and to use in production processes that are not in operation. Population centres far from the coast will be affected by disruptions. The tangles in this complex web may stretch supply chains to the breaking point. Even when we are successful at stopping the spread of COVID-19, it may take months to sort out the chaos in shipping and supplies.

Navies

It may seem strange to add navies to this discussion. How do pandemics affect navies? As in the other elements discussed here, there are direct and indirect ways that navies will be affected by this pandemic.

Although navies are making remarkable progress developing the technology of unmanned vessels, warships still have crews, and will have them for the foreseeable future. Without a crew, a ship is simply a vessel; it floats but it does not move or fight. Pandemics affect people, and navies are not immune from this. While hard economic times are often good times for recruiting in the armed forces, this will not help in the immediate future.

During a pandemic navies must keep crews isolated before they deploy on missions to avoid illness in the crew while underway. Crew members live in the community and thus are subject to infection just as anyone else is. So, in addition to their time away from their families while at sea, navy crews now have to be isolated for two weeks even before going to sea.

This is a lesson that is being re-learned as several warships have been hit with COVID-19. In the past month a number of navy ships have had crew members test positive, and more than 2,000 USN sailors have contracted coronavirus, according to Defense Department data.¹¹ Because of the possibility of a crew member having COVID-19 for days before manifesting symptoms, it is easily possible for other crew members to be infected. Ships have tight quarters, and therefore it is difficult to keep social distancing rules. Warships have sickbays but they are not equipped for large numbers of infectious sailors. The best (or worst?) example of a warship being stricken by coronavirus is the US Navy aircraft carrier, USS *Theodore Roosevelt*. When one crew member was found to be ill with COVID-19, he was airlifted off the ship, but it was too late, the virus had spread. There was a delay, and it was finally decided that about two-thirds of the approximately 4,000 members of the crew would be removed from the ship in Guam and isolated for 14 days ashore. More than 800 crew members eventually tested positive, with one fatality. The ship had to be deep cleaned by remaining crew – and as you can imagine, deep cleaning an aircraft carrier is a huge task. While the original members of the crew have now finished quarantine, the other members are entering it. This is not just a problem for the US Navy – almost half the crew of the French aircraft carrier, *Charles de Gaulle*, tested positive for COVID-19 in mid-April and the ship returned to port in France to quarantine. In addition to these two aircraft carriers, other USN ships have had sailors test positive.

Returning to port or having crews onboard sick in quarantine affects operations. At worst, it can take a warship out of service. Even without sick crew members, warships can be removed from operations or exercises for preventative reasons. For example, two Canadian Maritime Coastal Defence Vessels (MCDVs) left a counter-narcotics operation in the eastern Pacific early to return home, and two other MCDVs returned early from their exercises off the coast of West Africa. They were returned to Canada as a preventative measure.

Navies play three general roles – warfighting, constabulary and naval diplomacy. All of them

have been affected by the pandemic. Taking warships away from exercises and operations leads to deterioration of training and operating with other navies, and reduces the presence and capability of armed forces. Removing warships from duty also puts holes in American deterrence. Other states (or non-state actors) may be tempted to take advantage of naval absence or inattention or incapacity to press their own agenda.

Removing ships from constabulary exercises and operations may mean leaving criminal organizations free rein to transport narcotics or people. And, in addition, as the price of oil goes down, companies and states are filling up every available storage container to try both to capitalize on the low prices and to stabilize them. This has meant tanker ships that are no longer needed to transport oil are now being used as storage containers for oil. They sit anchored offshore, and may represent a tempting target for attack. Navies will have to keep close eye on the approaches to these tankers.

There is a financial element to the relationship between navies and pandemics. Governments have unveiled massive programs of assistance to help workers who have lost their jobs, and companies that have lost their revenue. These assistance programs will cost billions, or trillions in the US case. How will this affect naval budgets and operations? Navy ships are extremely expensive, and it may be tempting for governments to rethink naval budgets when the dust of the pandemic settles. Governments will have new priorities after the pandemic, and navies may not be one of them. New ships may not get built, old ships may have to carry the load for a little longer.

Conclusion

We seem to be turning the corner on (the first wave of) coronavirus. But as we move to restart ‘normal’ life, we cannot get the economy back to full speed without thinking about the maritime pieces of the economic jigsaw puzzle. Whether it is the thousands of jobs in the tourism/cruise ship industry, the disruption of industrial supplies and consumer goods, or the long-term implications on maritime security, we cannot ignore this sector. Our economy, our security and our leisure activities on the oceans have all been affected by the coronavirus pandemic. The effects will be felt for months, possibly years, even after we get COVID-19 under control.

Dr. Ann Griffiths taught Political Science for many years at Dalhousie University, and at the same time worked for the Centre for Foreign Policy Studies at Dalhousie focusing mainly on naval matters. She is the Editor of Canadian Naval Review and coordinates the Naval Affairs Program at the Naval Association of Canada.

Notes

1. See <http://crew-center.com/los-angeles-california-cruise-ship-schedule-2019>; and <http://crew-center.com/port-miami-cruise-ship-schedule-january-april-2019>.
2. Cruise ship numbers come from CBC News, 17 May 2020. Financial impact comes from Ross Marowits, “Cost of Cruise Cancellations Hits Canada Hard,” *The Globe and Mail*, 18 May 2020.
3. Ross Marowits, “Cost of Cruise Cancellations Hits Canada Hard,” *The Globe and Mail*, 18 May 2020.
4. See <http://crew-center.com/anchorage-alaska-cruise-ship-schedule-2019>.

-
5. See <http://crew-center.com/freeport-bahamas-cruise-ship-schedule-january-june-2019>.
 6. See Norovirus Statistics, available at <https://www.norovirus.com/norovirus-statistics/>.
 7. Data from Sea-Intelligence shows that Asia-North Europe trade lane reached 38% of canceled capacity the third week of April. The consultancy anticipates the other deep-sea trades will also reach peak impact with, for example the Mediterranean to North America East Coast having 33% blank capacity in week 19 and Asia to East Coast South America seeing a staggering 59% capacity removal in week 20. Jasmina Ovcina, "Sea-Intelligence: We are at the peak impact of the pandemic in terms of blank sailing," 27 April 2020, available at https://www.offshore-energy.biz/sea-intelligence-we-are-at-the-peak-impact-of-the-pandemic-in-terms-of-blank-sailing/?utm_source=worldmaritimeneews&utm_medium=email&utm_campaign=newsletter_2020-04-28.
 8. Matthew McClearn, "The Big Park," *The Globe and Mail*, 6 May 2020.
 9. Jasmina Ovcina, "150,000 seafarers in need of crew change," *Offshore Energy*, 4 May 2020, available at https://www.offshore-energy.biz/150000-seafarers-in-need-of-crew-change/?utm_source=worldmaritimeneews&utm_medium=email&utm_campaign=newsletter_2020-05-05.
 10. Irene Notias, "The Achilles Heel of Shipping," *Maritime Executive*, 13 April 2020, available at <https://maritime-executive.com/editorials/the-achilles-heel-of-shipping>
 11. Meghann Myers, "Navy COVID-19 cases pass 2,000 as military cases continue to rise," *Military Times*, 4 May 2020, available at <https://www.militarytimes.com/news/your-military/2020/05/04/navy-covid-19-cases-pass-2000-as-military-cases-continue-to-rise/>.