Chapter 1 — Dress Rehearsal

This Changes Everything

I was putting together a final draft of this book early in March 2020 and was ready to move into the publishing phase. And then the virus arrived — COVID-19 swept the world and changed everything.

What the final impact of this plague is going to be no one knows. But it is already clear that “It changes everything”. Therefore, I added this chapter. It could be that the pandemic is providing us with a preview of some of the more long-term changes that are on the way. But it could be that the most important lesson that this disease has taught us is the need to be humble. At various points in this book I quote Paul’s words from Chapter 13 of 1 Corinthians,

For now we see through a glass, darkly; but then face to face: now I know in part; but then shall I know even as also I am known.

We can glimpse the future, but detailed forecasts are almost certain to be wrong. Who would have thought that the year 2020 would start in such a dramatic and scary fashion? We are reminded once more of the quotation,

If you want to make God laugh, tell him your plans.

For decades we have known about issues such as resource depletion, climate change and overpopulation, yet we have resolutely chosen to ignore what is happening in front of our
eyes. Will the pandemic change our attitudes? We don’t know yet. But we do know that there is no going back to the ‘Old Normal’. Moreover, the situation — tragic and stressful though it may be — does present the church and people of faith with an opportunity to provide much-needed leadership. As we discuss in Chapter 4 — Hubris and Nemesis, there has been conflict between science and religion for the last 500 years, and generally science has won the struggle. But now science and technology seem have reached their Nemesis. More technology does not provide a solution. Indeed, more technology may make matters worse. Part of the church’s leadership could involve creating sensible harmony between science and faith.

How this pandemic will end no one knows. At the time of writing (mid 2020) it is still spreading, there is no vaccine, nor is there a cure for those who are infected. Therefore, this chapter is very much a work in progress. At the time of writing everyone is talking about ‘getting back to work’. They hope that we can move through a short, V-shaped recession and then revert to the old way of doing things. But we cannot throw 30 million people out of work in the United States alone in just two months and expect everything to bounce back to where it was. We cannot create new debt to the tune of half a million dollars per citizen and expect the economy to return the ‘Old Normal’. We cannot quickly rebuild a trust in government institutions that have, in so many cases, failed to act promptly and decisively. More fundamentally, we cannot return to a time of faith in science and technology. Too much has happened too quickly. We cannot put the genie back in the bottle.

For these reasons, it appears as if COVID-19 is a dress rehearsal for the long-term challenges that are the theme of this book. If and when things settle down society will face a choice: do we want to return to our energy-profligate ways that have caused so much environmental damage, or can we work out a new way of living that is more in harmony with the biosphere? It is this response that provides an opportunity for people of faith, and for the church, to provide leadership — to help create a new way of living that goes beyond mere material wealth.

**CONTROL OF NATURE**

A theme that runs through this book is that we are not in control of nature; the virus has reminded us of that truth suddenly and dramatically. For the last 300 years we have been all too successful at following the commandment in Genesis 9 in which God says to Noah and his sons,
Be fruitful and increase in number and fill the earth. The fear and dread of you will fall on all the beasts of the earth, and on all the birds in the sky, on every creature that moves along the ground, and on all the fish in the sea; they are given into your hands. Everything that lives and moves about will be food for you. Just as I gave you the green plants, I now give you everything.

At the time of writing (May 2020) the pandemic is still growing, tens of thousands of people have died, millions more have been infected, the world’s economies are in recession, and huge numbers of people have become suddenly unemployed.

**EARLY INDICATIONS**

We have been living in this new, pandemic world for nearly three months now. Although, as we have stressed, radical changes take place almost daily, we are seeing some signs as to how and where we can address issues such as climate change. Some of the signs are encouraging; others not so much.

**Environmental Changes**

The massive slowdown in economic activity that took place in the first quarter of the year 2020 has led to some noteworthy improvements in environmental quality. Los Angeles, for example, is known for its smog and thick air pollution. Yet during April 2020 it reported some of the cleanest air of any city in the world. And the canals in the city of Venice in Italy are much clearer due to decreased boat activity. All this is good news. Unfortunately, the climate may not be benefiting from these changes as much as we may have hoped. The slowdown has not led to much of a reduction in greenhouse gas emissions.

One reason for this limited decrease is that most of the slowdown has taken place in the transportation sector (although the freeway in our part of the world seems to be as busy as ever). Yet, as the following table shows, transportation accounts for only 20% of the emissions (International Energy Agency, 2020).

<table>
<thead>
<tr>
<th>Sector</th>
<th>Approximate contribution to greenhouse gas emissions %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilities</td>
<td>45</td>
</tr>
<tr>
<td>Industry</td>
<td>25</td>
</tr>
<tr>
<td>Transport</td>
<td>20</td>
</tr>
<tr>
<td>Residential</td>
<td>5</td>
</tr>
<tr>
<td>Other (including agriculture)</td>
<td>5</td>
</tr>
</tbody>
</table>
This is a discouraging observation. In order to meet United Nations targets, the world has to reduce the emissions of greenhouse gases by 7.6% every year for the next two decades. In spite of all that has happened we are still making the planet warmer (2020 is on track to be the warmest year ever). What this analysis is suggesting is that simply slowing down our current way of doing things is not enough — a more fundamental restructuring is needed.

**Community**

Chapter 8 — The Church’s Response describes how people of faith and the church as an organization can respond to the changes that are taking place, and how they can provide leadership. One area of opportunity is to emphasize the parish concept — the idea that the church serves the people in a relatively small area, and that the people in that area serve the church.

There are some signs that the pandemic has created such a response. People cannot easily travel, so they are building up local contacts and relationships. They are also spending more time and effort on local efforts, such as building vegetable gardens. In one case, various churches have banded together to create a single food bank because these churches see themselves as part of one parish — denominational barriers are being lessened.

**Virtual Worship**

The near-universal lockdown has forced churches to be innovative. In particular, Sunday morning worship is now virtual almost everywhere. This form of worship has obvious drawbacks, but it seems to have led to increased “attendance”. One reason for this change may be that people realize that there is a spiritual component to life to which they need to pay more attention. The church can address this new-found need.

**Step Changes / Tipping Points**

Our natural tendency is to see the future as being a straight line continuation of the past. Moreover, if a trend continues for long enough then we have “evidence” that that is how the future will look (Cobb, The world in straight lines, 2020). Such “evidence” becomes even more convincing if it is presented in graphical form. For example, the International Air Transport Association published the following chart. It a remarkable growth in the number of people flying over the course of the next 30 years.
The chart is impressive. But this picture of grounded airplanes at Dallas Fort Worth airport taken about a month ago shows the reality of air travel during the course of a pandemic.
SCIENTIFIC AND PROJECT MANAGEMENT REALITIES

The pandemic has not given us much to smile about. But some amusement can be derived from watching politicians trying to negotiate with the laws of biology. What our leaders are learning is that “nature bats last” — the fact that we want something to happen does not mean that it can happen, even if we throw unlimited money at the issue.

In Chapter 7 we quote Joe Biden, a candidate in the United States 2020 presidential campaign. His platform includes the following statement.

I guarantee you we’re going to end fossil fuel . . . Before 2050, God willing.

(The comments I make here are not partisan — many other candidates have made similar proposals.)

What Biden has failed to do is calculate just what this goal entails. In order to meet it, while maintaining the existing rate of energy consumption, the United States would have to build one nuclear power plant every three to five days. for the next 30 years. In other words, we would have to build something like 2,000 nuclear power plants. Yet the number of these facilities in the United States now is about 105. Moreover, that number is going down — more plants are being decommissioned than are being built. (The same conclusion can be drawn when considering other alternative energy sources such as wind or solar power. The project management realities are that the transition these politicians are talking about cannot happen.)

It’s not just political leaders who don’t “get it”. We can see the same lack of understanding in statements published by the church. For example, in 2019 the Episcopal Church published a statement to do with Renewable Energy (Episcopal Church USA, 2019). It reads in part,

Ambitious policy is needed in order to support the transition away from fossil fuels and to facilitate the introduction of renewable energy. An eventual goal of attaining 100% renewable energy is ideal, and it is very important that we keep that lofty goal in our sights.

The statement recognizes that a transition will create many difficulties such as habitat destruction. But there is an implicit assumption that alternative energy sources are sufficient to replace fossil fuels. This assumption is not correct — the only solution, which
will be forced on us if we do not act, is to drastically reduce our *per capita* energy consumption.

**BLOGS**

Given that we are living in the midst of the pandemic, this chapter is very much a work in progress. Therefore, we are writing a series of blog posts to do with the ‘New Normal’ and our uncertain times.

To reiterate what has already been stated, no one knows what the future holds, particularly while the pandemic is still spreading and there are no trustworthy forecasts as to when it may be brought under control. The posts in the blogs provide some real-time suggestions as to the lessons the pandemic is teaching us, and how we may be able to apply those lessons to the bigger picture, the Age of Limits.

At the time of writing, the blogs are:

- **The New Faith Normal**
  The posts in this blog are directed to people of faith. The basic theme of the posts (and of this book) are that the changes that are taking place provide the church with an opportunity to provide badly needed leadership in a society where so many assumptions and ways of living have been suddenly overturned. [https://newcityofgod.com/](https://newcityofgod.com/)

- **The New PSM Normal**
  These posts are written for those whose work involves industrial safety, particularly safety in the energy and process industries (the letters ‘PSM’ stand for Process Safety Management). [https://psmreport.com/](https://psmreport.com/)

- **The New Transportation Normal**
  The pandemic has brought about radical changes to the transportation industries. Airlines and the cruise business are virtually shut down, urban transit systems are being shunned and sales of automobiles have plummeted. This blog discusses some of these issues and their implications.
CHAPTER 2 — AN AGE OF LIMITS

John Bunyan (1628-1688)

THE AUTHOR’S APOLOGY

One of my favorite Christian books is John Bunyan’s Pilgrim’s Progress. He starts with an “Author’s Apology” — what we would now call an Introduction or Preface. In it he explains why and how he wrote the book. He also describes the challenges that he faced from many of his friends — particularly those who thought that he should not bother. I thought that I might follow his leadership — so here is my apology for what you are about to read. It provides an overview of my personal journey in understanding the Age of Limits — what it is, how it threatens us, and why it could be an opportunity for the church to provide leadership. I use the word ‘Apology’ because I venture into areas such as theology and history in which I have received limited formal education. However, as a chemical engineer who has worked on many large energy projects, I believe that I can provide professional theologians with pertinent insights from science, technology and the principles of project management.

Personal Background

I describe how I became aware of Age of Limits issues in Attachment A — A Personal Journey. In summary, somewhere around the year 2010 I learned about what was then called Peak Oil. The concept was simple — there is only a finite amount of crude oil in the earth’s crust. It took millions of years for that oil to form, and once it is gone it is gone. It will not be replenished on a human time scale. Crude oil is utterly foundational to our modern society, not only as a source of fuels but also for the petrochemicals. Therefore, the irreversible decline in crude oil supplies would lead to wrenching social changes.
As I researched Peak Oil in greater depth it became apparent that our society faces multiple limits in many areas, not just crude oil. I became evident that we are entering an Age of Limits, as discussed in the next section.

**An Age of Limits**

The title of this book is *A New City of God: Faith in a Changing Climate*. One reason for choosing that title was that climate change is a topic which is, deservedly, receiving much attention. However, it is not the only predicament we face — there are many others, some of which are shown in the sketch. Together they make up an ‘Age of Limits’. Many other items could be added to this list, including changing interest rates, political rivalries, the geology of the oil fields, ocean acidity and top soil depletion.

One reason that we cannot come up with solutions to the dilemmas we face is that we often run into the Law of Unintended Consequences due to the interaction between these items. For example, if we reduce fossil fuel usage (‘Resources’) then we may be forced to build more nuclear power plants and so increase the difficulty of