

THE NEXT GOLDEN AGE OF TECHNOLOGY 2030-45

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A Brief Word About Me

I originally trained as an economist. I then went on to train in commercial law, and as a management accountant. This defines my professional background.

I came to futuring through long term investment appraisal that incorporated political risk as well as economic uncertainty.

My current affiliations are:

1. A full member of the Association Of Professional Futurists.
2. A professional member of the World Future Society. I also sit on the Global Advisory Council of the WFS and head the WFS Europe Chapter.
3. A member of the steering group of the UK Node of the Millennium Project.
4. A commissioning editor of both *FUTUREtakes* and *World Future Review*.
5. A senior member of the Post Keynesian Study Group and a member of both the RSA and RES.



AN INTRODUCTION TO THE FUTURE



What Are We Hoping To Achieve Today?

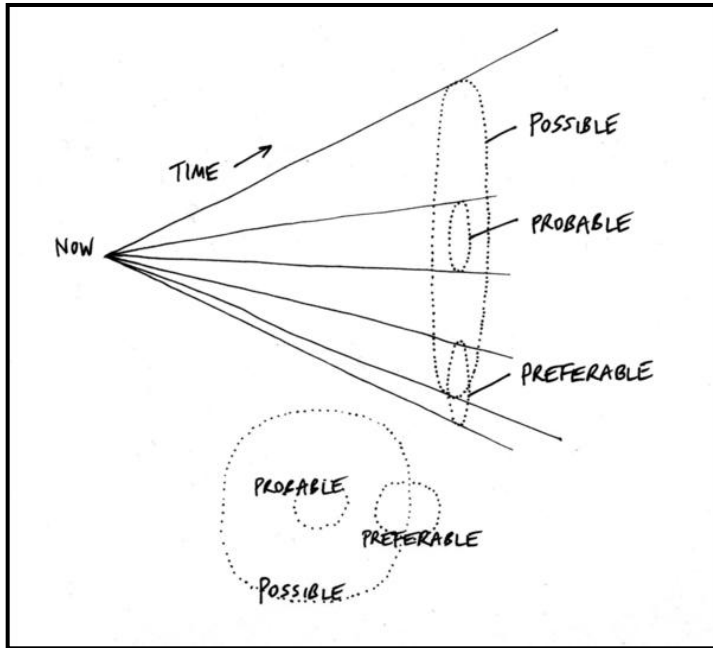
The audience today has a wide range of exposure to futures, from the curious public to the seasoned professional.

In order to deal with this variety of backgrounds, I propose to deliver the session in three parts:

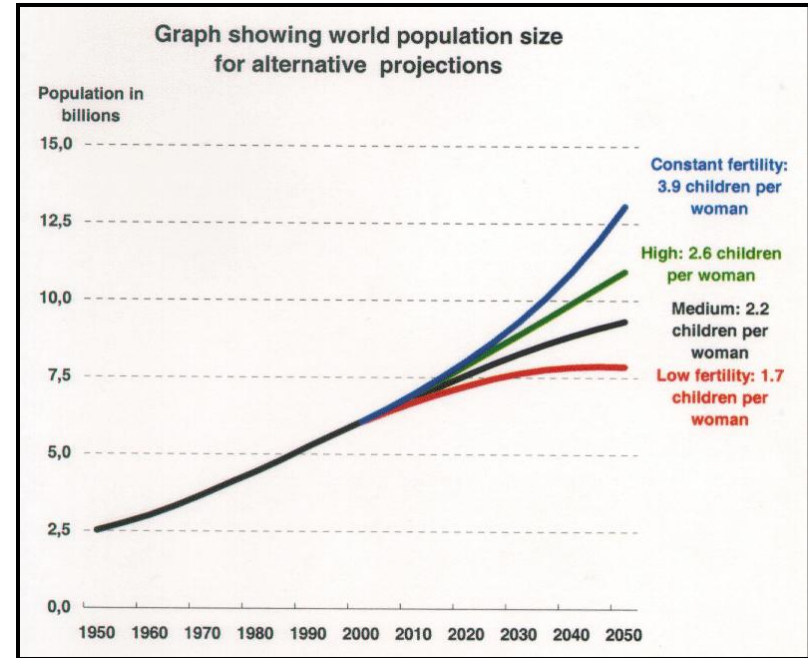
1. To explain futuring and what, in my opinion, it is all about. We can look at the different types of futurist and the different schools of futuring.
2. To consider how we can model the long term future and to consider which models we find particularly convincing.
3. To outline our model of long term technological development, to state where I think we are today, and where I think we are likely to head in the future.



A Key Concept: The Cone Of Plausibility



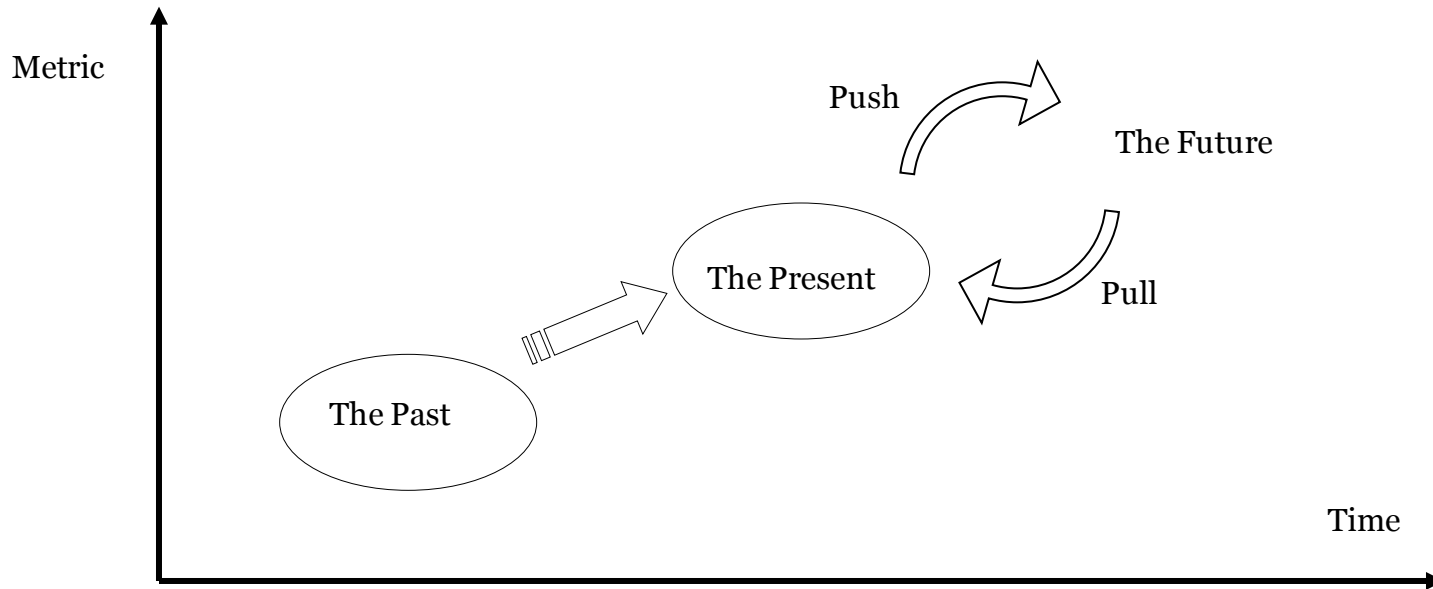
The Theory.



In Practice.

Push And Pull Futuring

Some techniques that study the future **push** out from the present into the future ...



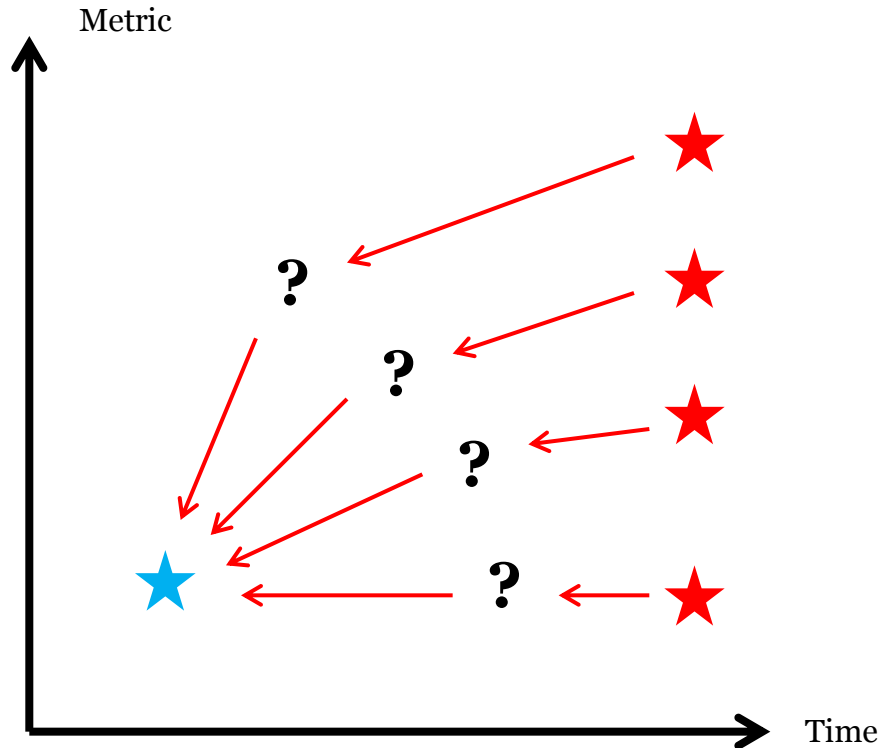
... whilst other techniques **pull** from the future back to the present.



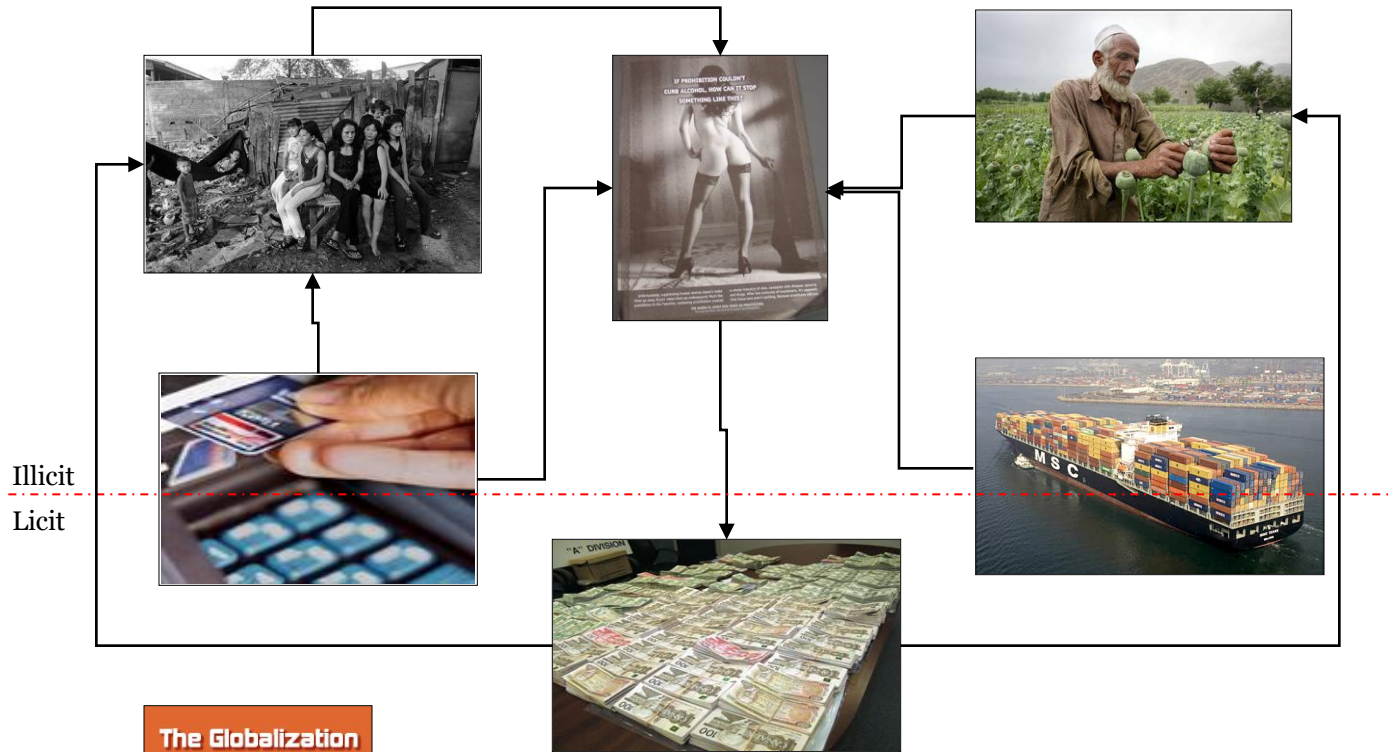
Pull Futurists: The Interpolators

1. Assess a current basepoint.
2. Determine the key uncertainties.
3. How might those uncertainties play out?
4. Retrace those future states back to the present.

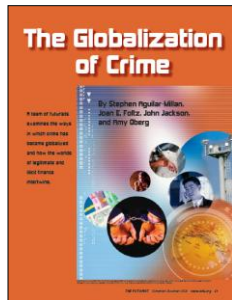
This method lends itself well to those who like to model the future.



Pull Futuring: An Example



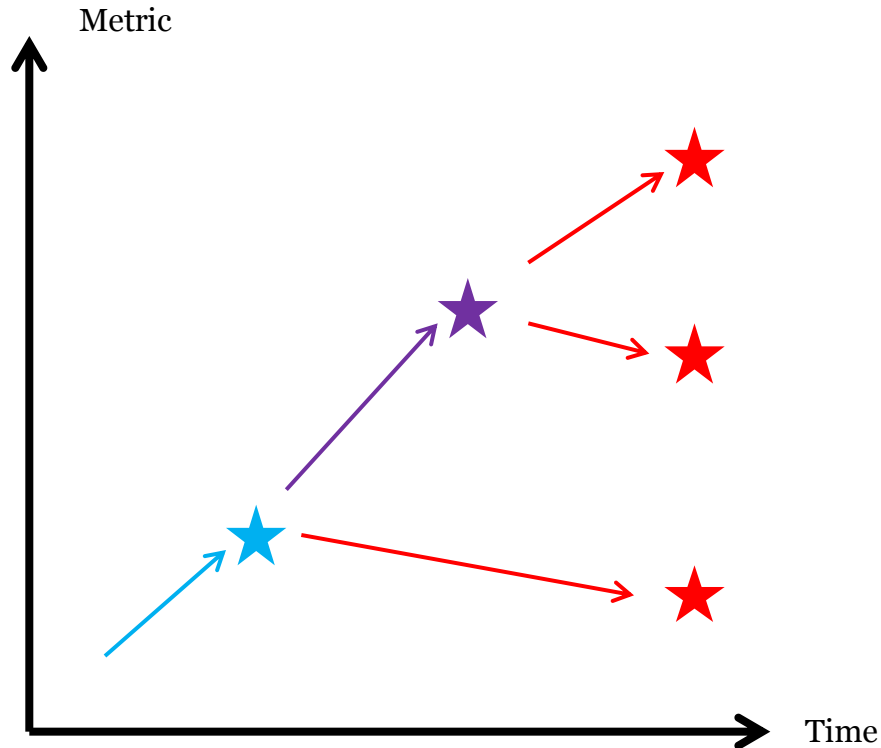
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Push Futurists: The Extrapolators

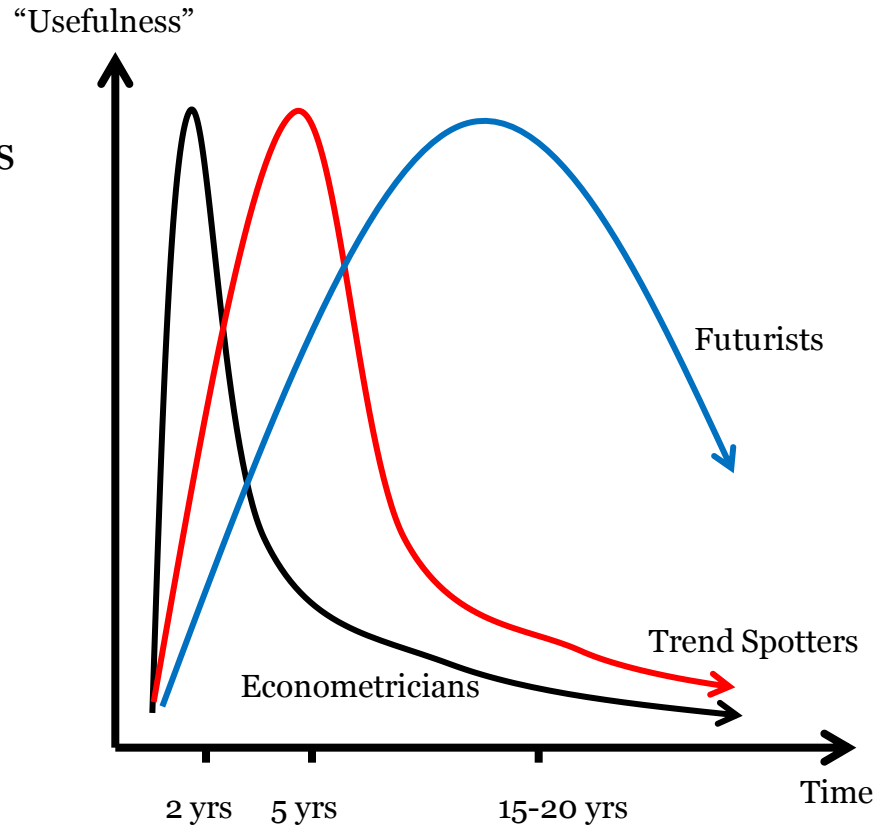
1. Take a metric.
2. Roll it into the future.
3. Add one or two alternatives.
4. And you get a set of alternative futures.

This method lends itself well to trend analysis.



Horses For Courses.

The various professions who operate in the futurescape have differing levels of usefulness, depending upon the time horizon a project is taking.



The Different Schools Of Futuring

The choice of methods used by various futurists tends to be determined by the school of futuring that they tend to follow.

We like to think of there being three different schools of futuring:

1. The trend analysts and horizon scanners. We like to think of these as the North American School because North American futuring tends to be trend heavy.
2. The modellers and systems thinkers. We like to think of this as the European School because European futuring tends to rely quite a lot on systems thinking and modelling.
3. The values based thinkers. We like to think of this as the Australasian School because Australasian futuring tends to focus on a more holistic approach to future issues.

We must not be too dogmatic in our thought – good futuring combines all three approaches.



Let's Take A Breath.

We have taken a quick romp through an introduction to futuring. Does anyone have any comments, questions, or feedback?



MODELLING THE LONG TERM FUTURE



Why do we use long term models?

Long Term models help us to link the past and the present to the future.

They provide a device to explain what has happened in our recent past, and how it shapes today.

They also provide a device by which we can anticipate what is likely to happen in the future.

They are not an accurate predictive device owing to discontinuities in trends and the impact of unforeseen circumstances.

We shall examine an example of a Political, Economic, Social, and Technological long term model to gain a glimpse of our near future in the coming decade.



Long Term Political Change.

Political change can be characterised by the interaction of two key drivers of change – the beneficiary of public action and the mode of delivering public action.

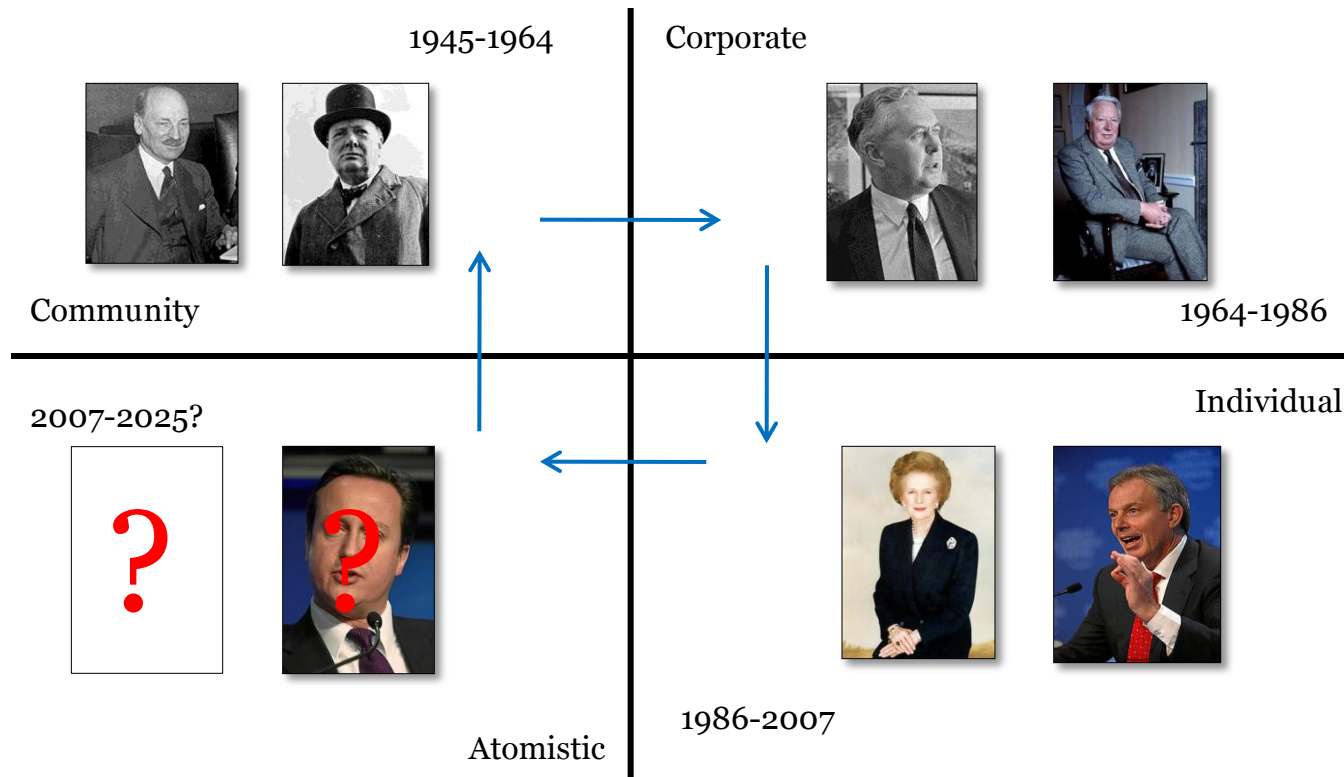
There are swings in the focus on who should be the beneficiaries of public action between the individual and the community.

There are swings in the emphasis on what should be the mode of delivering of public action between the atomistic and the corporate.

Each of the possible outcomes creates an unstable result that propels the system into a new phase.



Long Term Political Change.



Long Term Economic Change.

We often forget that the economy is subject to long term cycles, with periods of high economic activity and periods of low economic activity.

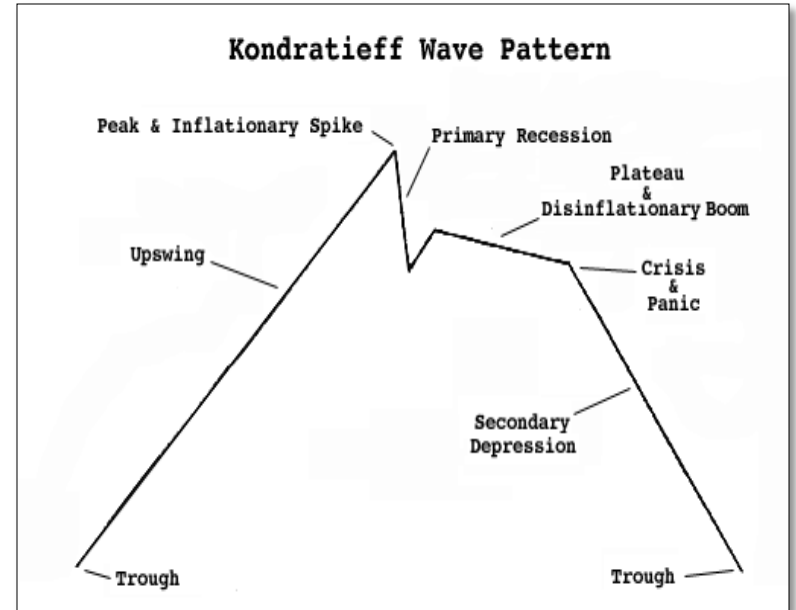
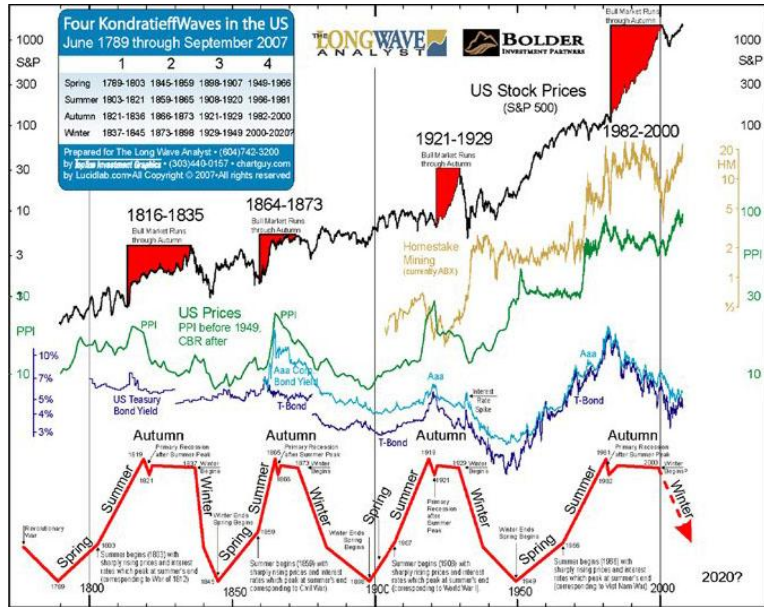
These periods of relative activity and inactivity can be characterised by the Kondratieff Cycle.

The cycle is characterised by four phases of the cycle – Spring (Expansionary Phase 1971-1998), Summer (Maturity Phase 1998-2001), Autumn (Consolidation Phase 2001-2007), and Winter (Crisis Phase 2007-2025?).

Each phase has its own distinct characteristics.



Long Term Economic Change.



Long Term Social Change.

Long term social futures tend to be characterised by three dimensions – generational archetypes, lifecycle stages, and generational cohorts.

The generational archetypes (Prophet, Nomad, Hero, and Artist) are determined by the shared experiences of the group.

The lifecycle stages (Youth, Adulthood, Mid-life, and Golden Years) determine the predominant roles played by each generational group.

The generational cohorts are defined by the lifecycle stage that each generational archetype passes through.



Long Term Social Change.

	1945-1964	1964-1983	1983-2007	2007-2025	2025-2045
	<i>Post crisis adjustment</i>	<i>Awakening</i>	<i>Unravelling</i>	<i>Crisis</i>	<i>Post crisis adjustment</i>
Youth	Boomer (Prophet)	Generation X (Nomad)	Millennial (Hero)	Homeland (Artist)	Scarcity (Prophet)
Adulthood	Silent (Artist)	Boomer (Prophet)	Generation X (Nomad)	Millennial (Hero)	Homeland (Artist)
Mid-Life	GI (Hero)	Silent (Artist)	Boomer (Prophet)	Generation X (Nomad)	Millennial (Hero)
Golden Years	Lost (Nomad)	GI (Hero)	Silent (Artist)	Boomer (Prophet)	Generation X (Nomad)



Long Term Technological Change.

Long term technological change tends to occur in waves of self reinforcing advancements.

There are two parts to the wave – the Installation Phase and the Deployment Phase – between which a crisis of maturity occurs.

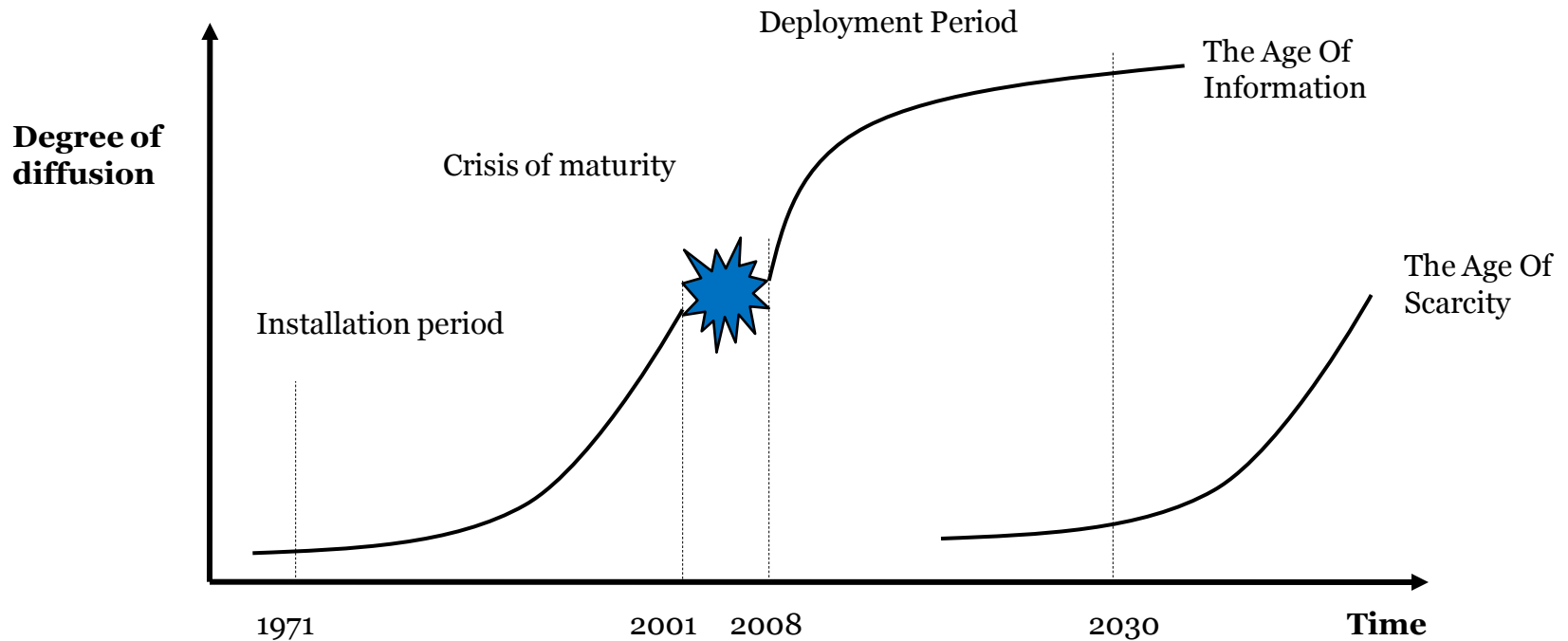
The Installation Phase is the process whereby the technological revolution gathers momentum and becomes established. During this time a financial bubble develops.

Eventually, the financial bubble bursts, causing a crisis of maturity in which a shake out occurs within the industry.

As the crisis of maturity subsides, the Deployment Phase takes hold, leading to the greater dissemination of the technology.



Long Term Technological Change.



Where are we now?

What do our models tell us about what we can expect over the next ten years?

In the political realm, we can expect a move towards a greater focus on community objectives delivered by more market based mechanisms.

In the economic realm, we can expect a prolonged downturn accompanied by a slow recovery.

In the social realm, the Homeland Generation will be in its Youth (over-protected), the Millennials will be in adulthood (good team workers), Generation X to be in Mid-life (very pragmatic), and the Boomers to be in their Golden Years (opinionated and over-bearing).

In the technological realm, we can expect the ICT revolution to reach maturity and saturation and the technology of scarcity to start to take off.



Let's Take A Breath.

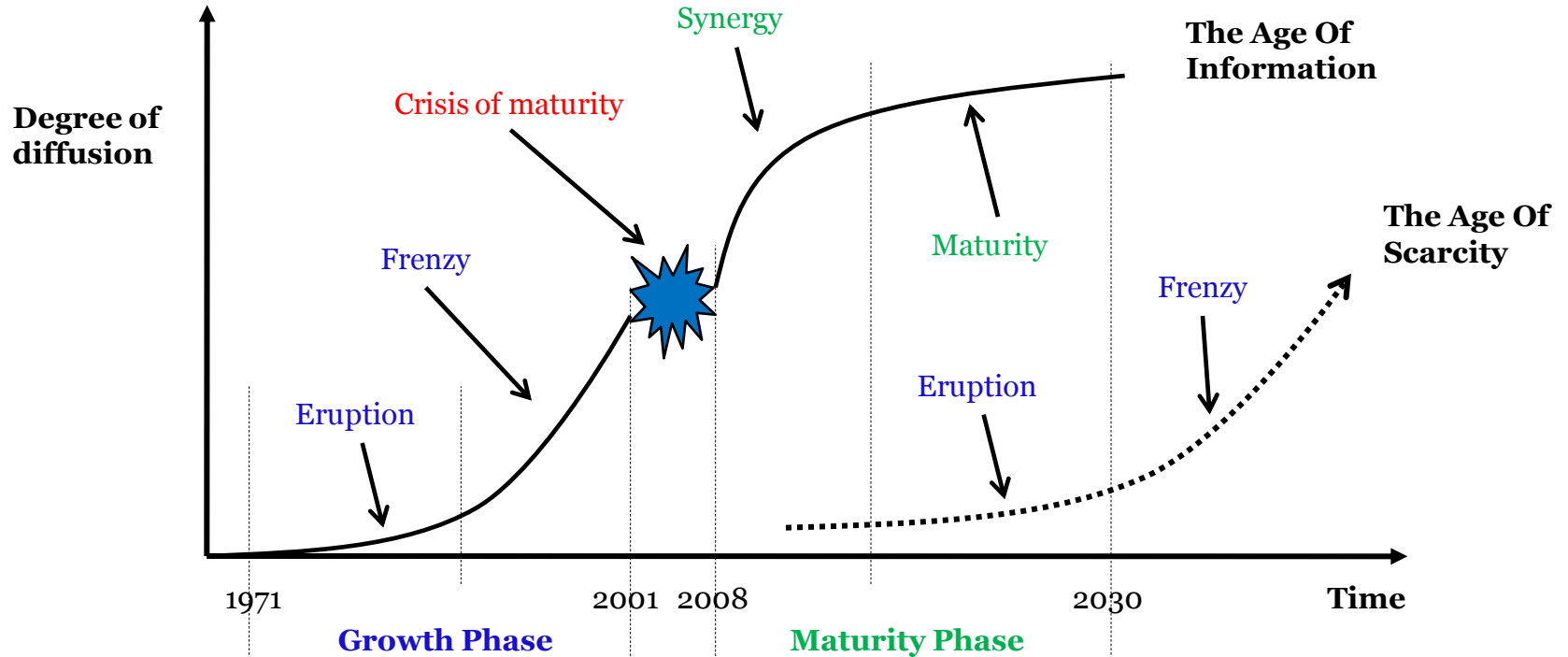
We have taken a quick romp through our approach to long term futuring. Does anyone have any comments, questions, or feedback?



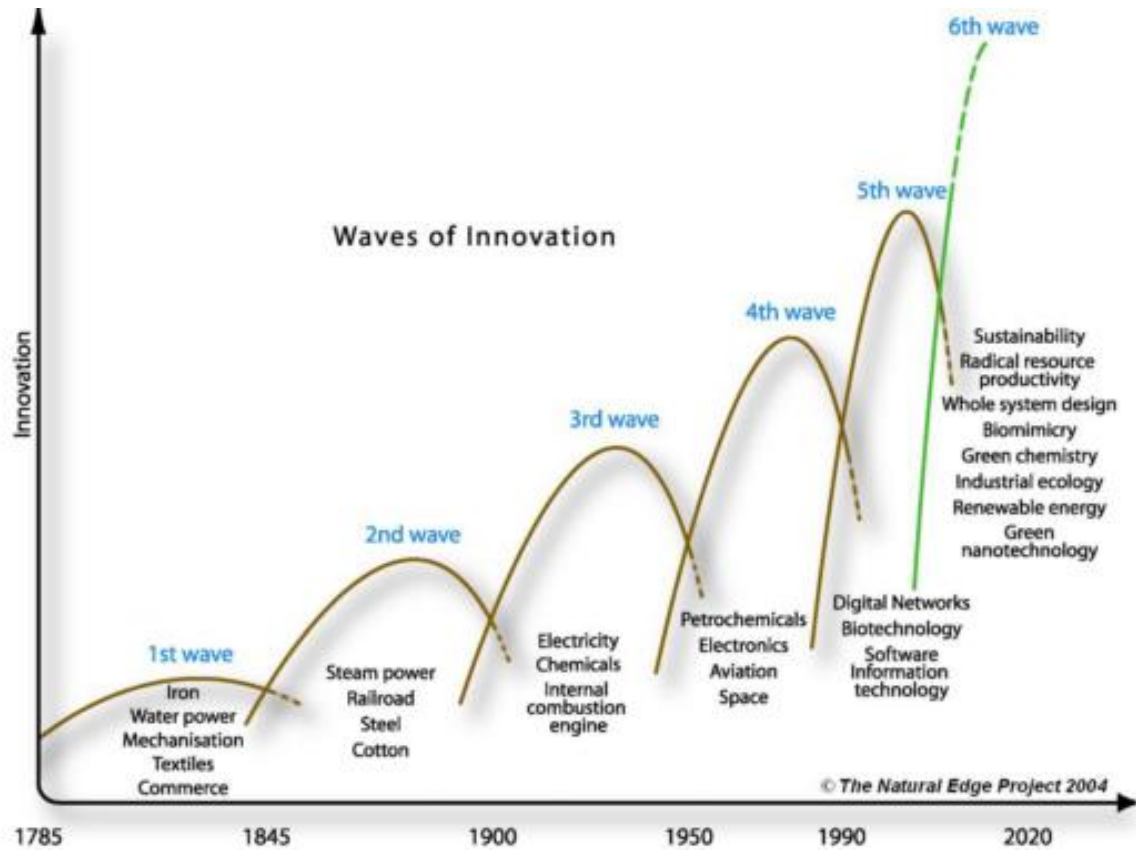
THE NEXT GOLDEN AGE OF TECHNOLOGY 2030-45



The Basic Model Restated.



The Long Waves Of Technology.



Our Template For The 21st Century.

Period	Label	Theme
2001-2008	The Crisis Of Maturity (W5)	Financial Meltdown
2008-2020	A Prelude To Scarcity	Recovery
2020-2030	Scarcity Bites	Shortages and Inflation
2030-2045	Scarcity Abates	A Technological Golden Age
2045-2050	The Crisis Of Maturity (W6)	Financial Meltdown
2050-2075	The Post Scarcity World	Recovery



Why Is It All About Scarcity?

1. Global population is likely to grow substantially over the first half of this century (these are the Many).
2. The supply of resources available to service this increased population is relatively fixed or declining.

One of the main implications of these assumptions is that demand for resources will outstrip their available supply – that we are likely to see an ‘age of scarcity’.

The main supply pressure is likely to be felt upon our Food, Energy, and Water resources (these are the FEW).

The age of scarcity is all about the interactions between the Many and the FEW.

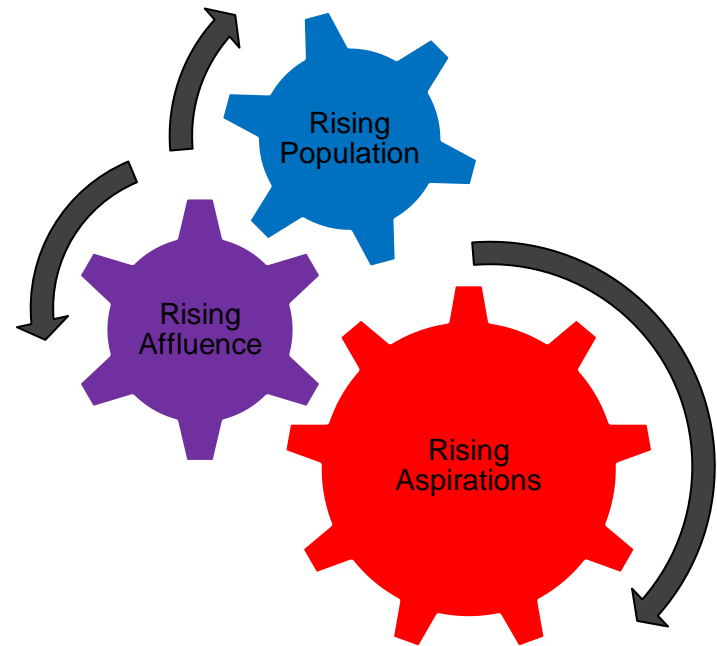


The Drivers Of Scarcity

Pressure on the demand for resources is likely to come from three key sources:

- A rising population
- Rising affluence
- Rising aspirations

Each of these is a source of rising demand in itself, but together they will interact to produce an exponential growth in the for demand for resources.

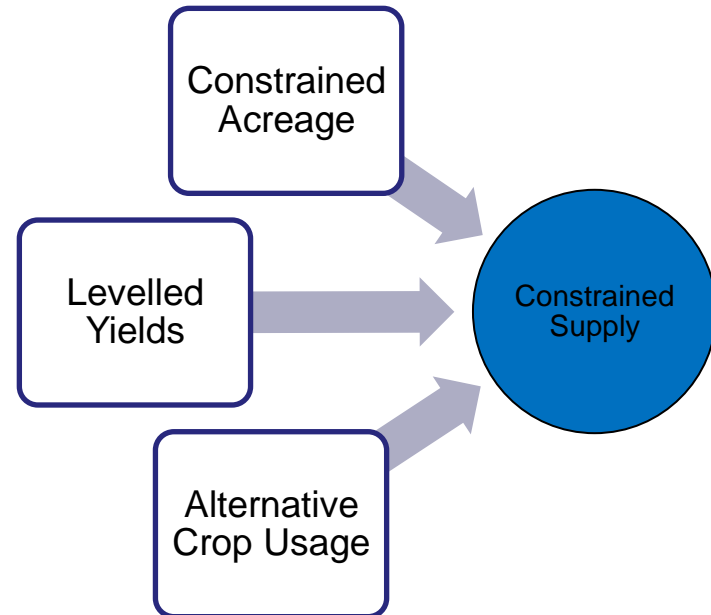


The Manifestations Of Scarcity: Food

The growth of the supply of food is restricted by three factors:

- Constrained acreage
- Levelled yields
- Alternative crop usage

Each of these factors serves to limit the degree by which global food production can be expanded.

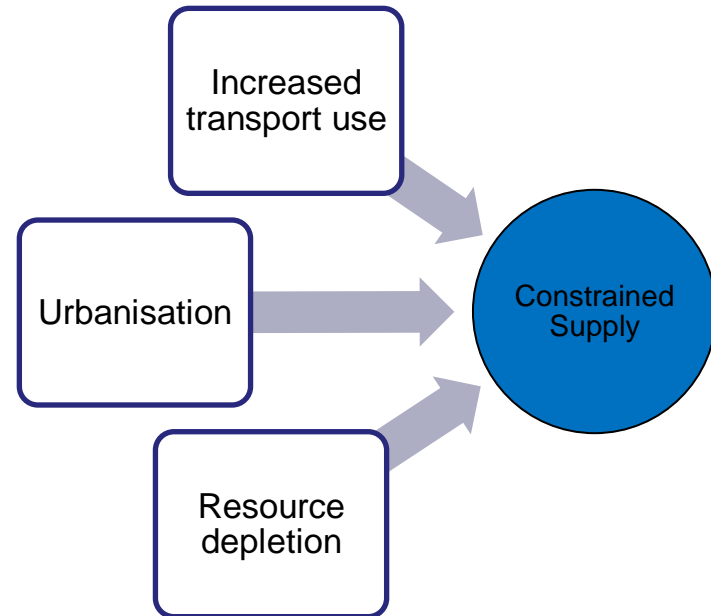


The Manifestations Of Scarcity: Energy

The growth of the supply of energy is restricted by three factors:

- Increased transport use
- Urbanisation
- Resource depletion

Each of these factors is expanding faster than the supply of energy sources to create energy scarcity.

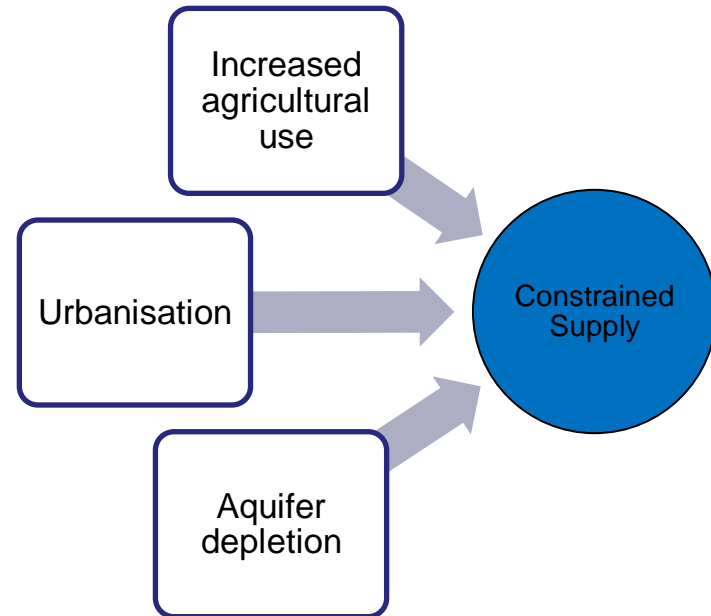


The Manifestations Of Scarcity: Water

The growth of the supply of water is restricted by three factors:

- Increased agricultural use
- Urbanisation
- Aquifer depletion

Each of these factors is growing faster than our ability to replenish the water supply, leading to increased global water stress.



Where Does That Leave Us?

If we are right that the pace of demand will outstrip the pace of supply for key resources in the immediate future, then we can expect to see the price of those resources rising on the long term trend.

The traditional response of organisations to the rising cost of key resources on the long term trend are:

1. In the very short term, pay the increased cost and suffer a squeezed cash flow.
2. In the short term, use less of the resource by moving to a lower level of activity.
3. In the medium term, find alternative sources of the resource that are more freely available.
4. In the long term, lessen the dependence upon that resource by migrating to a new technological paradigm.



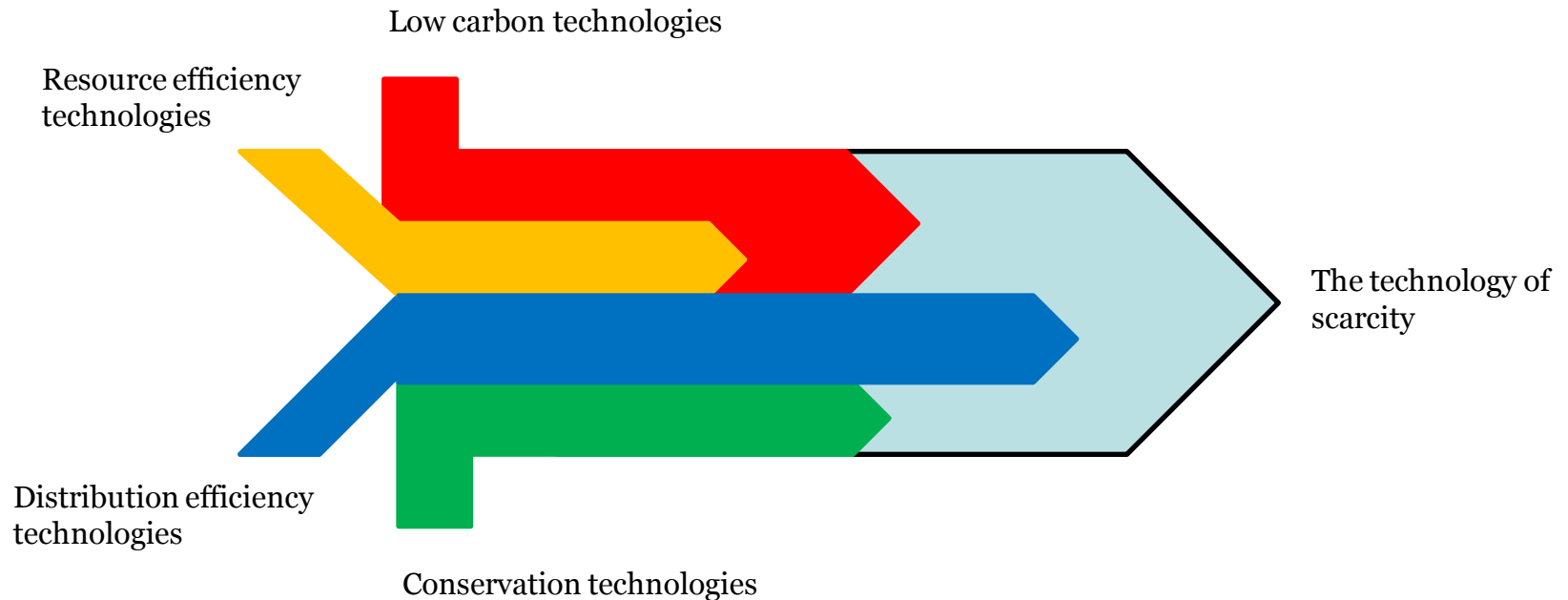
A Rough Road Before Us.

Period	Label	Theme
2001-2008	The Crisis Of Maturity (W5)	Financial Meltdown
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What Does The New Paradigm Look Like?

A convergence of technologies.



Thank You.

If you have followed me all of the way through, **thank you** for your attention. There is a lot of material to absorb in a small space of time.

Does anyone have any comments, questions, or feedback?

