COULD THE CURRENT CRISIS LEAD TO A SUSTAINABLE GLOBAL GOLDEN AGE?

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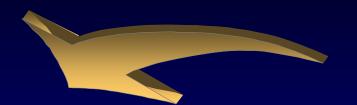
The historical analysis of how technological revolutions diffuse reveals important regularities that can serve to understand the present moment of the world economy and to provide criteria towards the future

FIVE TECHNOLOGICAL REVOLUTIONS IN 240 YEARS

1771	The 'Industrial Revolution' (machines, factories and canals)	
1829	Age of Steam, Coal, Iron and Railways	
1875	Age of Steel and Heavy Engineering (electrical, chemical, civil, naval)	
1908	Age of the Automobile, Oil, Petrochemicals and Mass Production	
1971	Age of Information Technology and Telecommunications	
20??	Age of Biotech, Nanotech, Bioelectronics and New Materials?	

EACH ONE DRIVES A GREAT SURGE OF DEVELOPMENT
AND CHANGES THE TECHNO-ECONOMIC PARADIGM GUIDING INNOVATION

Due to the nature of "creative destruction" DIFFUSION TAKES PLACE IN TWO DISTINCT PERIODS



The first half is the INSTALLATION PERIOD led by finance and free markets when innovation concentrates to set up the new infrastructure, let markets pick the new winners and modernize the old economy

The second half is the DEPLOYMENT PERIOD led by production and the State when innovation spreads across the board to reap the full economic and social benefits



A MAJOR BUBBLE COLLAPSE
MARKS THE SWING OF THE PENDULUM

THE HISTORICAL RECORD Bubble prosperities, recessions and golden ages

	Year country	INSTALLATION PERIOD	TURNING POINT	DEPLOYMENT PERIOD
GREAT SURGE		Bubble prosperity	Collapse & Recessions	"Golden Age" prosperity Maturity
1 st	1771 Britain	Canal mania	<mark>17</mark> 93–97	The Great British leap
2 nd	1829 Britain	Railway mania	1848–50	The Victorian Boom
3rd _B	1875 Fritain / USA Germany	Infrastructure bubbles of first globalisation (Argentina, Australia, USA)	<mark>18</mark> 90–95	Belle Époque (Europe) "Progressive Era" (USA)
4 th	1908 USA	The roaring twenties	Europe 1929–33 USA 1929–43	Post-war Golden age
5 th	1971 USA	Internet mania and financial casino	2000 & 2007/8 -????	Global Sustainable "Golden Age"?

The shift from financial mania and collapse to Golden Ages occurs when enabled by regulation and policies to shape and widen markets

WHY TWO PERIODS? WHY THE BUBBLE?

RESISTANCE TO THE NEW

Old industries old habits old methods

Need a period of CREATIVE DESTRUCTION to force modernization

UNCERTAINTY

Which products?
Which technologies?
Which companies?
Which markets?

Need to experiment in ferocious "free market" COMPETITION

NATURE OF INFRASTRUCTURES

All or nothing Invest up-front Revenues come later

Need credit creation through bubble boom and short-term CAPITAL GAINS

Once the bubbles collapse, the job is done
THE NEW PARADIGM IS INSTALLED AND CAN BE DEPLOYED

But that requires a structural shift away from the casino economy

THREE TASKS FOR GOVERNMENTS

AT THE TURNING POINT, AFTER THE MAJOR CRASH:

1 Intensive therapy for finance

DONE... even overdone

2 Redesign of regulation and financial architecture

This time global finance needs both national redesign and a global regulatory "floor" STILL ON THE DRAWING BOARD

Enable a
STRUCTURAL SHIFT in the real economy

RARELY BEING CONSIDERED AS SUCH

But recovery will be very difficult without it

The length of the process depends on the social and political forces

The last time around it took over a decade and a major war

EACH GOLDEN AGE HAS BROUGHT A CHANGE IN LIFESTYLES with new life-shaping goods and services that open vast new market directions

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LIFESTYLE

Age of Steam, Coal,
Iron and Railways

1850s-1860s

Urban, industry-based VICTORIAN LIVING in Britain

Age of Steel and Heavy Engineering

1890s-1910s

Urban, cosmopolitan lifestyle of THE BELLE EPOQUE in Europe

Age of the Automobile, oil and Mass Production

1950s-1960s

Suburban, energy-intensive AMERICAN WAY OF LIFE

Each style became "the good life" redefining people's desires and guiding innovation trajectories

Age of global ICT

2010s-20??s

Will the developed and emerging countries develop a variety of ICT-intensive "GREEN" SUSTAINABLE LIFESTYLES?

THE NEW TECHNOLOGICAL POTENTIAL

changes the relative cost structure and marks the direction of change

The techno-economic paradigm shift happening since the 1970s-80s

FROM THE LOGIC
OF CHEAP ENERGY (oil)
for transport, electricity,
synthetic materials, etc.



TO THE LOGIC
OF CHEAP INFORMATION
its processing, transmission
and productive use

Preference for tangible products and disposability

Unthinking use of energy and materials

Preference for services and intangible value

Huge potential for savings in energy and materials

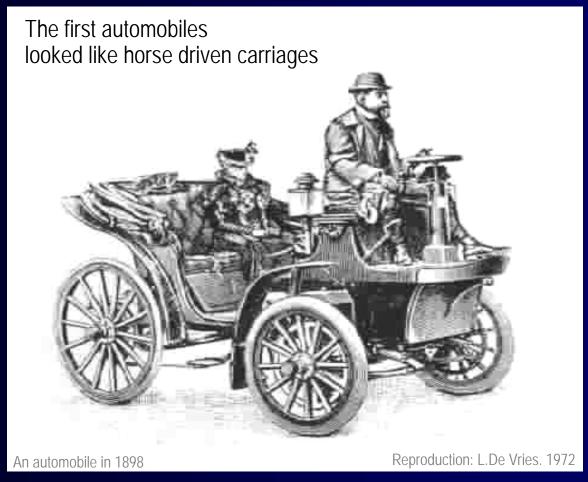
Unavoidable environmental destruction

Capacity for environmental friendliness

It is a huge opportunity space for innovation, growth and radical changes in lifestyles

YET, THE NEW PARADIGM IS STILL WRAPPED IN THE OLD

Mass production disposability and high use of energy and materials are still with us



WHY? Because in the crucial 1990s we had cheap oil and cheap Asian labour which favoured the stretching of the old marketing and consumption patterns

TO CONTINUE ON THIS ROUTE WE WOULD NEED SEVEN PLANETS!

THE UNAVOIDABLE PATH OF THE CURRENT GLOBALIZATION PATTERN

Rising prices of oil and raw materials

Rising packaging and freight costs

Visible effects of increasing global warming

Rising climatic risks and insurance costs

CHANGE IN THE ECONOMICS OF THE PRODUCTION, TRANSPORT AND DISTRIBUTION OF TANGIBLE GOODS

CHANGE IN BUSINESS STRATEGIES

CHANGE IN GOVERNMENT POLICIES

Optimal relocation and geographic re-specialization of physical production Gradual redesign of the consumption patterns for the "good life"



- Through very strict financial regulation in each country
 Glass Steagall, "Chinese walls", deposit insurance, capital export controls, etc.
- International stability through the Bretton Woods agreements
 US dollar as "gold", IMF, GATT, World Bank (then IBRD), etc.
- Keynesian policies for stable growth within national borders
 Counter-cyclical measures, stimulus spending, etc. and a set of policies...

...INDUCING STRUCTURAL CHANGE IN FAVOR OF MASS CONSUMPTION!

THE SYNERGISTIC CONDITIONS THAT SHAPED THE POST WAR GOLDEN AGE

INNOVATION ENABLERS Cheap oil FOR MASS PRODUCTION and materials **Universal electricity** Road and airway networks **FACILITATORS** OF DEMAND GROWTH **FORCES SHAPING** FOR MASS THE DIRECTION CONSUMPTION OF INNOVATION Suburbanization Welfare State Post-war **Public procurement** reconstruction Labour unions

They were provided in different proportions in each "First World" country

Personal credit

system

R&D funding

Cold war

A POSITIVE-SUM GAME

THAT TURNED THE WORKERS
OF THE ADVANCED WORLD
INTO MIDDLE INCOME
CONSUMERS

AND BROUGHT
THE GREATEST BOOM
IN HISTORY

The current potential for a new global positive-sum game

Universal ICT

Full internet access
at low cost
is equivalent
to electrification
and suburbanization
in facilitating demand
(and, this time,
also education)

"GREEN" GROWTH



FULL GLOBAL DEVELOPMENT

Revamping transport, energy, products, production and consumption patterns to make them sustainable is equivalent to post-war reconstruction and the spread of suburbia

successive new millions into sustainable consumption patterns is equivalent to the Welfare State and government procurement in terms of demand creation

And the elements are interconnected

ICT

ICTs are the main enabling instruments of sustainability

Internet access is the social and geographic frontier of the global market

"GREEN"

FULL

GLOBAL

DEVELOPMENT

Only with sustainable production and consumption patterns ls globalization possible

But we need policy consensus involving government, business and society

"GREEN" is not only about saving the planet It is about saving the economy and having a high (but different) quality of life

GLOBAL DEVELOPMENT
is not only
a humanitarian goal
It is about healthy growth,
markets and employment
in the advanced, emerging and
developing worlds

A MASSIVE "GREEN" SHIFT IN PRODUCTION AND CONSUMPTION PATTERNS GLOBALLY

Would provide a vast new opportunity space for innovation and wealth creation

Would fulfill the needs of people in emerging and developing countries without sacrificing those of the advanced ones

Would avoid climatic catastrophes and extreme prices in energy and materials

BUT IT CANNOT HAPPEN BY IMPOSITION OR MOVED BY GUILT OR FEAR BUT BY DESIRE AND ASPIRATION

"GREEN" MUST BECOME THE "LUXURY LIFE"

WHAT LOOKS IMPOSSIBLE NOW MAY SEEM OBVIOUS LATER

In mid-1930s DEPRESSION it seemed impossible to imagine...

...that blue collar workers would have lifetime jobs and fully equipped suburban houses with a car at the door

...or that most colonies would gain independence

And it seemed impossible in the late 1960s...

...to expect some of the values of the hippie movement [back to natural materials, organic food, etc.] to become the luxury norms

But later it was obvious that...

...increasing wages created many more millions of consumers for mass production and sustained growth

...the new middle classes rising in the developing world widened world markets for mass production by adopting the "American Way of Life"

But it is now obvious that...

...innovations in natural textile fibers have transformed the world of high fashion

... and innovations in distribution logistics have made organic foods the premium segment in supermarkets

Shifts in consumption patterns shift profit-making opportunities

THE TECHNOLOGICAL STAGE IS SET TODAY FOR THE GLOBAL GOLDEN AGE OF THE 21st CENTURY

It is up to business, government and society to agree on the convergent actions for making it a reality