

TOWARDS A SUSTAINABLE GLOBAL GOLDEN AGE

Reshaping Globalization and redesigning well being

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**How feasible is
sustainable global growth?**

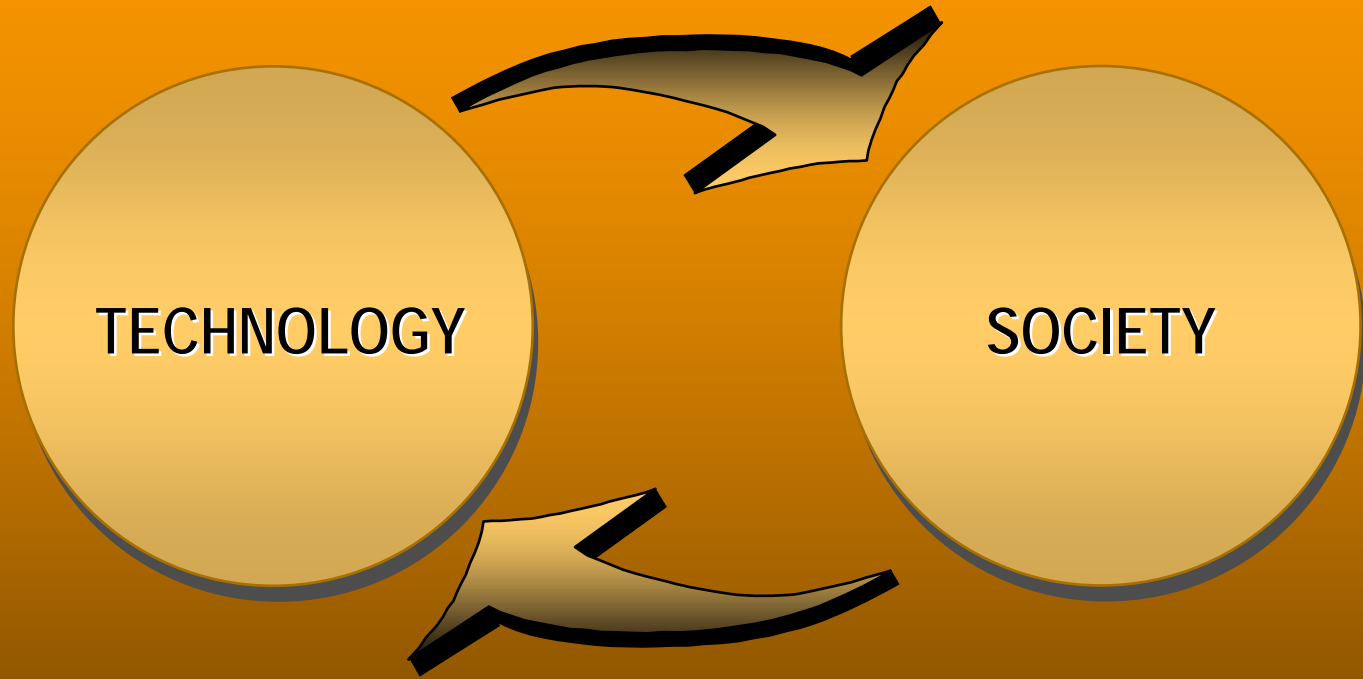
**Is full globalization compatible
with the so-called “American way of life”?**

**Why do we (and so many around the world)
think
that the “American way of life”
is the best?**

Could there be better?

**UNDERSTANDING
TECHNOLOGICAL REVOLUTIONS
AND PARADIGM SHIFTS
CAN HELP ANSWER THOSE QUESTIONS**

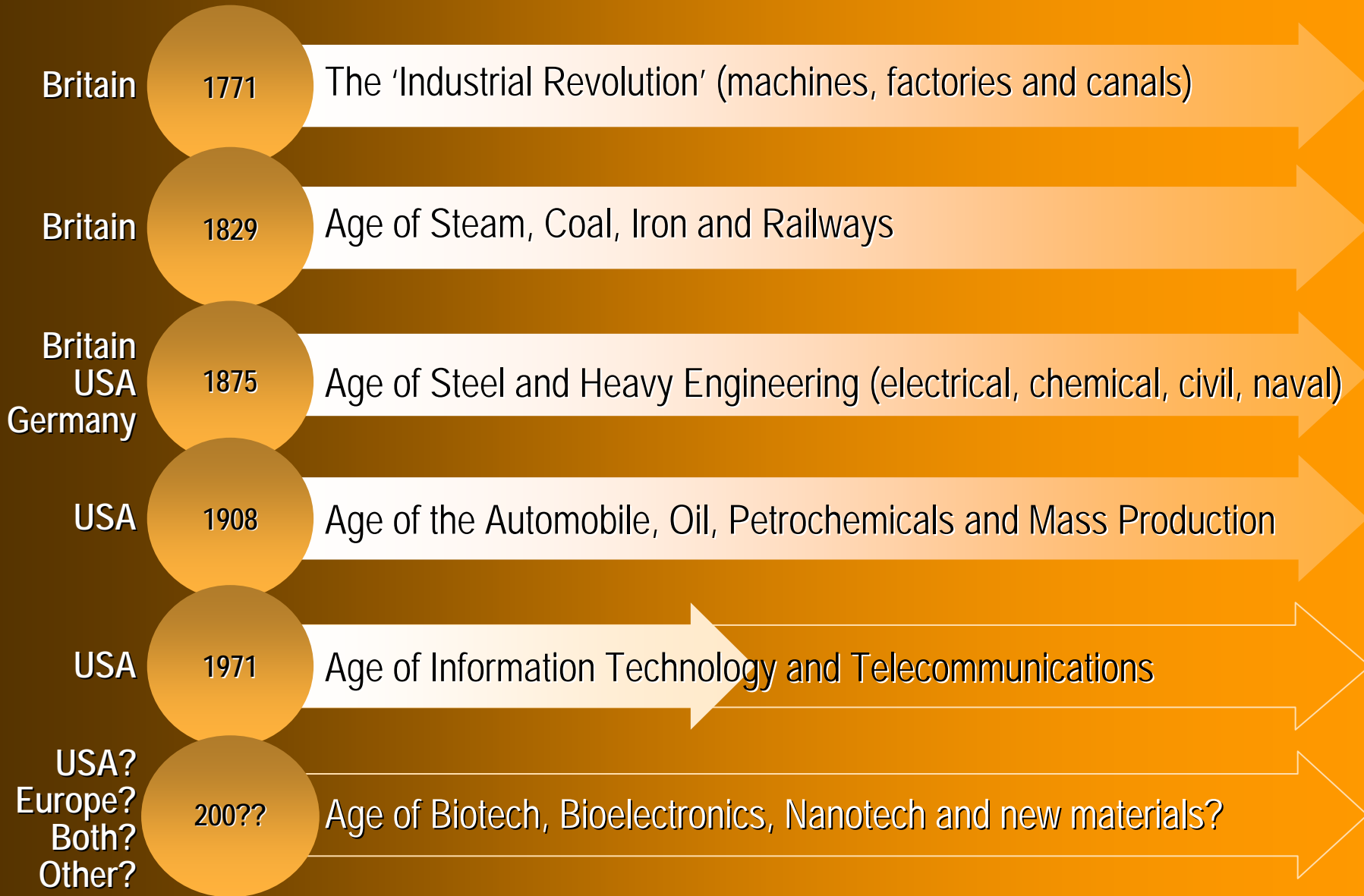
A crucial relationship to examine



The historical analysis reveals
a process of mutual shaping
in a periodically changing context

FIVE TECHNOLOGICAL REVOLUTIONS IN 240 YEARS

Each begins in a core country...



Each takes 40-60 years to spread across the world and reach maturity

Why call them revolutions? Because they transform the whole economy!

NEW INDUSTRIES

A powerful cluster
of visible new and dynamic
industries
and infrastructures

and

NEW PARADIGM FOR ALL

New generic technologies,
infrastructures and
organizational principles capable
of modernizing
the existing industries too

Explosive
growth
and structural
change

A quantum
jump in
innovation and
productivity
potential for all

A massive techno-economic paradigm shift

CHANGING THE OPPORTUNITY SPACE AND RESHAPING SOCIETY

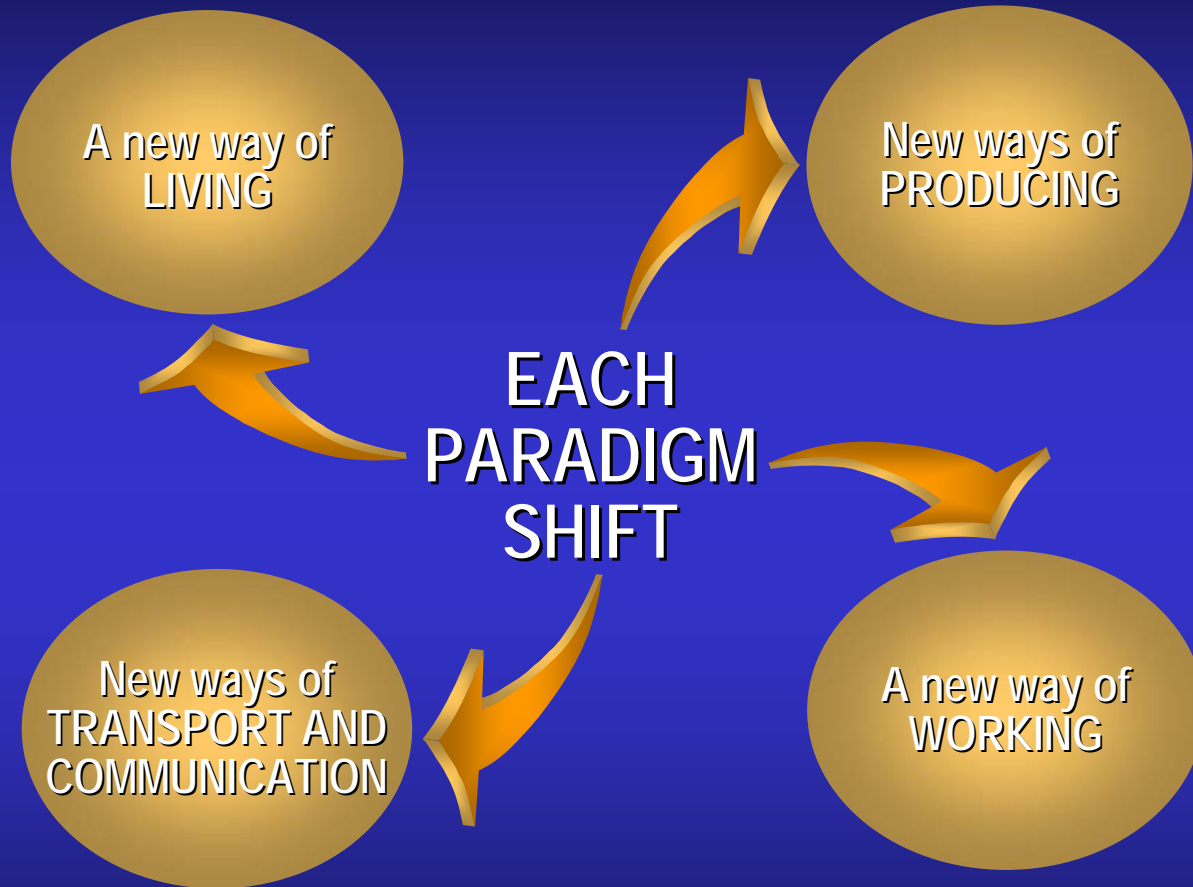
WHAT IS
A TECHNO-ECONOMIC PARADIGM SHIFT?

It is the appearance
of an enormous
new wealth creating potential

Enabling and requiring
A CHANGE
IN THE DIRECTION OF CHANGE
across all industries...

...and gradually across society

A FAR REACHING TRANSFORMATION



Each generation sees itself as the embodiment of progress and comfort and sees the previous way of living as old fashioned and backward

Each technological revolution provides a new inter-related set of life-shaping goods and services at 'affordable' prices

Age of Steam, Coal,
iron and railways

VICTORIAN LIVING

The British 'middle classes' establish an industry-based urban lifestyle different from that of the country-based aristocracy. It spreads to new upper classes elsewhere

Age of Steel and
Heavy Engineering
First Globalization

THE BELLE EPOQUE

British, European and American upper and middle classes establish a cosmopolitan lifestyle spreading to the upper classes of the world

Age of the Automobile,
Oil, Petrochemicals
and Mass Production

THE AMERICAN WAY OF LIFE

American upper and middle classes establish a suburban energy-intensive lifestyle spreading to the working classes of the advanced countries and to the middle classes of the developing world

Age of Information
Technology and
Telecommunications

SUSTAINABLE GLOBAL LIFESTYLES ?

Will the affluent educated classes of the developed and emerging countries establish an ICT-intensive knowledge society with a variety of environmentally friendly lifestyles and consumption patterns???

Each style becomes "the good life"
shaping the desires and dreams of the majority

The emergence of the 'American Way of Life' as the paradigm shift from the 1910s...

FROM ENERGY-SCARCE LIVING
Energy is expensive and often inaccessible

Trains, horses, carriages, stage coaches,
ships and bicycles

Local newspapers, posters, theaters, parties

Ice boxes and coal stoves

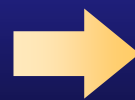
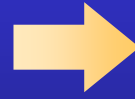
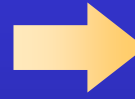
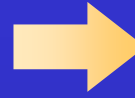
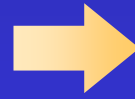
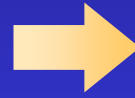
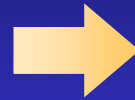
Doing housework by hand

Natural materials (cotton, wool, leather, silk..)

Paper, cardboard, wood and glass packaging

Fresh food bought daily
from specialized suppliers

Urban or country living and working



TO ENERGY-INTENSIVE HOMES AND MOBILITY
Energy is cheap and its availability unlimited

Automobiles, buses, trucks,
airplanes and motorcycles

Mass media, radio, movies and television

Refrigerators and central heating

Doing housework with electrical equipment

Synthetic materials

Preference for disposable plastics of all sorts

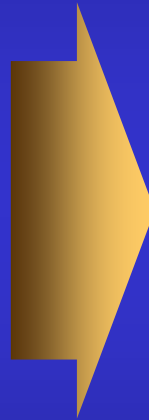
Refrigerated, frozen or preserved food
bought periodically in supermarkets

Suburban living separate from work

...all strongly aided by advertising, business strategies
and government policies

The current paradigm shift taking place since the 1970s

THE LOGIC
OF CHEAP ENERGY
for transport, electricity
and synthetic materials



THE LOGIC
OF CHEAP INFORMATION
PROCESSING
AND TELECOMMUNICATIONS

A radical change in the innovation opportunity space
and in life-changing potential

Three of the many new directions of the current paradigm shift

Mass production

ICT- Flexible production

HOMOGENEITY



DIVERSITY

Adaptability (including upgrading as change)
Niche markets; 'the long tail'
Potential for a great variety of lifestyles
on a common ICT platform

NATIONAL ECONOMIES



GLOBALIZATION

Global economy
with differentiated
national, supranational
and local spaces

UNAVOIDABLE
ENVIRONMENTAL DAMAGE



CAPACITY FOR
ENVIRONMENTAL
PROTECTION

Measurement, monitoring and control
Recycling and refurbishing
Conservation; closed-loop systems
Avoiding pollution and waste

Each paradigm opens different new routes for making profits
as well as for achieving socially desirable goals

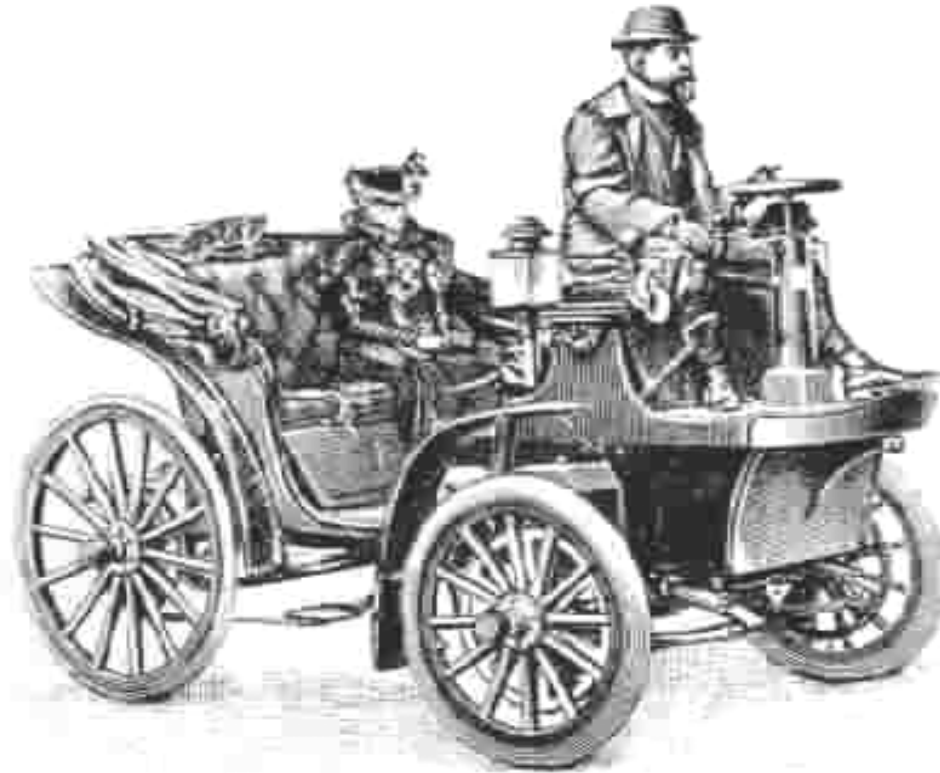
THE POTENTIAL PARADIGM SHIFT IN PRODUCTION PROCESS INNOVATION

Activity	Practices enabled by ICT
FABRICATION INDUSTRIES	Minimum energy and materials use; custom designed materials Zero defects, zero resource waste. Design for low energy use in operation. Planned upgradeability (not obsolescence), disassembly, recycling
PROCESS INDUSTRIES	Energy saving and "intelligent" process controls. Low energy processes By-products seen as source of value: trend toward closed-loop systems Custom-made materials; development of nanotechnology and biotech
PRODUCT PROFILE	More services than tangible products (pleasure in quality leisure; not in objects) Very high quality products, smaller, multi-purpose, durable Widely differentiated range by style of living (equivalent satisfaction)
PERSONAL TRANSPORT	Information-based variety of means, revaluing of time, flexibility of location Innovation in individual and collective transport. Car as last resort
FREIGHT TRANSPORT	Full awareness of environmental impact (and full costing) Optimizing of routes by bulk and weight. Innovation in vehicles Innovation in packaging and distribution
ENERGY	Variety of sources, local diversity, interactive users. Conservation Combined heat and power; intelligent controls in home and office
URBAN DEVELOPMENT	Integrated cities: living, work, education and leisure Full connectivity for multiple activities. Transport avoiding design Environmentally intelligent buildings

But the realization of the potential will depend on the policy context

BUT THE NEW WAY OF LIVING IS STILL WRAPPED IN THE OLD! Even ICT adopted the consumerist mode of marketing!

It is like early automobiles
that looked like horse carriages



One of the early automobiles 1898

WHY?

**CIRCUMSTANCES HAVE GIVEN
A NEW LEASE OF LIFE
TO THE OLD PARADIGM**

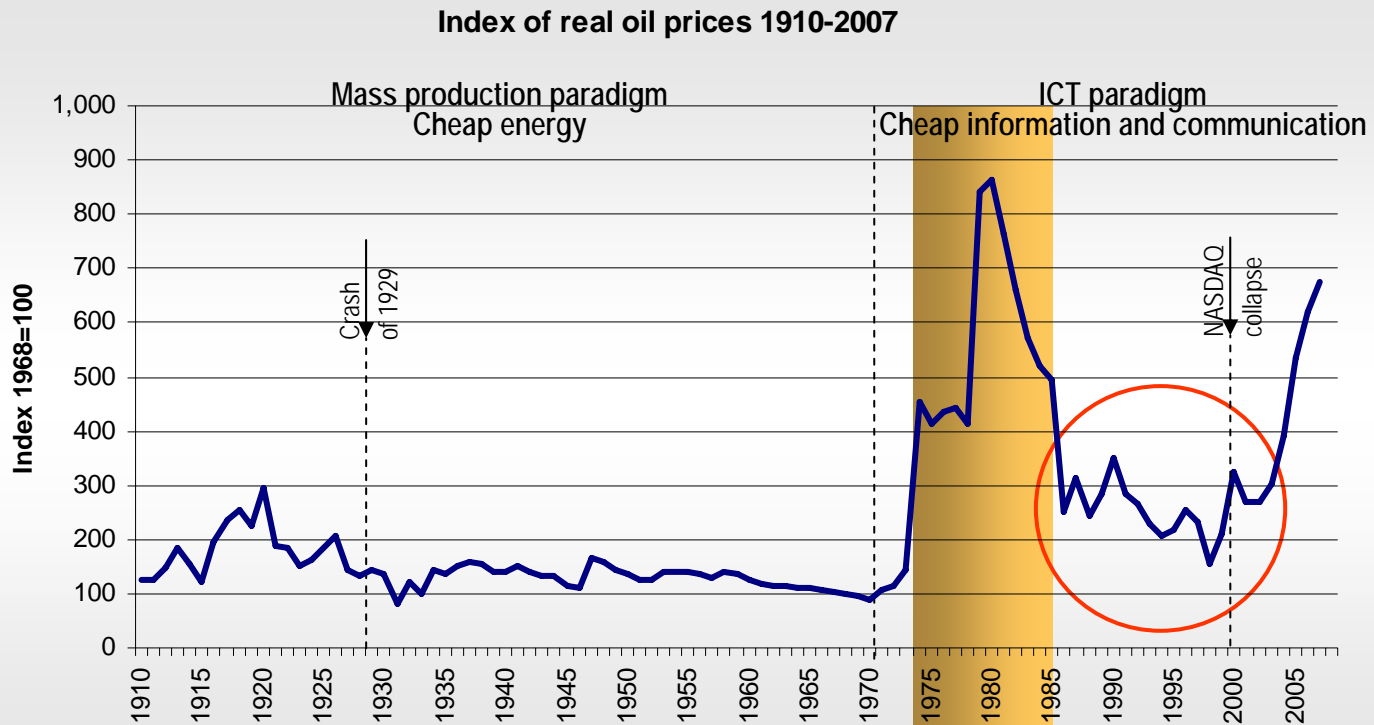
The low price of oil in the 1980s and 1990s

The low price of labor in China and Asia

The old 'American Way of Life'
is still seen as the model of well being to imitate
(because it has not been replaced in America)

**YET, GIVEN THE WAY GLOBALIZATION
IS EVOLVING TODAY,
WE WOULD NEED SEVEN PLANETS!!!**

AFTER THE OIL SHOCK, PRICES CAME BACK DOWN



The conservation policies WERE
The energy saving practices ALL
The alternative energy investments ABANDONED...
of the late 1970s

...just when the diffusion of ICT was most intense!

BUT THEY ARE GOING UP AGAIN, PRECISELY DUE TO GLOBALIZATION

THE "CHINA PRICE"

MADE MOST PRODUCTS CHEAPER AND CHEAPER

Not through technological advance, as in electronics

BUT THROUGH EXTREMELY LOW LABOR COSTS

- The old pattern of consumption was revitalized in the advanced countries and adopted with fury in the developing ones
- Rather than durability, disposability came back as the desired norm (it is cheaper to throw out than to repair!)

BUT THE RISING COST OF ENERGY, MATERIALS
AND FREIGHT WILL ERODE THE COST ADVANTAGE

Only ICT and Internet based services
will remain cheap

WILL THE NEW PARADIGM PREVAIL?

YES

If economic circumstances change

If it becomes an aspiration of the majorities

**If it is a positive sum game
between business and society**

Sustainability must...

**“create economic opportunities
and
improve the quality of life”**

President Bill Clinton

CUD 2008 Conference, San Francisco

Quality of life is measured by fulfilment of values and aspirations

Those aspirations are historically determined by the way society shapes each successive technological potential

The "luxury" life: values and aspirations UNDER THE MASS PRODUCTION PARADIGM

- Brand new is better than old
- Bigger is better than smaller
- More is better than less
- Synthetic is better than natural
- Fabricated is better than hand-made
- Disposable is comfortable
- Leisure is rest (not exercise)
- Shopping is a leisure activity
- If you don't keep up with the Jones', you are falling behind

ENABLERS

- Low cost of products
- Consumer credit
- Unemployment insurance
- Official trade unions
- Savings and loan banks
- Low cost housing

OPINION SHAPERS

- Role models
- Advertising
- Movies, TV
- Relative prices
- Marketing strategies

The shift to “ICT-green”
consumption patterns is possible
**NOT BY GUILT AND FEAR
BUT BY DESIRE AND
ASPIRATION**

Through shaping and enabling
a change in our notions of luxury and the “good life”

**BUT IT MUST HAPPEN
FIRST AND VISIBLY
IN THE ADVANCED COUNTRIES**

The notions of luxury and good taste
emerge at the top of the income scale
and spread by imitation

PART OF THE PARADIGM SHIFT IS ALREADY HAPPENING

- Small is better than big
- Natural materials are better than synthetic
- Multipurpose is better than single function
- 'Gourmet' food is better than standard
- Fresh organic fruit and vegetables are healthier
- Exercise is important for well being
- Global warming is a real danger
- Not commuting to work is possible and preferable
- Solar power is luxurious
- Internet communications, shopping, learning and entertainment are better than the old ways , etc.

BUT RELATIVE PRICES AND WIDER INTERESTS HAVE TO FOLLOW! WILL THEY?

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 risk

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

**CHANGE
IN BUSINESS
STRATEGIES**

**CHANGE
IN GOVERNMENT
POLICIES**

Massive relocation and geographic re-specialization of physical production
into optimal local, regional and global networks

Gradual redesign of the consumption patterns for the "good life"

UTOPIAN OR REALISTIC?

It sounded utopian to say
in mid-1930s DEPRESSION:

**Blue collar workers will have
lifetime jobs and
fully equipped suburban houses
with a car at the door**

**Most colonies
will gain independence**

...or in the late 1960s:

**Some of the values
of the hippie movement
[back to natural materials,
organic food, etc.]
will become
the luxury norms**

But it was realistic:

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

Rising middle classes in the developing world
adopted the "American Way of Life"
widening world markets for mass production

Innovations in natural textile fibers
have transformed the world of fashion

Innovations in distribution logistics
have made organic foods the premium
segment in supermarkets

Shifts in consumption patterns shift profit-making opportunities

A SUSTAINABLE POSITIVE SUM FUTURE IS POSSIBLE

FOR BUSINESS

Fast growing global demand (new consumers)
Changing and widening space for innovation and investment
Huge environmental industry
Profits from quality and adaptability, etc.

FOR CONSUMERS

Better job prospects from a less skewed production geography
High quality durable products
New patterns of “desirable living” fulfilled, etc.

FOR THE ASIAN DEVELOPING WORLD

Better balance between outward and inward growth
Reduced dangers from the environment, etc.

FOR THE REST OF THE DEVELOPING WORLD

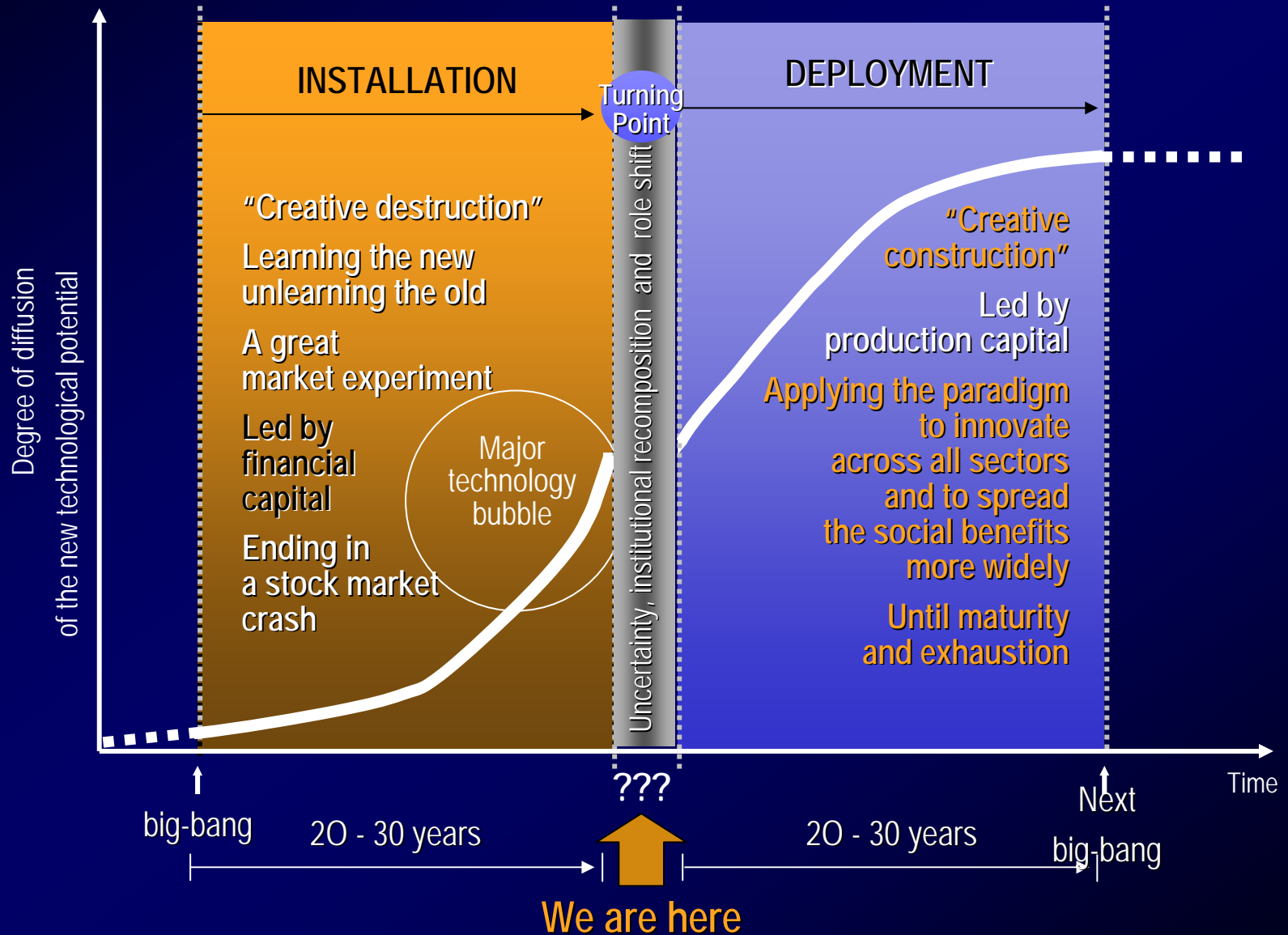
Growing prices of raw materials exports
New possibilities for development, growth and innovation
Attracting more global investment, etc.

But it will not happen automatically: the market cannot do it alone

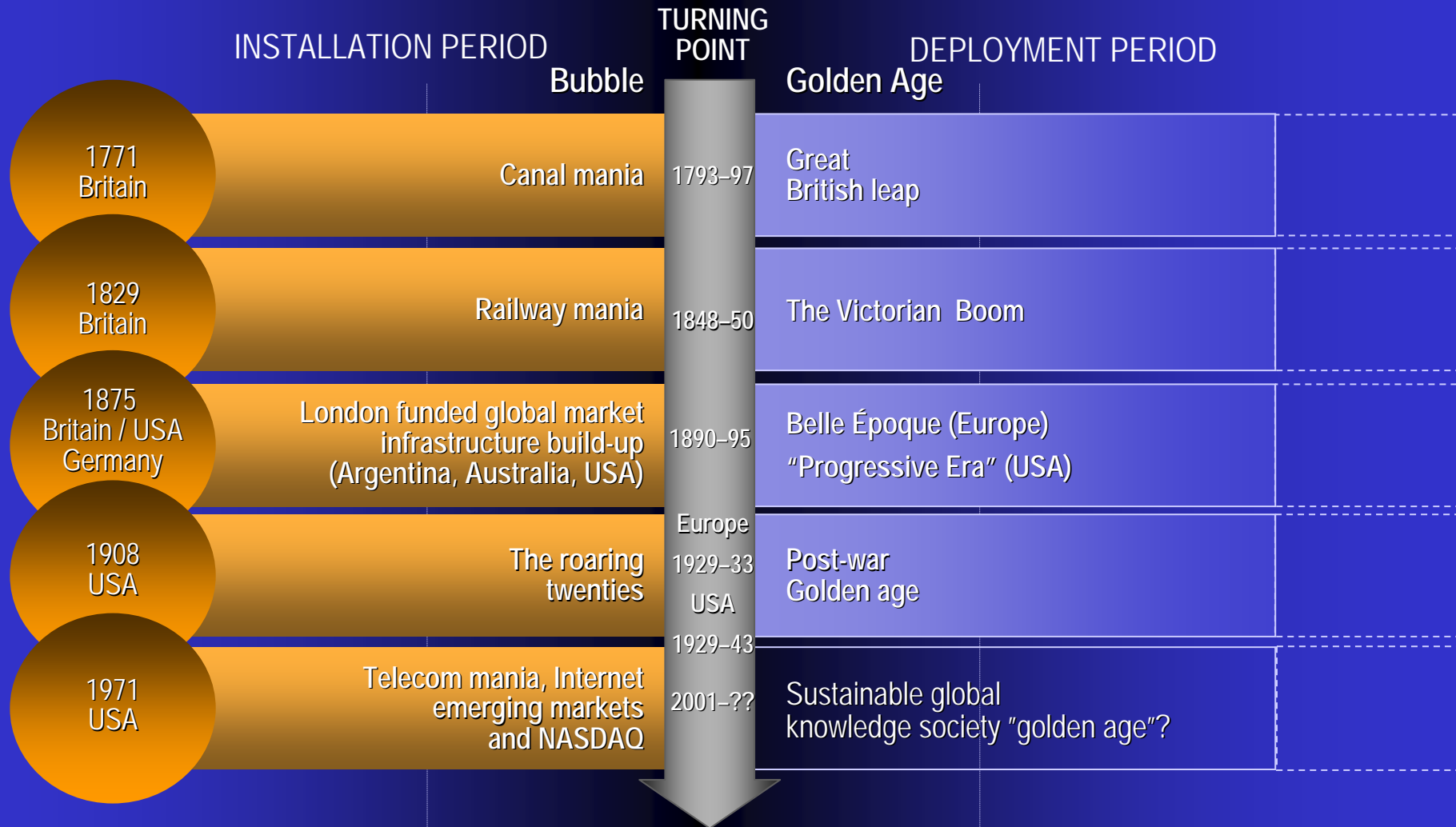
**WE ARE PRECISELY AT THE HISTORICAL MOMENT
WHEN THE STATE MUST COME BACK INTO THE PICTURE**

EACH TECHNOLOGICAL REVOLUTION PROPAGATES IN TWO DIFFERENT PERIODS

The first half sets up the infrastructure and lets the markets pick the winners
the second half reaps the full economic and social potential



The historical record: bubbles, recessions and golden ages



Each Golden Age has been facilitated by enabling regulation and policies for shaping and widening markets

Different periods: different roles for the agents

INSTALLATION

THE STATE
in a
facilitating
service
role

FINANCE and
THE NEW
ENTREPRENEURS
as drivers
and innovators

DEPLOYMENT

FINANCE
in a
facilitating
service
role

PRODUCTION
and
THE STATE
as drivers
and innovators

As the roles shift to enable deployment
collective interests become part of the guiding mechanisms

*John Chambers, Cisco CEO
CUD 2008 Conference, San Francisco*

**“It is important to have supportive governments...
I wouldn’t have said this ten years ago”**

The pure market ideology has already played its role
in the installation of the ICT paradigm.

THE TIME IS RIPE FOR THE STATE
TO COME BACK INTELLIGENTLY
at all levels, nationally, regionally, globally
and --especially– locally!

IN COLLABORATION WITH

- Business
- Civil society (NGOs)
- Universities and
- Media

**“We must all collaborate to paint a vision
and realize a new architecture”**

**The answer to whether
sustainable global growth is feasible
is, therefore, YES!**

But neither pure “free markets”
nor simple “environmentalism”
will get us there

The innovation potential of the ICT paradigm
can and must be collectively redirected
towards new patterns
of environmentally friendly well being
and a new profit-making dynamic for business

AND THE TIME TO ACT IS NOW!