

Innovation for Sustainable Development

March 28, 2013

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Vermelding onderdeel organisatie

Sustainable Development, nothing new?

Humanity destroyed crucial (eco)systems
The victims went somewhere else
Today, we are destroying global systems



The SD Challenge

	2013	2050
WORLD POPULATION	1 *	1,3 *
PROSPERITY / CAP	1 *	5 *
ENV. BURDEN / UNIT PROSPERITY	1 =	10 – 15 =
ENVIRONMENTAL BURDEN	1	1/2????????
We need leaps, not just improvements!!!		

What is Sustainable Technology?

SD is a holistic concept:

meets the needs of the present without compromising the ability of future generations to meet their own needs

But is ill defined at the micro scale.....

articulation(s): expressions of SD in regard to needs of people:

Maintaining air/water/.. quality, healthy, not depleting resources, not contributing to climate change,

Dilemma's and Paradoxes

In innovation, always various SD articulations are important

SD Articulations might change over time

SD articulations often create dilemmas: clean-safe-efficient-....

dilemma's might turn out to be paradoxes by innovation:

E.g. Since the 1970s cars have become more efficient, cheaper and safer

(but 1 billion of them will rapidly deplete all crude oil)

Collective and individual interests: Prisoner's dilemmas

If individual interests prevail, we will not achieve the optimum situation

Prisoner A

Prisoner B

		Stays silent	Confesses
Prisoner A	Stays silent	1 year for A 1 year for B	10 years for A No jail for B
	Confesses	No jail for A 10 years for B	5 years for A 5 years for B

Examples:

Not driving at SMOG alarms, environmentally sound products, Bringing your child to school by car



So a green dictatorship or working towards a responsible society?

Stakeholder cooperation in SD action is crucial:

- many blocking powers: governments, companies, NGO's,
- Without acceptance, no action: professional cultures, user habits, ...
- better solutions through mutual learning

So there is a tremendous challenge for scientists and engineers!

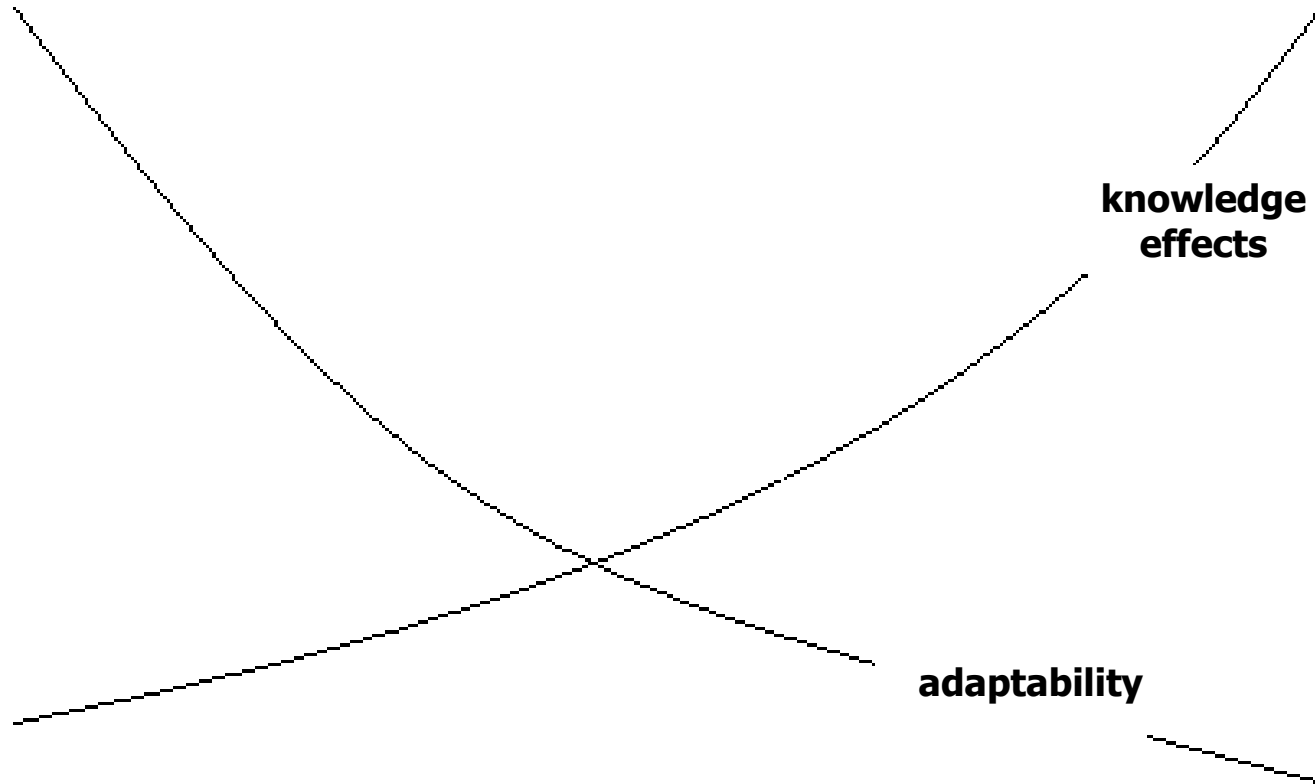
“The engineer” knows as little of technological strategy, as a fish knows of hydrodynamics

Wiebe Bijker

- *Missing 'other' perspectives: users, producers, legislators, ...*
- *Short term promise – long term 'dead end street', pathdependency,*
- *Impact of technology, Jevons paradox, 2nd order effects*

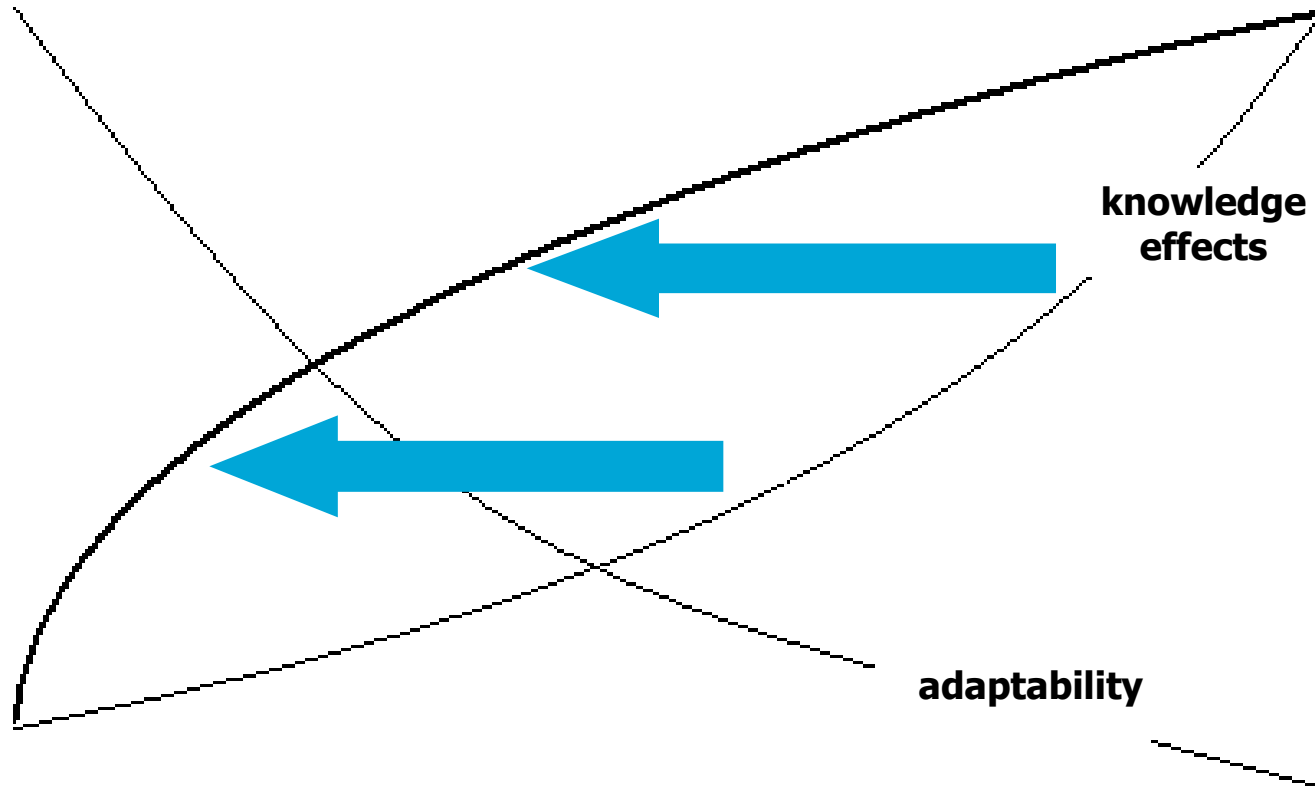
Impossible to steer?

Control dilemma, Collingridge



Early dialogue and studies are crucial

Control dilemma with forecasting of impacts



Involving Stakeholders in Innovation, How?

Analysis of innovation systems functions: How are they fulfilled?
Who is missing?, ***FIS Analysis***

Joint future goal setting, and developing pathways: ***Backcasting***

Involving stakeholders in early stages of technology development
and creating feedback loops: ***Constructive Technology
Assessment***

And the next challenge: How to get a high quality of interaction?

How to get stakeholders to talk instead of giving statements?

Expertise is relative: we are all experts in a specific role:

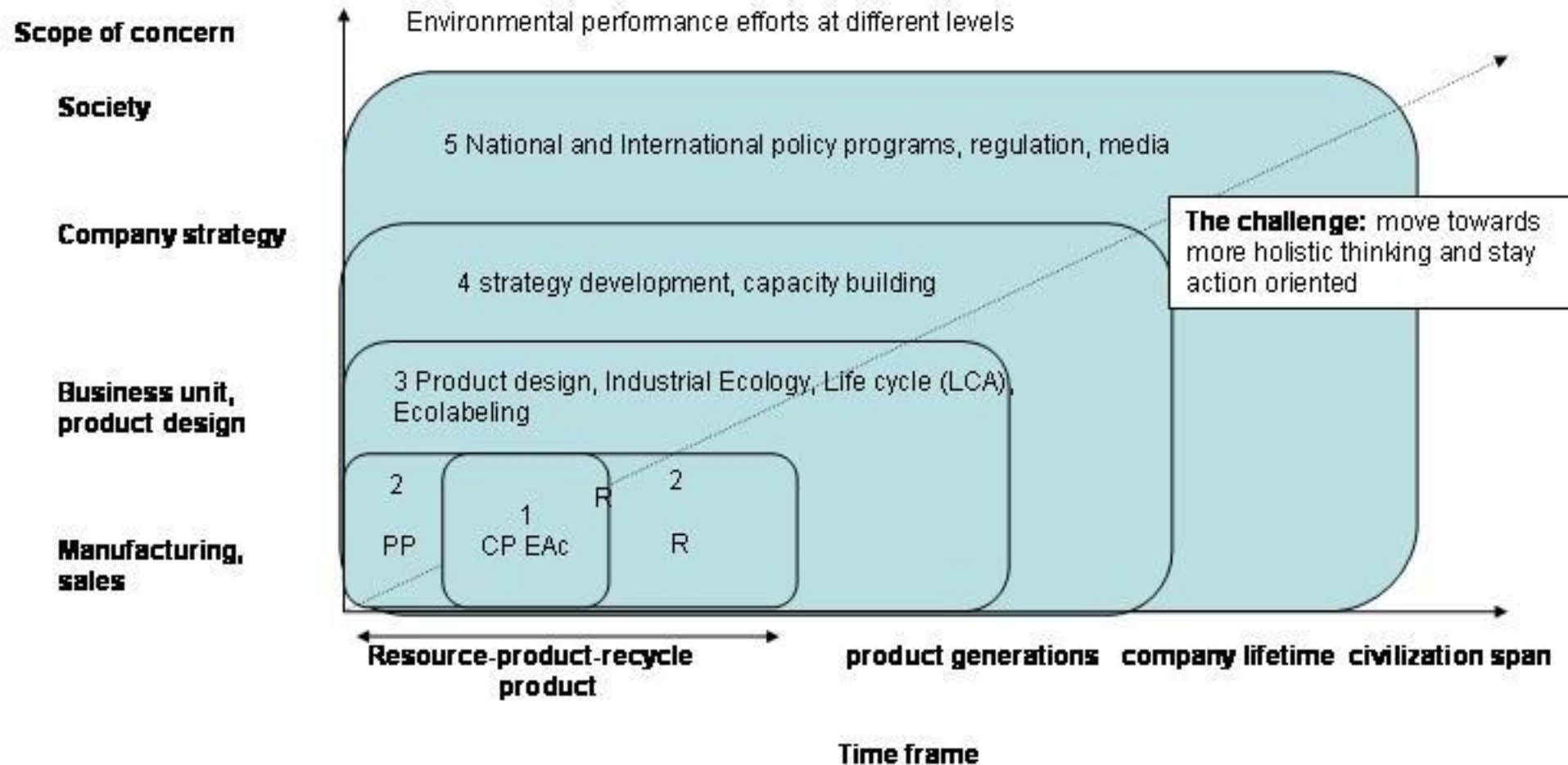
consumer, parent, worker, scientist,

What do innovations imply from this perspective?

Stakeholder dialogue and tools:

Forecasts, scenario's, model analysis to help stakeholders

Broadening the Innovation process and long term vision



A Changing Society

Increasing complexity and interdependencies of systems

Globalisation of design and production

More educated populations - Deeper democracy

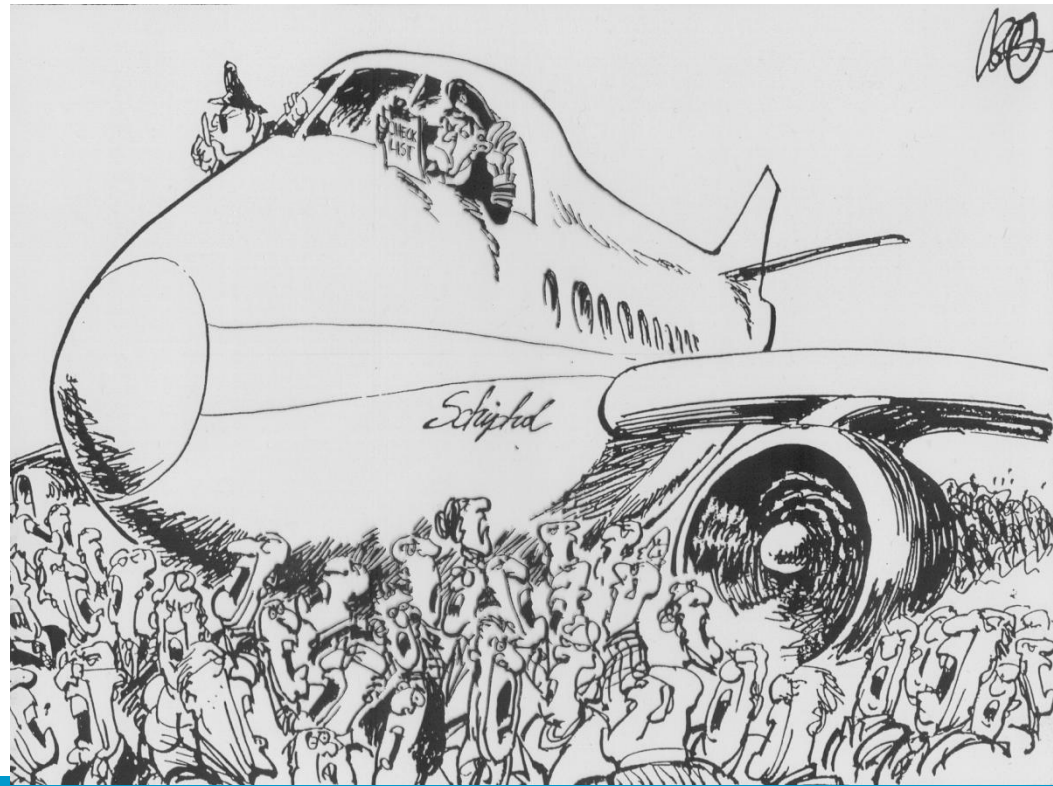
Innovation is harder, or use the wisdom of the crowds?

Renewal of Engineering

From
top-down planning,
harness nature, and
'hard' solutions

to:

stakeholder dialogue,
nature as partner, and
resilient solutions



Renewal of education



Taking Engineering from the shadows:

Between 1858 and 1875, Joseph Bazalgette designed and constructed the London sewerage.

This piece of engineering added 20 years to the average life expectancy of 40 years.

Engineering faces a comparable challenge today: to take the lead in providing Sustainable Development

Innovation for Sustainable Development needs a comparable drive but with a modern approach. Lets go for it!