

1960s : Goal of economic development policy → to raise living standards  
HOW? providing steadily more goods and services to an expanding population.  
The benefits of development will “trickle down” to those who needed them most

Late 1970s Paul Streeten and others: Basic Needs (edu, nutrition, health sanitation, employment) trickle down???

HDI (1990)→ combines life expectancy, adult literacy, and school enrollment ratios with per capita GDP in a weighted average to get an index between 0 and 1

1980s to contrast unbalanced internal and external debts (e.g. Latin America), inefficient bureaucracies

→ liberalization of trade, market-oriented reforms, neoliberalism

→ greater inequity

→ Higher env damage (Environmental Kuznets Curve)

Modernism, and its more recent manifestation as development, have betrayed progress . . . while a **few** have attained material abundance, resource depletion and environmental degradation now endanger many and threaten the hopes of all to come . . . Modernism betrayed progress by leading us into, preventing us from seeing, and keeping us from addressing interwoven environmental, organizational, and cultural problems (R. NOORGARD 1994)

**BUT SEE also ARTICLE BY MENSAH**

Sust dev: - Economic, - Social, - Natural

### **Economic: sustaining welfare via consumption**

C= consumption , S= savings, Y= Income

$U(C)$

$C=Y-S$

S → to reproduce/maintain means of productions  
(Capital)

Production function

$Y(K, L, N)$

N=Nature L=Labour

To which extent can we substitute K and N?

Strong vs weak SUSTAINABILITY

Mainstream: “Hartwick rule”:

consumption may remain constant, or increase, with declining non-renewable resources provided that the rents from these resources are reinvested in reproducible capital.

Herman Daly:

keep constant stock of natural capital (SEE Daly’s Chapter)

HOW?

For renewables resources: to limit resource consumption to sustainable yield levels; i.e.:

To be harvested no faster than they can be regenerated while waste must be emitted no faster than they can be assimilated

For nonrenewables: to re-invest the proceeds from non-renewable resource exploitation into investment in renewable natural capital.

Daly’s view “man-made and natural capital are fundamentally complements and only marginally substitutes.

Natural capital has a special and unique importance. To remain productive and resilient to support human life.

Safe minimum?

backup

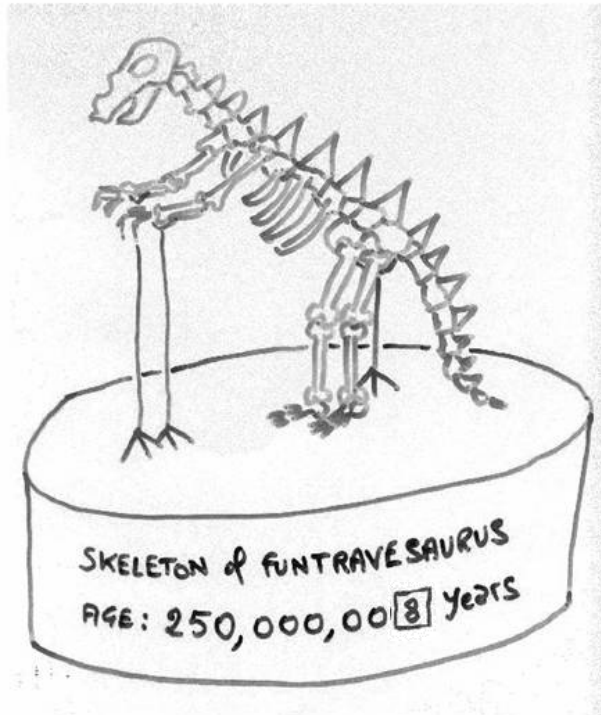
TEMPORAL SCALES?

WHY NATURAL “CAPITAL”?

HUMAN LIFE SUPPORT

AND INTRINSIC???

Fig. 3.2 The “true” age of the dinosaur



Funtowicz, S. and J. Ravetz (1990). *Uncertainty and Quality in Science for Policy*. Kluwer Academic Publishers.

## Weak sustainability in practice

Keep constant the SUM of the capitals,  $N + K$

$$\frac{\Delta K}{\Delta t} + \frac{\Delta N}{\Delta t} = 0$$

US, J, D high investments  $\rightarrow$  sustainable ?

The true age of dinosaur and the “weak sustainability” indicator!!!

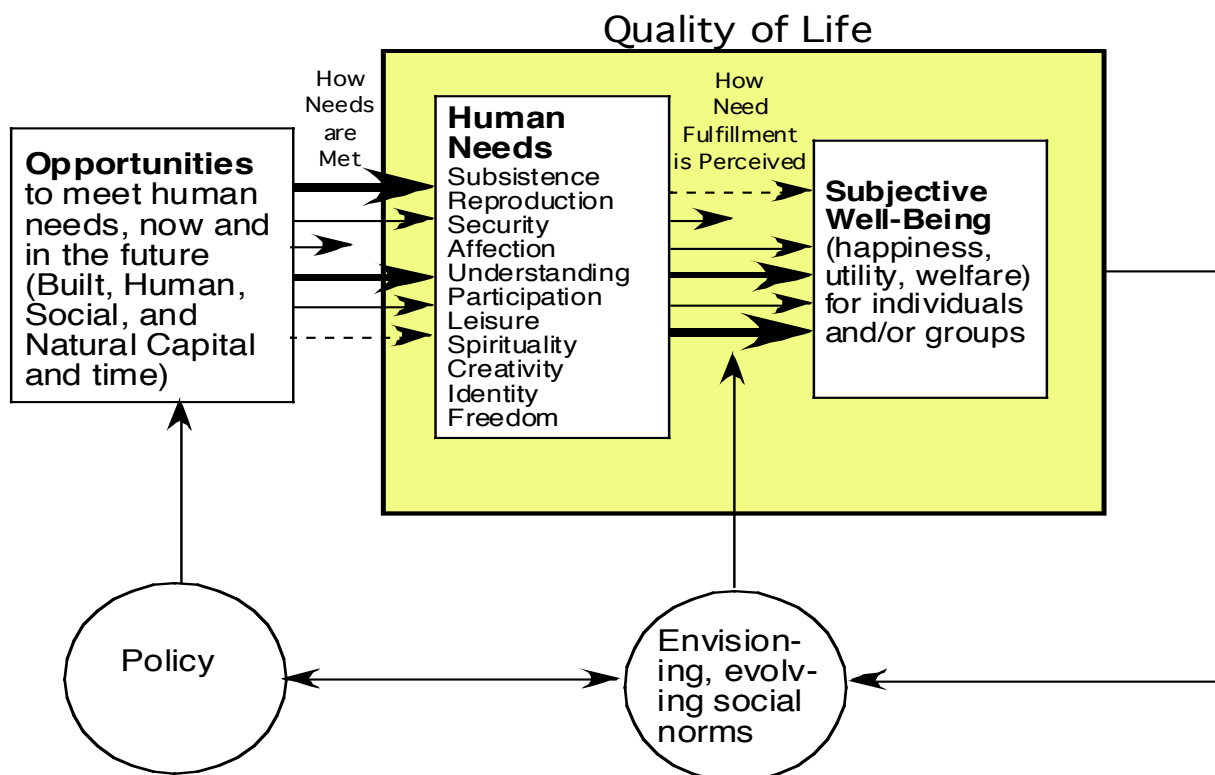
Side effects:

growth in GDP has begun to increase

- environmental and
- and social costs faster than it increases production benefits.

UNECONOMIC growth ?

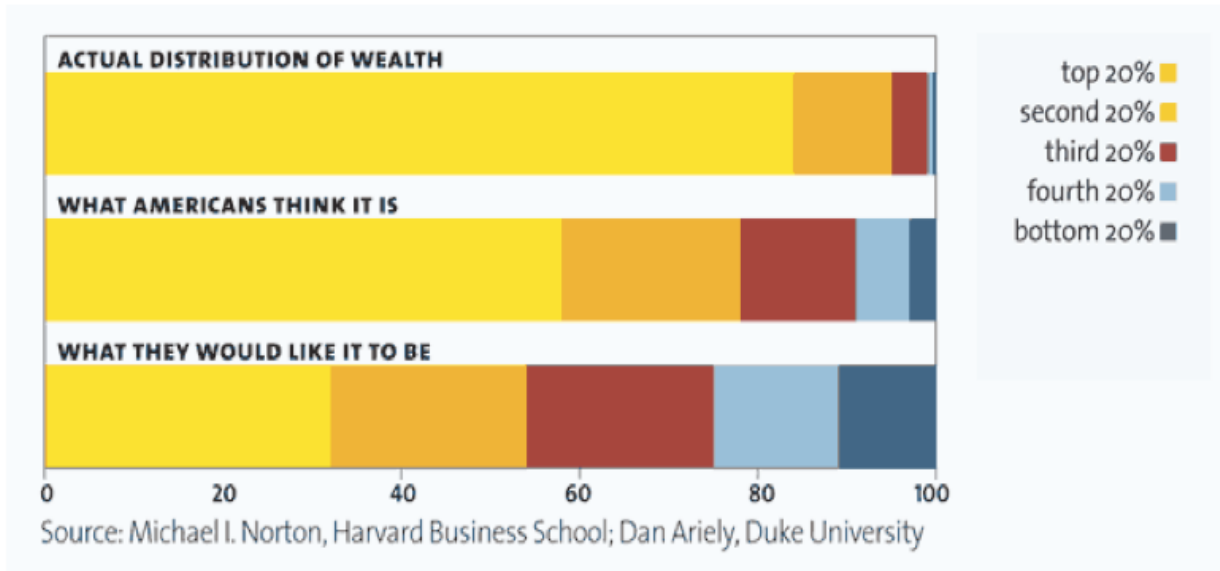
(defensive expenses?)



From: Costanza, R. B. Fisher, S. Ali, C. Beer, L. Bond, R. Boumans, N. L. Danigelis, J. Dickinson, C. Elliott, J. Farley, D. E. Gayer, L. MacDonald Glenn, T. Hudspeth, D. Mahoney, L. McCahill, B. McIntosh, B. Reed, S. A. T. Rizvi, D. M. Rizzo, T. Simpatico, and R. Snapp. 2007. Quality of Life: An Approach Integrating Opportunities, Human Needs, and Subjective Well-Being. *Ecological Economics* 61: 267-276

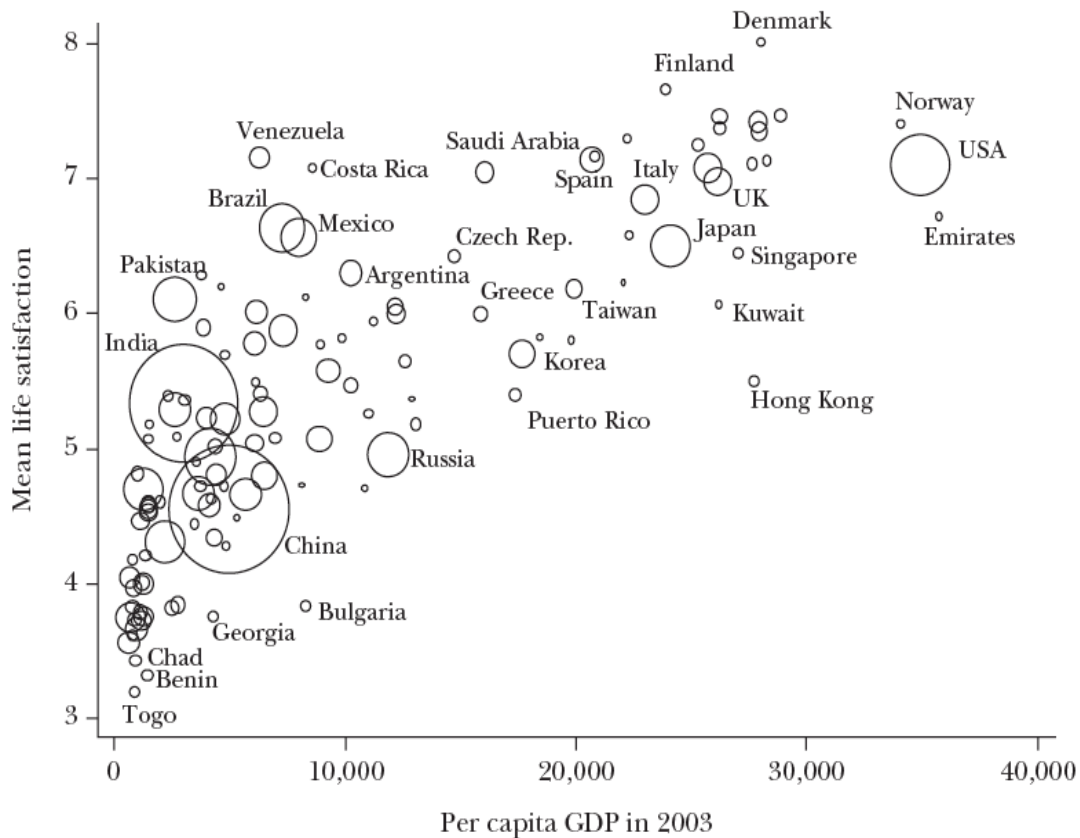
# OUT OF BALANCE

A Harvard business prof and a behavioral economist recently asked more than 5,000 Americans how they thought wealth is distributed in the United States. Most thought that it's more balanced than it actually is. Asked to choose their ideal distribution of wealth, 92% picked one that was even more equitable.



## Life Satisfaction and Per Capita GDP around the World

Source: Deaton, 2008.



## Environment → ECOLOGICAL perspective

### *Maintenance of ecosystem resilience!*

C.S. Holling: it:

Two of the fundamental axioms of ecological and evolutionary biology

- 1) organisms are exuberantly over-productive
- 2) that limits set by time, space, and energy are inevitably encountered.
- 3) Evolution → variability → resilience

response to shocks: basin of attraction of a given configuration

“The key to resilience is the existence of a wide variety of species, interacting with each other and providing a reservoir of genetic forms which provide the potential to adapt to changing conditions”

- The original idea of development was based on a straight-line progression from traditional to modern mass-consumption society. Within this framework, a tension developed between the promotion of economic growth and the equitable provision of basic needs. Development as it has proceeded over the last half-century has remained **inequitable**, and has had **growing negative environmental impacts**.
- Sustainable development → must remedy social inequities and environmental damage, while maintaining a sound economic base.
- The conservation of natural capital is essential for sustainable economic production and intergenerational equity. Market mechanisms do not operate effectively to conserve natural capital, but tend to deplete and degrade it.
- From an ecological perspective, both population and total resource **demand** must be limited in scale, and the **integrity** of ecosystems and diversity of species must be maintained.
- Social equity, the fulfilment of basic health and educational needs, and **participatory democracy** are crucial elements of development, and are interrelated with environmental sustainability.

Harris, 2000