An Essay on the Notion of Sustainability: Opportunities and DANGERS

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Hans Carl von Carlowitz: Nachhaltigkeit-Sustainability

Source http://en.wikipedia.org/wiki/Hans_Carl_von_Carlowitz


Mit GOtt!
SYLVICVLTVRA OECONOMICA,
Oder
Haußwirthliche Nachricht und Naturmäßige
Anweisung
Zur
Wilden Baum-Zucht,
Nebst
Gründlicher Darstellung/
Wie zu förderst durch Göttliches Benedeyen dem allenthalben und insgemein einreissenden
Grossen Holtz-Mangel/
Vermittelst Säe- Pflantz- und Versetzung vielerhand Bäume zu prosperiren/
Alles zu nachhaltiger Versorgung des Hauß- Bau- Brau- Berg- und Schmeltz-Wesens/
Worbey zugleich eine gründliche Nachricht von den in Churfl. Sächs. Landen
Gefundenen Turff
Dessen Natürliche Beschaffenheit/ grossen Nutzen/ Gebrauch und nützlichen Verkohlung.
Aus Liebe zu Beförderung des gemeinen Bestens beschrieben
von
Hannß Carl von Carlowitz/
Königl. Pohl. und Churfürstl. Sächs. Cammer-Rath und Ober-Berg-Hauptmann.
LEIPZIG/
verlegts Johann Friedrich Braun 1713.

Cover of *Sylvicultura oeconomica, oder haußwirthliche Nachricht und Naturmäßige Anweisung zur wilden*

Nachhaltigkeit-Sustainability

- "Sustainable" and defined as: "1: capable of being sustained, 2 a: of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged (sustainable techniques), b: of or relating to a lifestyle involving the use of sustainable methods (sustainable society). "Merriam-Webster (online)

- "Sustainable development" includes as well to economical perspective; "Sustainable development is an approach to economic planning that attempts to foster economic growth while preserving the quality of the environment for future generations. Despite its enormous popularity in the last two decades of the 20th century, the concept of sustainable development proved difficult to apply in many cases, primarily because the results of long-term sustainability analyses depend on the particular resources focused upon. ..." (Encyclopaedia Britannica (online))

reports and agreements, which since 40 years, are organised by the United Nations (UN).

- (i), 1972, Stockholm Conference:
- (ii) 1987, The so-called “Brundtland-report”,

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

(iii), 1992, “Agenda 21”Rio de Janeiro Conference

UN reports and summits…

- (iv), 2012, “Rio+20”; “The future we want” The common vision: (a) “...renew our commitment to sustainable development and to ensuring the promotion of an economically, socially and environmentally sustainable future for our planet and for present and future generations.” (b) “...Poverty eradication...“, (c) “we commit to work together to promote sustained and inclusive economic growth, social development and environmental protection and thereby to benefit all.”

UN: "Holistic Solutions" are sought between disciplines.

- (iv) 2013, September Global Sustainable Development Report (Prototype Edition) "Building the Common Future We Want "Eliminating poverty and hunger; feeding, nurturing, housing, educating and employing 9 billion people; securing peace, security and freedom ;and preserving the Earth's life support systems in the next two generations". This report highlights also the multitude of assessments. (United Nations, 2013).

Today's use of the concepts…

Problems:

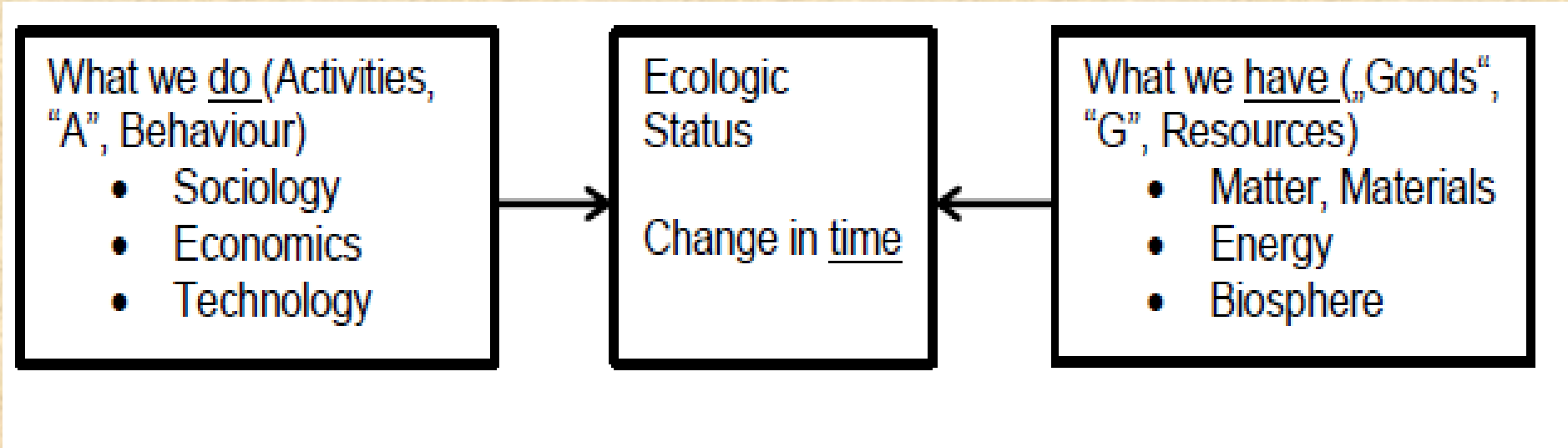
- Inflation in assigning sustainability (ubiquitously present)
- Complexity of UN goals; not attainable
- Psychological-political phenomenon rather than technic, economic, sociologic…
- Certifications (are stipulated goals sufficient?)
- Poor evaluations of the **consequences of change** to achieve goals (before and after)

CHANGE, TIME, DECISION…

- Point of departure:
- Hypothesis 1: *The ecological status at a specific time is a function of natural processes and what humans have done with the resources until that time".*

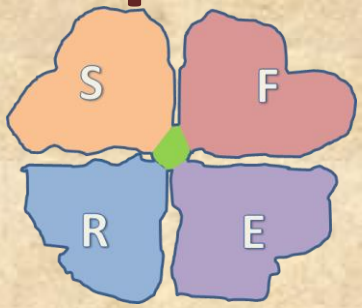
- Hypothesis 2: *Every human activity is a contribution to the detriment of the environment.*

$$S_X = A_X + G_X$$


What we do (Activities, "A", Behaviour)
• Sociology
• Economics
• Technology
Ecologic Status
Change in time
What we have („Goods", "G", Resources)
• Matter, Materials
• Energy
• Biosphere

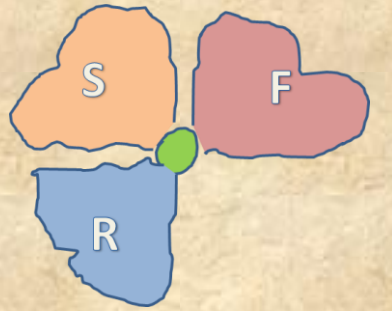
What includes **Sustainability** & **Sustainable Development**?

$S_{TU} = S_E \cup S_S \cup S_F \cup S_I \cup S_N$



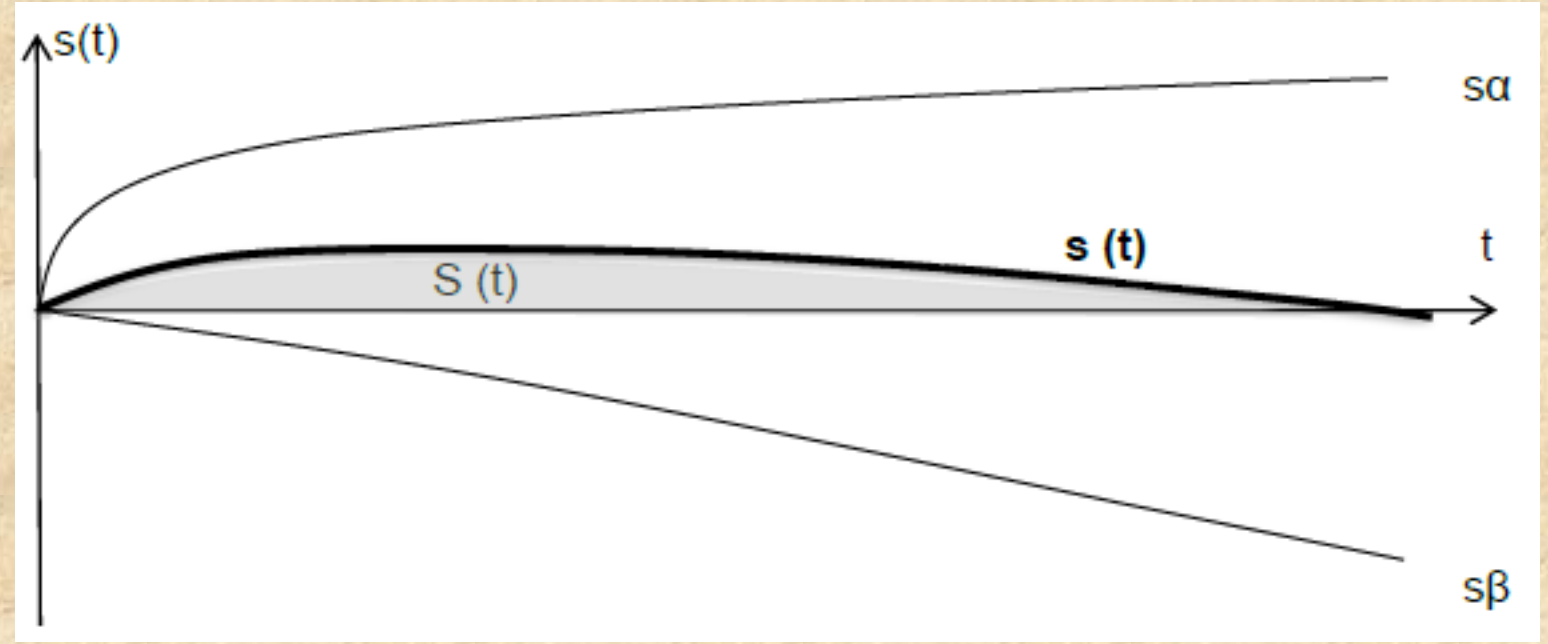
$S_{T\cap} = S_E \cap S_S \cap S_F \cap S_I \cap S_N$

$S_T = \exists(A+G)_X \vee (A+G)_N,$



$S_T = \exists(A+G)_X \wedge (A+G)_N,$

$$S(t) = \int_0^t s(t)dt, \text{ where } S(t) > 0$$



Practical approach ; **weighted perspectives**

$$S(t) = w_{Et}S_E(t) + w_{St}S_S(t) + w_{Ft}S_F(t) + w_{Rt}R(t)$$

	Environmental (E)	Social (S)	Economic (F)	Rest (R)
Primary positive effects,)	G: Improved building physics: acoustic, energy insulation (heating, cooling) A: New knowledge skills in R&D in new windows	G: Newer look, transparency, easiness to clean and use, higher satisfaction A. Creation new jobs, directly and indirectly, Easier maintenance,	G. Reduced Energy Cost for the owners. A. Emerging firms in manufacturing new windows, financial growth. Promotion of refurbishment (cheaper loans)	G: Technology parallels (generic technology) , application of innovation. A: Societal imitation energy saving (educational effects)
Secondary, often negative effects, (Less considered), (sβ)	G: Some windows (plastic, aluminium) cannot be repaired, maintained, Resource use A: Disposal to waste activity, CO2 increase (e.g. transports)	G: Individual variations disappear of windows A: Users dissatisfaction of new windows and loss of old ones.	G: Short life cycle reducing substance value of real estates. A: Governmental requirements for not desired, radical refurbishments (more expensive loans for non-refurbished houses)	G:EoS lead to standardisation not fulfilling special design. A: Loss of skills and jobs (poverty) in manufacturing, repair, maintaining timber framed windows
Tertiary Effects etc., Institutional (Even less considered) (sβ)	G: Bounded life-cycle (25 years), dependence to regular replacement and waste A. Higher societal energy use (and pollution) than for the individual owner of the building	G: Monoculture takes over regional variations (Architecture) Loss of cultural heritage A. New patterns of Service related to windows>societal indirect effects.	G: Economics of Scale (EoS) of new plants for manufacturing. Disadvantageous dependencies. A. New patterns of Service related to windows>transaction costs (contracts).	G: Spaces with new energy-saving windows got heating unnecessarily. A: New R&D in total creates a consumption pattern of resources (like oil) more than before the decision.

The Future…

- Sustainability regarded as relative and as variable
- Distinguish the differences between **efficiency** and **effectiveness;** i.e. doing **(A)** things right vs. do the right things with available resources **(G), i.e. sometimes better to do nothing rather than to make wrong decision and changes…**
- **"Reduction of the damage in an optimal way"**
- Operationalization (Change decisions) through ICT :

BIM (Building Information Modelling)

DSS (Decision Support System)