Food for thought - Coupling between 'licence to produce' and 'licence to explore'

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a report by
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Since 'business as usual' can neither solve the hunger problem nor obesity, 'business as unusual' may do. One needs to periodically step off the safe linear road to improvements, into the rough and complex area of innovations. Here, one may fall or reach higher peaks than before. It is here – at the edge of order and chaos – that new solutions emerge, possibly also for the hunger problem sometime in the future.[1]

Issues that need to be dealt with in a proposed research initiative include:

- whether incremental improvements are really not enough and in which areas innovations are necessary;
- how people should carry on, within what framework and with which criteria;
- identifying the kind of goals and conceptual approaches that need to be well-thought out and defined; and
- identifying the kind of practical solutions that will be reached.

Problem Definition

At the turn of the century, 1.1 billion people are undernourished and underweight worldwide. On the other hand, the number of overweight people surpasses the one billion barrier. The growth rate of the world population is about 1.3% per year (2000), while the world agricultural production is expected to grow at 1.8% per year. The annual growth rates for animal protein sources vary from 0.5% for beef to 11.4% for aquaculture. The losses in post-harvest perishables are estimated to be between 20% and 40%. The yearly loss of tropical forest for food production fields is between 0.5% and 4%, etc.[2–4] Much more statistical data can be presented.

The exact figures differ substantially, with those of the World Watch Institute at one end and those of Lomborg at the other. The interpretation of figures is also very different. The ability and creativity of humankind has led to solutions for severe problems. The question is more as to what extent that will be possible in the future.[5] In identifying the limits between fulfiling primary needs and having the unmatched freedom to purchase luxurious products, there is just one answer: face the questions, explore new solutions and discuss these limits.[6]

Exploring the Field of Sustainable Solutions

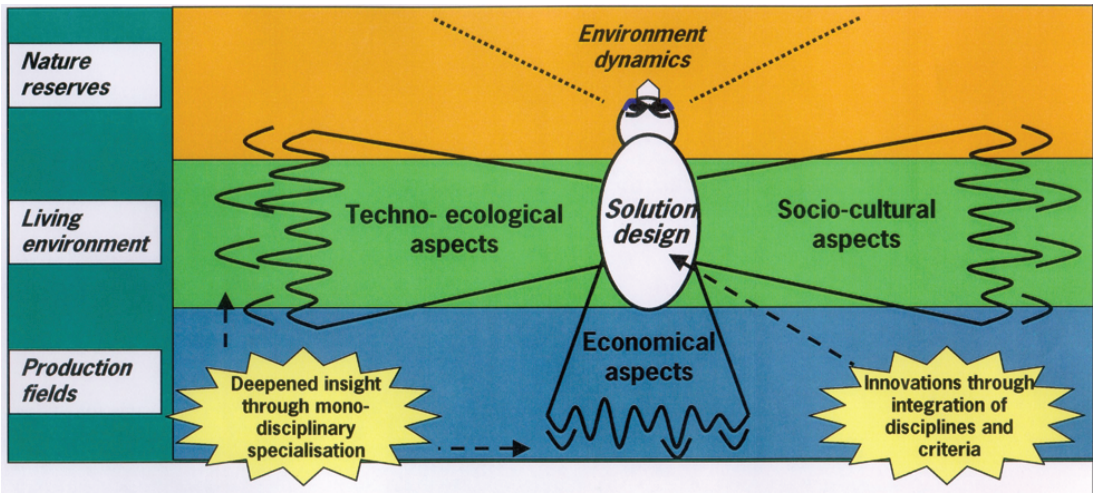
In order to reach new solutions, exploring environments blindly must be avoided. Like playing a game, the playground needs to be defined in addition to field partitions, the players, the pieces, the duration and the rules (criteria).

Along the same line of thinking, the 'sustainable-solutions game' can be sketched, for example, as follows. The earth is the playground. The field partitions are production fields, living areas, nature reserves and transport lines in between. The players are national and regional governments, farmers, small and large enterprises, research institutions, non-governmental organisations (NGOs) and the various populations in roles from consumers to citizens.

The pieces are ecological variety, greenhouse gases, tropical forests (for nature reserves), housing, shopping centres, recreation areas (for living areas), a variety of products, materials (construction, packaging and clothing), water (drinking and process), energy sources (solar, gas and biomass) for production fields. The duration is split into either 15 years or five generations ahead.

1. *M M Waldrop (1992),* Complexity.
2. *L R Brown, et al, 2001,* State of the World 2001.
3. *B Lomborg, "The Truth about the Environment",* The Economist, *4 August 2001.*
4. *The Organisation for Economic Co-operation and Development (1998),* The Future of Food.
5. *J Ausubel, "Resources and Environment in the 21st Century: Seeing Past the Phantoms",* World Energy Council Journal, *July 1998, http://phe.rockefeller.edu/phantoms/*
6. *H Mintzberg, et al. (1998),* Strategy Safari.

Figure 1: Viewing Opportunities from a Distance



The rules are such that a reward is given for:

- an optimal fit for the needs of both current and future generations;
- needs that are translated into product characteristics with added value;
- products that are realised based on the availability of (or newly developed) resources, process-technology and transport means and zero waste or valorised waste streams;
- product and process characteristics that can be verified (transparency);
- product and process characteristics according to social values;
- Fulfilment of biodiversity needs; and
- fulfilment of other needs regarding (area for) nature.

Within this context, finding new sustainable solutions is challenging.

The fascinating issue is that – even though the number of possible 'games' to be played may seem endless – the creativity of and interaction between players will lead to substantial but limited different end results. This is due to so-called 'self-organisation' of the system.[7] Both deep chaos and rigid order are to be avoided by the right definition of the 'game'.

Goals to be Reached

The main aim will be to develop sufficient (to be defined), safe and well-accepted food, water, materials and energy for current and future generations within the context of a vital environment. 'Licence to produce' concepts need to have the confidence of world citizens. 'Licence to explore' needs to be realistic. Transparency and clear communication of relevant information are key issues.

Conceptual Approach

Once the playground, field partitions, players, pieces, duration and rules have been designed, it is preferable to view opportunities from a distance, as a bird in the sky (see *Figure 1*). From a distance, the bird considers people, planet and profit as a unity (3P). Its approach is holistic, reductionistic, etc., to survive short and long-term hurdles. The environment determines what species of birds will survive and the complexity of the birds. This allows the bird to dynamically approach the production fields for feed, the living areas for rest and the nature reserves for interaction with other species. Interaction leads to emerging properties of the system as a whole (birds plus environment) and to new alliances among birds in order to survive.

Translation of these phrases into the human world would give rise – on one hand – to optimise each quality dimension (the individual Ps) by strengthening and enlarging the wings and tail of the bird and – on the other hand – to constructing innovative solutions to problems that are observed in the environment (by the body and head of the bird, respectively). The key skill for innovative solution design lies more in the integration of options from ecological, economical and socio-cultural aspects (for example, 3Ps). The first approach is 'mono-disciplinary', the latter 'multi-disciplinary'. Both approaches are essential for the system as a whole, and should both be present in initiatives aimed at establishing innovations.

7. *S Kauffman (1995),* At Home in the Universe.

Developments in Practice

Many institutions, such as the UN, World Health Organization, Food and Agriculture Organization, UN Environment Programme, The World Bank, World Water Forum, World Wildlife Fund, and the Dutch foundation for sustainable food industry (DuVo)[8], are involved in and support sustainable developments. Numerous stakeholders pay daily attention to social and ecological aspects. Positive results are obtained, such as eco-certificates by the Marine and Forest Stewardship Councils, declarations on improved water management, and development of biodegradable packaging material and highly efficient wind turbines, etc.

Although the exact status of sustainable developments or the link with poverty, deforestation and climate change, etc., will never be known, people are obliged to focus daily on these developments for the next generations. This includes current bottle-necks and opportunities, as well as forecasting long-term needs for living environments, nature reserves and production fields. The latter implies crossing borders among (industry) sectors. The Dutch National Initiative for Sustainable Development supports and initiates the 3P discussion over the traditional industrial borders, such as chemical, food, medical, equipment manufacturing, information and communication technologies, housing, transport and retail, etc. Other countries have re-organised themselves in this area, but a worldwide approach is not at hand. Even the research area 'sustainability' within the EU sixth framework only deals with sustainable energy sources; little attention is paid to renewable resources, while basic needs such as food and materials seem to be ignored.

In order to let the bird fly and to reset the 3P agenda, the following steps are proposed.

- Co-ordination of worldwide, independently operating 3P-innovation-driven research centres in a think tank aimed at inspiring sustainable developments and informing/sparring with key players in policy, production, and research and development. A steering committee with representatives from government, industry, research institutes and NGOs, a scientific advisory board and an examination board will support and control the executing committee.

- Formulation of scenarios for long-term innovations, based on societal trends and making use of the game concept.

- Carrying out a rigorous back-casting approach to describe effective business strategies and government policy on technology and organisational forms ('3P pull approach').

- Proposing a research and implementation agenda; and inspiring third parties to take action. The approach aims at system innovations based on concurrent gains in consumer insight (perception, target group specificity and household care), product design (basic needs, speciality products, presentation design and virtual design), product and process development (renewable resources, processing technology, transport means and waste streams) and validation (social-cultural, economical, ecological, legal aspects and norms and values).[9]

- Advising of short-term, socio-environmentally friendly improvement initiatives.

- Advising local communication structures that inform citizens on sustainable developments. Example initiatives could be:

  a. (e-)office for information on sustainable development;
  b. internationally oriented debates on sustainability; and
  c. development of the game-concept as an enjoyable educational tool for young people and adults, and an additional one for use as a strategic tool in government and the industry environment.

The only way to provide a living for future generations is to continue to gather and discuss novel ideas, to realise creative improvements and innovations, and to communicate them. These generations have the right to feel 'at home in the universe'.[5]

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8. *The DUVO has taken the initiative to come to a 'broad' and sustained basis for environmentally sound product development and integrated chain approach.*
9. *The Dutch EET subsidiary structure Economy, Ecology and Technology serves as a good example to reach practical solutions and proof of principles (hands-on results instead of lip service).*