

Agricultural scientists cannot see the wood for the trees? The quest for holistic science

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Sustainability and holism

The development of sustainable farming systems demands a holistic approach. The multi-facets of sustainable rural development, expressed in multi-functional land use, demand that farming systems be sustainable from ecological, technical, economic, political and socio-cultural points of view. The concepts of sustainability and holism are closely related. Holism not only refers to an approach which pays attention to all possible aspects of farming systems, but also refers to the recognition that the whole is more than the sum of its parts (unpredictable emergent properties do exist). The operationalization of the concepts of sustainability and holism, however, remains problematic. How can farmers and other stakeholders in the multi-dimensional process of rural development gain a comprehensive view of farming systems?

Positivists and constructivists

Under the constant pressure of various stakeholders the train of agricultural research rolls on without breaks (brakes) for reflection. While the development of sustainable farming systems demands systems thinking and bridging of the gap between the natural and social sciences, most agricultural researchers are fully occupied with solving practical problems. Difficulties in communication between hard (natural) and soft (social) scientists are grounded in their corresponding positivist and constructivist assumptions about the nature of human knowledge. While in the positivist paradigm scientific knowledge is considered to be an objective, universal and context-free commodity, the constructivist position in social sciences holds that all thinking is value-laden and in stead of objectivity the norm is intersubjectivity. For constructivists facts are not given phenomena, but facts are made. Positivists attempt to keep values and norms outside the rational discussion: a strict fact-value dualism is the aim. One assumes that the goals are 'given' and focuses on the best technical means to achieve them. In the constructivist paradigm, however, goals are the bone of contention and values and norms are the source of rational discussion.

Economy and ecology

Monocultures of crops, animals and trees are the logical outcome of the dominant positivist-reductionist scientific paradigm in 'hard' science. The science-induced addiction of conventional farmers to chemical-based monocultures and the addiction of many, highly specialized, agricultural scientists to 'high-tech' approaches demand 'detoxification'. To kick these habits, the dominant positivist paradigm needs to be reviewed. The fact-value dualism allowed technology development to become an apparently autonomous power. The latest example is the genetic modification of living material, which can be classified as the next 'magic bullet' approach. So-called 'inevitable' technological development, however, is a fabrication which can be undone. Monocultures of (transgenic) uniform crops are designed to favor economies of scale through lower production costs per hectare. Monocultures are thus grounded in economic thinking, whereas the ecologisation of farming systems must be based on ecological principles. Monocultures go against the evolutionary forces that have resulted

in huge biological diversity, a diversity that is an essential part of sustainability. How can the two opposing tendencies of economy and ecology be reconciled?

Attitudinal change

The *operationalization* of the integration of economy and ecology remains problematic. How do we strike a dynamic balance between economy and ecology? While ecology is characterized by an integrative tendency, today's economy emphasizes a self-assertive tendency (i.e., get as much personal profit as possible with minimal attention for the larger eco-system and social environment). In order to 'walk the talk' of sustainable development we must think and *act* sustainably. Sustainable thinking and *acting* in the domains of economy and ecology demands new attitudes. Attitudinal change resulting in more sustainable behaviour, however, does not come easily. While many people might agree that the main underlying cause of the current unsustainable agricultural system is related to faulty attitudes, practical and effective methods to change attitudes remain scarce. Most training methodologies have little impact in this respect, probably because training focuses on thinking and acting without addressing the pure consciousness that underlies all thinking and acting.

Experiential spirituality

Conventional science and most other human behaviour are grounded in the concept of 'thinking-being'. This most dominant mode of 'being' expresses itself in a continuous flow of thoughts, in an incessant 'inner talk'. Most people are not even aware of this continual 'talking to ourselves' because it is the predominant mode of being. In contemporary society 'thinking-being' is considered the only possible mode of being. In addition to 'thinking-being', however, an experience of 'just being', of 'consciousness-as-such' (transcendental or pure consciousness) is possible. The process in which one (preferably) *systematically* trains the receptivity to gain (preferably) *regular* access to this transcendental consciousness can be referred to as spirituality. Spirituality is here understood as an individual and, above all, experiential spirituality which is not based on dogmas, but on do-it-yourself techniques to break the continuous spell of the mode 'thinking-being'¹. The domain of experiential spirituality is open to investigation by scientific methods, i.e., open to experiential validation or refutation.

Wholeness

Sustainability is an integrative, holistic property which encompasses 'wholeness in human beings' and 'wholeness in society'. Economy and ecology (and many other aspects) must be integrated in the personal and collective spheres of life. The building blocks of any society, however, are individual human beings, who together construct socio-economic and cultural 'structures'. To my mind it is an illusion to believe that complex interdependencies at high levels of integration (for example, between socio-economic structures and the ecological environment) can be grasped by intellectual reasoning ('thinking-being') alone. At the level of the individual person intellectual reasoning alone does not result in wholeness. This is exemplified in the rather weak performance of most educational programmes to assist in the formation of intellectually, emotionally and socially 'healthy' and environment-conscious

¹ The do-it-yourself technique that I practise (since 1972) is the transcendental meditation (TM) technique as taught by Maharishi Mahesh Yogi. This technique has been subjected to a large amount of research with results published in refereed scientific journals.

citizens. One can try to exercise ‘both-and’ thinking, but in most cases this also does not result in true integration of opposing tendencies (in ‘the one thing as much as the other’). Perhaps the co-existence of the two opposing tendencies of economy and ecology (self-assertion and integration) can only be ‘lived’ at higher levels of awareness, as E.F. Schumacher maintained.

A new agricultural professionalism

The development of sustainable farming systems demands a shift in attitudes of farmers, extensionists, researchers, environmentalists, civil servants, politicians, consumers and other stakeholders. Group synergy needs to emerge on social platforms with this multitude of actors of different walks of life. The large number of variables and actors that are at play in agriculture make it difficult to grasp the complexities of farming systems at the intellectual level. Conventional research suffers from ‘the illusion of intellectual holism’. Pretty and Chambers (1994) advocate a new agricultural professionalism about which they remark: “Personal behavior and attitudes remain the great blind spot of agricultural research and extension. ... Personal change will often have to precede as well as accompany changes in the cultures of organizations”². This applies also to Wageningen University and Research Centre and its staff and students.

Collective agency

In a sustainable agriculture farmers are not only entrepreneurs but also natural resource managers. This demands collective learning of various actors in order to reach group synergy or joint agency, i.e., the ability to act as a like-minded group. Hitherto the ability of the multitude of actors to create effective collective agency is insufficiently developed, resulting in today’s unsustainable farming systems. The question is then under which specific conditions collective agency emerges. The development of sustainable farming systems entails (preferably) mutually beneficial interactions between many individual actors, their (socio-economic, cultural and political) structures and ecosystems. The interactions between individual actors, their structures (soft social systems) and (hard) ecosystems are represented in Diagram 1.

Collective consciousness

The actor/structure debate in social psychology and in the sociology of rural development does not really clarify, to my mind, *how* exactly the *interaction* between actors and structures comes about. In Diagram 1 I have placed the concept ‘collective consciousness’ at the interface between actors and structures. Social scientists (e.g., Sorokin and Durkheim) say that society is something outside, and something inside us. Society has an objective aspect (a concrete social structure) and a subjective aspect (a collective consciousness). The collective consciousness and the social structure are the inner and outer side of the same socio-cultural reality. The central ideas and values, that are internalized in the collective consciousness, form the basis of all sub-structures in a society. The socio-economical, political, cultural and religious sub-structures of a society are connected through this collective consciousness (in Diagram 1 the box representing ‘structures’ can be any one of these sub-structures). All individuals who together form these sub-structures are connected through this ‘field’ of

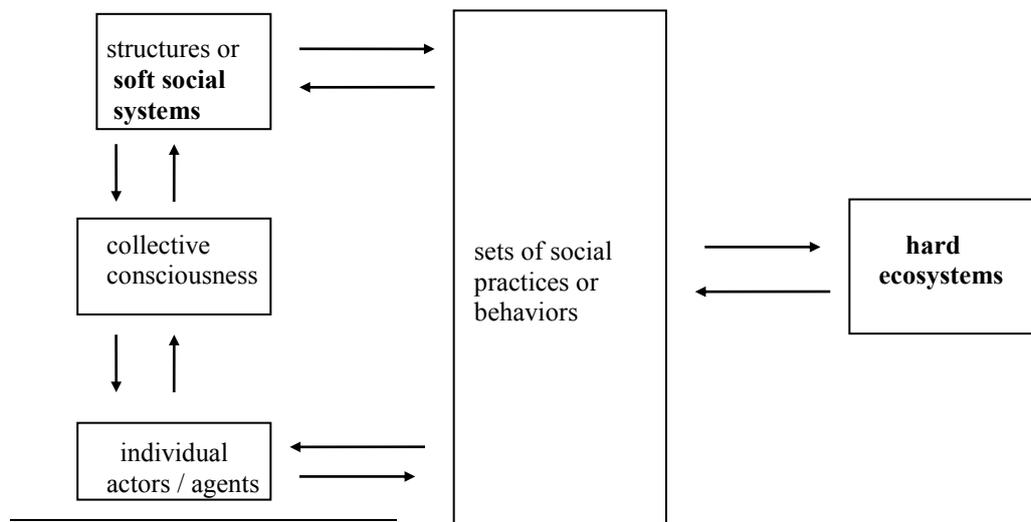
² Pretty J. and R. Chambers (1994). Towards a learning paradigm: new professionalism and institutions for a sustainable agriculture. In: Scoones I. & J. Thompson (Eds). Beyond farmer first. Rural people’s knowledge, agricultural research and extension practice. Intermediate Technology Publications Ltd, London. pp. 182-202.

collective consciousness. The collective consciousness is the integrating, inner structure of a society. The concept of collective consciousness could be the missing link in the long-standing actor-structure debate, since it clarifies the *interaction* between actors and structures and thus can integrate the socio-psychological and structural approaches.

Positively oriented collaboration and effective co-ordination between actors, i.e., collective agency, demand a coherent and ‘high quality’ collective consciousness³. All noses need to point in the same direction. A ‘high quality’ consciousness of individual actors results into a ‘high quality’ collective consciousness, which in turn can generate more appropriate social systems or structures. A ‘high quality’ individual and collective consciousness results in more positive (e.g., more environment-friendly) behavior, which would have a positive impact on ecosystems (these interactions are represented by the right-pointing arrows in Diagram 1). The left-pointing arrows indicate, for example, that monitoring of changes in ecosystems by scientists can change behaviors and thus social systems and attitudes of individual actors. This, however, proves to be a slow process. Deliberate management of human interaction with ecosystems requires the generation of ‘social capital’, resulting in mutually beneficial co-operative behavior. High levels of social capital are grounded in a ‘high quality’ collective consciousness.

The quest for holistic science at Wageningen (with Prof. Oldeman being one of its most open-minded and productive proponents) requires, in addition to specialists, scientists who can work in an inter-disciplinary mode. This demands a *trans*-formation of attitudes and a *trans*-disciplinary, overarching paradigm that encompasses natural sciences, social sciences and effective techniques for consciousness development. The last ones can actually help us to *transcend* the numerous trees and see the forest (the trees might refer here to the numerous disciplines within Wageningen University as well as to the many actors and structures in the real world). The state of our agriculture is a reflection of the state of our mind⁴.

Diagram 1: the interactions between soft social systems and hard ecosystems



³ An example of negatively oriented collaboration, caused by a coherent yet ‘low quality’ collective consciousness of a group, would be the behavior of football hooligans.

⁴ This paper is largely based on my Ph.D. thesis. For more details see: Van Eijk T. (1998). Farming Systems Research and Spirituality. An analysis of the foundations of professionalism in developing sustainable farming systems. Ph.D. thesis, Wageningen Agricultural University, The Netherlands.