

Towards a New Framework for an Agriculture & Horticulture Embedded in Society

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Abstract

In the beginning of the 21st century the development of the agricultural sector in most of the modern industrialized countries continues to follow the main directions that have already been laid down, but in doing so it is influenced and challenged at the same time by a number of factors in a wider social, economic, ecological and geographical context. The key elements in this 'autonomous' development, besides the ongoing integration in society, are the agricultural sector's strive for an equal development in economic and social terms and the impact of the ongoing technological development. It will be affected by an accelerating globalisation and liberalisation of agricultural production and trade. This seems to give the big multinational chains a free hand for a unilateral optimization of economic progress, facilitated by technological progress and rapidly transferable knowledge. The increasing awareness of the need for a 'license to produce', however, leads to a balanced strategy, in which not only economy (profit) but also ecology (planet) and the norms and values of technology and society (people) have a place. This 'triple bottom line' or 'corporate social responsible activity' proves to be a generally new three dimensional framework for further development in all branches' of industry, including agriculture. It will have big consequences for operating and that goes for the Dutch agricultural sector too. This new framework which can be used as a tool for guidance in organizing and developing agricultural science and technology, is elaborated in this contribution.

INTRODUCTION

In the beginning of the 21st century the development of the agricultural sector continues to follow the main directions that have already been laid down, but in doing so it is influenced and challenged at the same time by a number of factors in a wider social, economic and geographical context. The effect of the many external influences, the internal possibilities and the way in which the agricultural sector tackles the challenge of a new framework are the main themes of this paper.

The main directions that have been laid down can be put in perspective. The key elements in this 'autonomous' development, besides the ongoing integration in society, are the agricultural sector's striving for an equal development in economic and social terms and the impact of the ongoing technological development.

We will focus now on the main trends affecting agriculture.

AUTONOMOUS DEVELOPMENTS CONNECTED WITH THE AGRICULTURAL SECTOR

Intensification of Interaction with Environment

The strengthening of the agricultural sector's links with society (its integration in international society and the economy) and the growing scientific character of industrial and product chain management (intensification of knowledge and information) are going ahead at an accelerated pace.

The increasing interest of industry in acquiring a 'licence to produce' in society is evident. The increasing influence of citizens and consumers is manifest, and is expressed not only in purchasing behaviour but also in consumer concerns about food safety, the

method of production, and technological progress. Around the agricultural sector we notice the great potential of the development of biotechnology. It is ripe for implementation, but increasingly runs up against questions from society that is concerned about its long-term effects. The other major technological development, that of information and communication technology (ICT), creates the possibility of transparency by tracing and tracking the technical history of the product. The liberalisation of markets and the globalisation of industry are mutually reinforcing driving forces, partly facilitated by the enormous development of ICT. This complex of factors also has consequences for organisation in the (inter)national product chains. Links with little or no added value will often lead to a shortening of the chain and a shift of control to the end of the chain. Ongoing specialisation and increase of scale per actor in the link make product chains looser and less exclusive, leading to the emergence of (inter)national product networks.

Globalisation and Liberalisation: Unlimited Prospects?

Globalisation is the most important trend in the world economy (Silvis, Van Rijswijk et al., 1999). It leads to an increasing interdependence of the economies of the individual countries. This process is encouraged by liberalisation in international economic policy, which will get a fresh impulse at the next round in the context of the World Trade Organisation (WTO). At the same time, regional trade blocs are growing in importance, like the EU in Europe, NAFTA in North America, MERCOSUR in South America, and ASEAN in South-East Asia. Within these blocs the liberalisation of trade goes much further than is possible on a world scale. These processes lead to a faster transfer of production to regions where the costs of production are the lowest.

According to the latest theories of trade, it is, however, not just a matter of the lowest cost price from the farm. International competition will be governed by four determinants (Hack et al., 1998):

- capacity to adjust to the market (product innovation and differentiation, services, quality and range of products);
- effectiveness of the supply chain (information, logistics, coordination);
- costs and efficiency (price and quality relation) and strategic potential (core competition, robustness, flexibility and strategy).

Liberalisation of agricultural trade has been a priority on the international agenda since the early 1980s and is promoted by the international food chains. Market access and (low) costs of production are the key issues.

Liberalisation of the world agricultural trade is strongly advocated by countries with a low-cost agriculture for the major bulk products, such as the Cairns group. Their focus is not only on greater access to foreign markets, but above all they are trying to stop the dumping of surpluses resulting from regional policy and thereby to prevent the disruption of the world market. Their 'Carthages' are the agricultural policy systems of the highly industrialised countries such as the EU, Japan and Norway, which have usually combined their policy on the functions agricultural production and rural development so far.

On basis of these opportunities in technology, production and trade, one may ask to what extent globalisation and liberalization do provide unlimited, unrestricted prospects? Apparently not. More and more (inter)national companies are urged to show not only their responsibilities to their own profit goal or to their shareholders, but to show that they have performed well to their physical and social environment as well.

This important aspect of rural development has not yet been included in the paradigms of globally operating food chains. The need for a licence to produce, however, is increasingly appearing on the agendas of the multinationals.

The principle of corporate social responsibility, the Triple P's (Profit, Planet, People) is therefore an arising target and can be given relevance in this way. Application of this principle by multinational corporations can underline their potential market strength in the promotion of sustainability. This concerns in particular the reduction of emissions of chemicals, the improvement of animal welfare, and – last but not least – the

improvement of the social conditions of those who work in agriculture. The consumer may urge for these developments by requiring for these aspects controlled and labeled products. This is already a matter of fact for British supermarket chains importing flowers from Kenya and Tanzania.

THE CONCEPT OF CORPORATE SOCIAL RESPONSIBILITY

Towards a Dynamic Balance

At the beginning of the 21st century the prospects for the agricultural sector lie in the achievement of a sustainable, socially and technologically based and dynamic balance between economy and ecology (Fig. 1). It is a matter of harmony and balance. Technological progress itself, and the extent and form in which it is embodied in social norms and values, in other words, is socially accepted, are important driving factors in the dynamic balance. It is because of this strong interaction that we distinguish a third angular point in the concept of corporate social responsibility: next to economy and ecology, also norms and values from society and technology. The basis for this balance is derived from our norms and values on technology and in society.

Balance means that there are no fixed scientifically defined norms and values, but that they are laid down in interaction between all of those involved, and (can therefore) change in the course of time. It is therefore a dynamic balance, determined by our attitude and behaviour. Technological progress is particularly relevant for both economic and ecological development.

A balanced and harmonious combination of economy and ecology can be seen as one of the main objectives of the post-industrial eco-society. The achievement of a sustainable development has been a central objective of many reports and memoranda since the famous Brundtland Report *Our Common Future*. It is evident that the orientation towards balanced sustainability in the economy and in ecology calls for a process of transformation of the structures and methods of production that is so far-reaching that much steering (incentives and communication) and regulating (norms, limits, compulsion) are required. The dynamics arising from changes in the three main factors – economy, ecology, and norms and values – leads to an evolutionary process of continuing adjustments in the horticultural sector. Environment and space are important elements for determining that balance in this evolutionary perspective. In particular for horticulture it are really though physical barriers, since horticulture is usually situated close to or even in urban concentrations.

Environment: Investment of Effort and Harmonisation, a Systems Approach

It is clear that the(inter-)national resolutions on environment are becoming more ambitious and more challenging, but in many cases they are not yet taken further in a sufficiently concrete way. The direct link between goals and measurements at different system levels (world, nation firm) often fails. One reason for this is probably that the desired reduction in the depletion of scarce raw materials and resources calls for breakthrough technologies, as well as the application of an integrated systems approach to ecology and economy and a call for system innovations to bring about a dynamic balance between economy, ecology and norms and values from technology and society.

Space: Crowding on the Balance Beam

It is clear as well that the wishes regarding the future of the countryside and the process of agricultural production are riddled with contradictions. What one actor wants is at the expense of the space – often literally – of the other. The changing role of consumers, or more generally citizens, calls for a different policy that is more in line with what people want. The (national) government is therefore reflecting on its core tasks, or to put it in positive terms: is considering what can be left up to other levels of government, citizens and the market. This leads to a search for new roles, tasks and responsibilities. The advantages of leaving more up to the market can be summarised in two points (Van

der Hamsvoort et al., 1999): better attunement to demand; it is assumed that guidance by the market usually pays more heed to what consumers want; less claims on the government budget; this makes it possible for society to divert government money to other important matters.

As a result, the sector will be seen by society (again, or even more) as the provider, the retailer of the countryside that is so important for the city dweller (fellow citizen), and thus as a natural partner for the maintenance and development of mutual vitality – in short, for a dynamic, organic whole.

We have to tackle the divergent forces and to design converging concepts.

Divergent Forces: Diversity among Producers and Consumers

To what extent can the tension between economy and ecology be found in practice, how can a balance be achieved there, and does it call for new concepts and paradigms?

The Economy found for a long time in the Technological development its most important partner; inside and outside agriculture (Fig. 3). In the agricultural sector – especially in the primary sector – the fast technological developments provided enormous improvements in labour productivity. It is the domain of profit by adding value and it provides the opportunity to the producers to achieve his goals and desires.

By using more natural resources for production, the scarcity became evident. We started to re – value the natural resources. At first, the Ecology found its natural partner in another perception of Nature, in the social norms and values for preservation of the exhaustion of natural resources.

This is the domain of the Planet (Mother Earth) where the demands and desires of society have to be met.

It is, however, no longer a matter of opposition, but of a balanced cooperation between Economy and Ecology. Here are the questions and issues, while Technology seems to be the anti pole, a threat to Ecology and the perception of nature and social norms and values seem to be in contrast with the strive for profit by the producer.

It is interesting to notice that threats may be chances as well.

The pattern, as shown nowadays by producers and consumers, can be fit into the quadrant Economy and Ecology (Fig. 2).

At the vertical axis the productchain and at the horizontal axis the natural resources can be characterized by contrasting keywords:

Production column	-	rural area
International	-	regional
Brands / convenience	-	multifunctional
Market	-	space
Profit	-	balance

Annex production chains can be developed, which are oriented at different types of consumers and which are served by different types of agricultural entrepreneurs.

In our presentation the pure agricultural entrepreneur tries to earn his income completely out of his agricultural operation and production, while the rural entrepreneur earns his income out of different multifunctional sources. Intermediate types in person and over time are shown by producers and consumers. The rational and cooperative consumer types take in the Netherlands about 70% of the total.

In connection to the diversity of producers and consumers one can ask questions about the internal dynamics of this system and about the reaction of the agricultural sector. The answer is in the total picture (Fig. 3).

In the center is the human being (People). The sustainable satisfaction of his / her demands and desires is the aim. An aim which can be in tension to the strive for profit by the producer, when he does not use the planet (our natural resources) in the proper way. It is therefore to achieve these 3 P's into a balance.

In this way the corporate social responsibility may be achieved / realized. In this way the horti-/agricultural sector may obtain its license to produce.

How can the potential threats between profit, planet and people be bridged? What about the tension between Economy and Ecology, between Technology and Norms and Values? Is there a converging concept?

The challenge is to combine the apparent contradictions in a coherent framework.

The vertical axis in Figure 4 is the integration of technological and social development (what is technically feasible and socially desirable) and indicates the embedding of this socially accepted technology in the norms and values. It is therefore important to take these aspects into account and to make the apparent contradictions transparent: instead of opposite poles, they must come to form dimensions of one of the same production possibility surface. This is also reflected in the forming of new paradigm, by which agriculture and horticulture are transformed from a function of technology and economy alone to a function in which ecology and society are also involved, in order to obtain a licence to produce. On each of the three dimensions (economy, ecology and the integrated norms and values in society and technology) additional value has to be realized by the operations in a company or chain. The bigger the distance of the three dimensional production-possibility surface to the origin and the more balanced over the three dimensions, the higher is the additional value or the result in terms of corporate social responsibility. It deals with the contribution to social welfare on the longer term. It provides in principle the decision-making framework for corporate social responsibility. To operationalize, as is stated before, it needs still a lot of additional research to formulate the units of measurements, other new concepts and paradigms for analyzing and decision-making.

This framework for corporate social responsibility is not only relevant for producers but also for the other actors in the horticultural arena like Ministries, Growers organizations and NGO's and Public pressure groups. All their thoughts, concepts and actions do have impact on this three dimensional framework. Also for agricultural research it provides an important challenge since new concepts, paradigms and institutions have to be developed. In Economics a lot is known about optimization, in Ecology most is known about sustainability and we are working on the impact of norms and values in society and technology as well. But less theory is available for operating norms and values in practice, not to speak about the impact of the dynamics in the interaction between the dimensions Ecology, Economy and Norms and values. We need assistance and cooperation by other social sciences like Philosophy, Ethics, Sociology and Communication. It is to understand the dialogue between the representatives of all three axes. For instance in the strategic planning of companies and the design for the agricultural sector itself. And is already reflected in some international quality standard systems. In the case of floriculture, for example, MPS is such a standard system developed by the Floriculture Environment Project in the Netherlands. It is used now in more than 20 countries and may develop as the global standard. In the certification process a grower has to show not only the economic and ecological attributes, but also the social situation in his company. This type of approach is important also for the capacity building in developing countries. An other example is the Sustainability Checklist (Kramer, LEI, 2002 under development) for the evaluation of project proposals for Sustainable Agro Food Chains in the Netherlands.

FROM CONCEPTS TO PRACTICE

Attention was drawn at the beginning of this paper to a systems approach, that is, an approach in which the total business – or rather the chain – is considered. This is a particularly effective approach as far as the environment is concerned. The focus of social and political debate so far has been mainly on the processes and emissions of primary agriculture and horticulture. However, the environmental claims and pressures of the other links in the product chain are also being increasingly involved because of the many advantages to be gained from a proper harmonisation between the links. Thanks to the

mutual harmonisation of the whole trajectory from supply to processing, intermediaries like trade and transport can arrive at major improvements by means of a good systems approach and ecological modernisation. It provides the tools for a complete transparency in the total chain.

Ministries and Farmers organizations in countries like The Netherlands have also indicated the concept of 'social entrepreneurship' as the most important guideline for development. The actual elaboration of such proposed policy within the system level of the individual company is, as now appears, a good deal harder to handle. The translation of policy taking into account the dynamics in development of societal norms and values to the individual actor level into tactics and operations in the company, at whatever point in the chain, entails a lot of questions. Besides physical matters (such as the coping with the limitations on the arsenal of pesticides and insecticides), the question of costs and returns is manifest. The development of the market and the consumers also plays a role in this, with the uncertainty as to whether the actual purchasing behaviour follows the attitude towards the organisation of the process of production.

As a result of all this, uncertainty in running a business increases because less preventive measures can be taken, and the need for transparency of the process of production throughout the chain increases. The precision of the company operations in the application of resources (precision agriculture), the increased uncertainty in the process of production, the tighter relation with the rest of the chain, and the decreasing market protection by the government impose high demands on the management of firms and companies. In every link, and not least in the primary sector, there will be a growing need for new concepts and paradigms to quantify strategy, tactics and operations. This leads at a fast rate to a higher level of information and knowledge on the part of the management, and therefore calls for putting management of the company and the product chain on a more scientific footing.

The framework of corporate social responsible activity will prove to determine the parameters for the operations in the agricultural sector, just as for the other branches of industry, in the near future. This framework may be suitable as well for the development and organization of agricultural science and technology. Each dimension of the framework represents a number of disciplines. The development in the disciplines is very important to tackle aspects of the problems in the real world.

The multidisciplinary of these problems, however, is a fact as well and concerns all three dimensions and the new developed production-possibility surface of the framework. the concept of and to be developed paradigms representing the framework may serve as a tool for guidance in organizing and developing agricultural science and technology in future.

Very important in this respect is the design of a framework that combines the development of agricultural production and consumption in relation to the use of natural resources with the development and interaction of social and technical agricultural sciences. The figure represents agricultural production as one of the functions (besides housing, recreation etc) that competes for the use of natural resources.

In Figure 5 the curving arrow illustrates the development of agricultural activities over time as it runs through the four quadrants:

1. Downside left: At first the main goal of agriculture is to provide in food. There are no restrictions yet in the use of natural resources like space, soil, water and air. The increase of productivity in agriculture depends on the development of technical sciences. Social agreement is complete for the issue as well as for the direction to solve it. This quadrant shows the mutual interference of agricultural and general technical sciences ($\beta - \beta$ relationship).
2. Downside right: Food production increases through intensification and technical progress. Unavoidable is the growing use of natural resources like space etc. Meeting the need for food shows rather soon the deterioration of biodiversity and the competition for space. Additional technical progress urges for new social agreement. Contributions for solutions are provided by the social sciences ($\beta - \gamma$ relationship).

3. Upside right: the more the technical opportunities grow the more a variation in products and services may be provided by the agricultural sector. The issue is not only increase of productivity or control of costs but of product differentiation as well. Now complex decision issues arise to meet the needs of a critical consumer society. Provision of more food has to be balanced with use of more natural resources. Direction and control of agricultural production and use of rural areas are at stake. Choices and decisions have to be made. This quadrant represents the typical domain of the social sciences in agriculture and in general ($\gamma - \beta$ relationship).
4. Upside left: The ultimate challenge is to arrive in this quadrant that shows an increase in availability of natural resources combined with an at least constant level of agricultural production. This situation reflects a demand driven agriculture that meets the needs and wishes of critical consumers and citizens and arrives at a sustainable position and development. To translate the wishes of society into a further development in agriculture the social sciences ask questions for research to the technical sciences ($\gamma - \beta$ relationship).

The big challenge for countries like The Netherlands is to arrive with its very intensive agriculture in a dynamic balance that is required by the corporate social responsibility. Other countries still have the priority to meet the minimum of food requirements. The real situation and development of an agricultural sector depends on a number of system determinants like wealth, culture, administration and political systems, institutions, norms and values. Figure 5 provides therefore a general concept with room for regional specifications of the total system.

The dynamics in agricultural development ask for different roles of technical and social sciences. Both types of sciences have their own development and momentum. The more advanced the developments in agricultural production the more they need a mutual interaction of social and technical sciences. Also within social sciences there is an urge for intensive mutual cooperation between economists and other social scientists. Economists are interested in results of developments and processes, but not that much in the process itself, while the process is the study object of most of the other social sciences. To provide in the essential knowledge for the development of the concept and new paradigms for corporate social responsibility we need the cooperation of technicians, economists, but also representatives of communication sciences, ethics and philosophy, sociology and anthropology as well. This mixture of disciplines should be represented in each future oriented design for the organisation of agricultural science and technology and is therefore important for the ISHS as well. Social sciences will get a more important part in the agenda of future ISHS work and IHC congresses.

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Figures

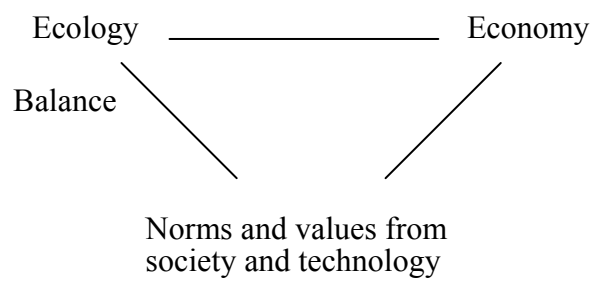


Fig. 1. Dynamic balance.

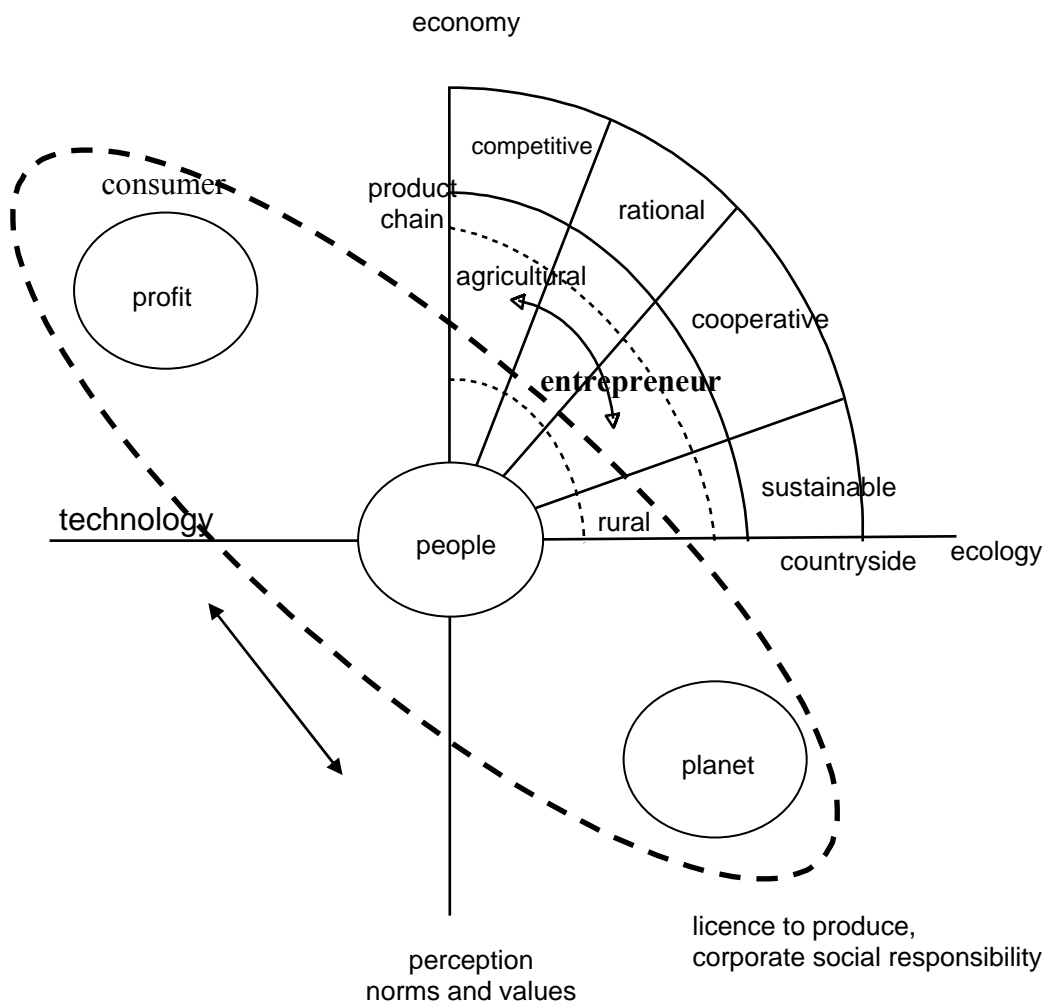


Fig. 2. An integral approach to 3 P's concept.

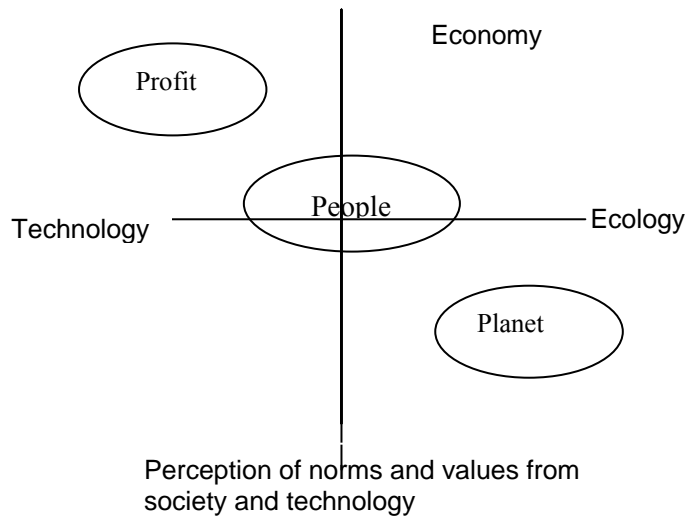


Fig. 3. Dimensions of company management.

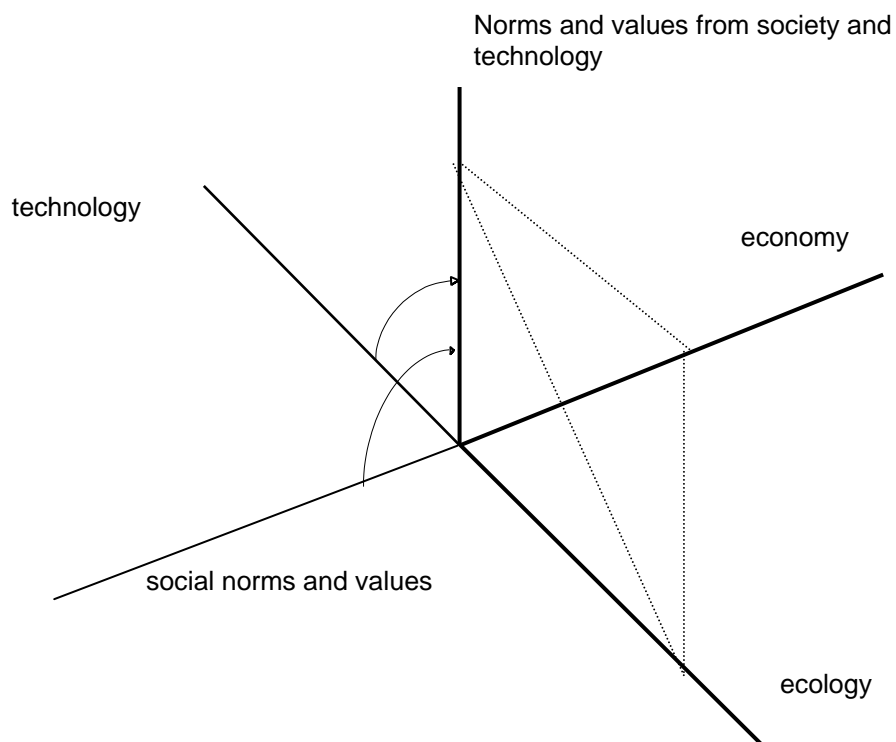


Fig. 4. Three-dimensional space of production: a new framework for corporate social responsibility.

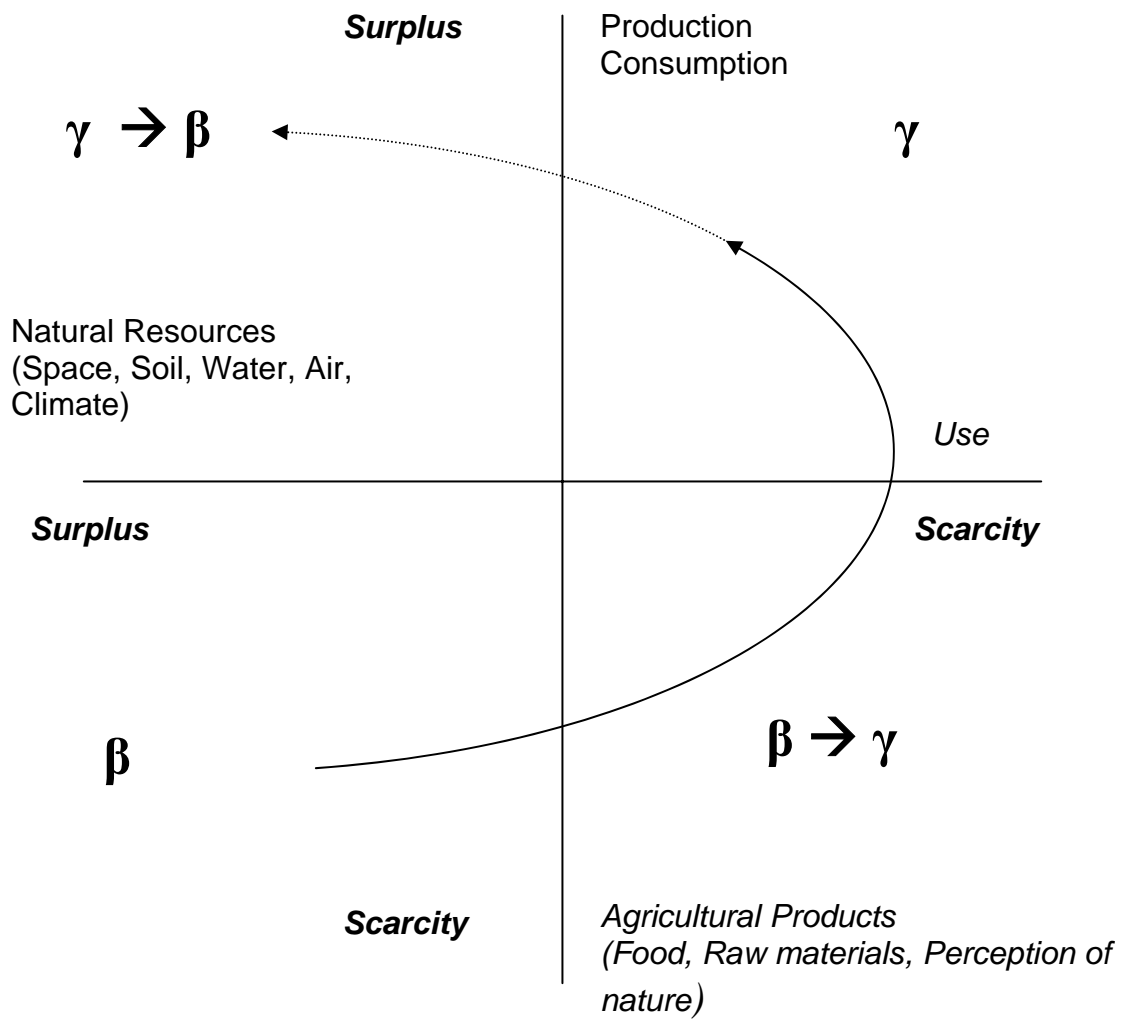


Fig. 5. Development of agriculture over time in relation to the development of technical (β) and social (γ) sciences.