

# **Innovation and sustainability: create the innovative organisation**

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## **Abstract**

This paper describes the ecological concept of strategic fit in order to enhance sustainable and innovative organisations. The Ecological System Model integrates concepts of ecology and evolutionary economic theory by comparing organisations and ecosystems at a consistent system level. It introduces a taxonomy of organisations from tundra to tropical rainforest and aligns ‘open innovation’ with the participative concept of people-market-combinations. It wants to contribute to the development of theory and practice of social innovation (creating new richer relations between people and environment) in such a way, that it enhances (business models for) productivity as well as other values.

**Keywords: innovation, sustainability, organisation, ecosystem, participation**

## **1. Introduction**

In this chapter, we describe the types of innovation and the practical relevancy of adding social and sustainability components to innovation. This includes the definition of social innovation, the historical path that led to social innovation and sustainability, the distinctive definitions of sustainability and the aim and main research question of this study.

### ***1.1. Adding a social component to innovation***

From the early nineties on, innovation has been an increasing topic on the agenda of European companies. During the Lisbon conference in 2000, governmental leaders agreed upon making

Europe the most dynamic and competing knowledge economy in the world. However, progress is rather disappointing. There is a lot of technological innovation and knowledge development, but the application in companies and institutions can be improved strongly. This is called the ‘innovation paradox’: the chasm between inventions and utilisation (Leijnse 2006). People or social factors and organisational factors explain this malfunction for 75% (Volberda 2004a).

In literature, social factors seldom are the starting point for innovation. Jacobs (2007) distinguishes the following most common kinds of innovation:

- Product innovation: the renewal of products, concepts or services. Very often, these new products and concepts are developed in R&D-like settings.
- Process innovation: a new way of managing for enhancing productivity or quality. Examples are Socio-Technical System Design, re-engineering, innovation in chains and networks. The latter caused the term ‘open innovation’, where several companies innovate together. As a result of their joint innovation, chains or networks create at the same moment new markets.
- Transaction innovation: a marketing innovation, to be seen in a new way by the market and have new overviews or ways of organising the market. The warehouse in the 19<sup>th</sup> century, the supermarket in the sixties and nowadays selling on Internet or lease constructs are examples of market innovations.
- New business models: the whole organisation and the way it generates revenues changes, for example Ikea.
- System innovations: major transitions where several groups of stakeholders take part of; for example the financing of national healthcare systems.

- New social-economic paradigms: industrial revolutions, a radical shift in leading thoughts about social-economic issues. Micro-credit and the concept of ‘serving the bottom of the pyramid’ (Prahalad 2006) are examples of paradigm shifts<sup>1</sup>.

Most times, social innovation is seen as a form of process innovation. Social innovation<sup>2</sup> refers to renewal of the shop floor, but it has a broader scope than workplace innovation. It references the renewal of the workplace and, its processes and way of organising. It is remarkable that in the above listed kinds of innovation, the human factor is not even explicitly mentioned.

As a result of the governmental Dutch Innovation Platform, the Dutch Centre for Social Innovation (NCSI) wants to enhance the pleasure in work and the productivity in our country. Besides technological innovation, NCSI asks more attention to ‘administrative innovation’ (Daft 1978). Management, organisation and labour are necessary determinants for the absorption of knowledge and the application of innovation in practice (Cohen 1990; Wijffels 2004). New forms of activating personnel are particularly aimed for higher productivity (Leede 2002; Jongkind 2003) or for employees who want to, and are able to, use their talents (Vaas 2001). NCSI defines social innovation as: ‘the development of new management skills (dynamic management), modernisation of the work organisation (flexible organisation principles) and full exploitation of competencies in high-quality work processes (work smarter), aimed at the improvement of the organisations’ performance and development of talents’.

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<sup>1</sup> The term paradigm here is not exclusive for scientific revolutions as in Kuhn, T. S. (1962, 1970). The Structure of Scientific Revolutions. Chicago, Chicago University Press.

<sup>2</sup> Not to be confused with the American term social innovation, where it has a more societal meaning.

Rightfully, Looise asks for more attention to the role of people in the debate on social innovation (Leede and Looise 2005). Is this increasing attention to people just because of the changing needs of professionals and knowledge workers or is there more at stake? In Finland, for instance, social innovation at the workplace is aligned with social justice and the welfare state (Castells 2002).

This study takes into account that innovation needs absorption of knowledge by people, knowledge needs good human talent and human talent deals with values and meaning of work. When you put people at the heart of corporate purpose (Gratton 2000), the relations and the meaning of work in a broad sense are an issue. Not by coincidence, relations in different environments are the core of ecosystem theory. Based on the ecological system model, elaborated later on in this article, we come to the following definition of social innovation (Crielaard 2007):

***Social innovation is creating new, richer relations and environments in the work situation.***

Like ecosystems, organisations arise as an outcome of all the relations and processes in a certain environment. Ecosystems adapt continuously and at the same time they develop themselves, which is a form of autopoiesis (Varela, Maturana et al. 1974). In that way, ecosystems are organisations that have been proven to be sustainable. So, sustainable innovation has a double meaning: first, social innovation lasts long and is incorporated in the organisation; second, social innovation develops sustainable values in the organisation. Social innovation not only deals with workplace innovation, but what matters is letting people and environments show up well. Historical developments subscribe the increasing importance of human values and show the way to this missing component.

## ***1.2. Development of organisations, environment and social innovation***

In this paragraph, we describe the developments on the market and the adaptations of organisations since the fifties. We base ourselves on the study of Bolwijn and Kumpe, which is extrapolated and elaborated with more aspects (Bolwijn and Kumpe 1989; Bolwijn and Kumpe 1998; Crielaard 2006b).

In the time of reconstruction after crisis and World War II, there was a shortage of almost all products. Hallmark of this time was an increasing industrialisation as an answer to scarcity: large-scale production of standardised goods. It was a sellers market: everything that was made was sold. The organisation of work was according to scientific management (Taylor 1911), characterised in a magnificent way by the conveyor belt in the film 'Modern Times' (Chaplin 1936). Employment rate and prosperity increase fast, but the character of work changes, with effects for the human effort. Charley Chaplin undermines the process, uses machines for his own advantage and shows alienating behaviour.

In the sixties, industrialisation carries on and world trade and low wages countries enter the market. This implies the first demand in the market place: price. Until the sixties marketing merely was the same as demography. From the sixties on the four P's of the marketing mix arose (McCarthy 1960; Borden 1964). Price competition stresses the effort on efficiency and costs. Everything on the shop floor is oriented to routines, exploitation and mechanisation. There is no personnel policy, only personnel administration. From own experience, all the files of 3000 employees were stored in one three-drawer chest. Half of the personnel was born on January 1<sup>st</sup>.

At the end of the sixties, the criticism on society (Marcuse 1965) and the opposition to the cold war and hot wars (Vietnam) resounded in flower power and student revolts. The exclusive attention to welfare and materialism lead to resistance and the call for better instead of more. In the economic domain a second market requirement took shape: quality. And quality is made by human beings. The classical authoritative leadership got competition by a more democratic style of management. Personnel administration became personnel affairs and companies put more attention to task structuring, task-oriented courses, work evaluation and improvement programs. Socio-Technical principles (De Sitter 1981; 1985) designed workplaces and processes for a better quality of labour and sense making in the organisation (Weick 1995). Later on, this also worked out positively for costs and efficiency.

In the eighties, there were enough reasonable priced quality products and to make a difference product development speeds up. A huge increase of assortment gave the consumer choice. The market requirement was client-orientation, choice and speed. Organisations turn over into market oriented organisations: from central inside-out to decentralised short communication lines, from product offer to request based proposals and from staff steering to integral management. The client decides for which quality he pays. Diversification in product-market combinations, products and services, and management by objectives are the result of this market requirement. Organisations develop to independent business units, where logistics and automation are necessary for the desired speed and huge assortment. The flexible organisation is designed for speed (Volberda 1992). Personnel affairs became Personnel and Organisation with job rotation, development programs and a client oriented problem-solving attitude. Employees must be flexible and multi-skilled; objectives must be SMART and the world is considered to be achievable.

Besides education, also wealth increased during the decades. Diacritical capacity is the increase in services, co-operation in chains and markets and technological innovation. The market requirement in the nineties is characterised by uniqueness. Innovation speed is the answer of businesses (Bolwijn and Kumpe 1998). This requires open companies, creativity, entrepreneurship and joint ventures in chains and networks, the so called 'open innovation'. The work is done in projects and teams, where people must have good competencies to operate independently. P&O became HRM. Is Human Resource Management a policy to develop talents and competencies or is it managing resources? Does innovation speed require top-down management or preferably less hierarchy?

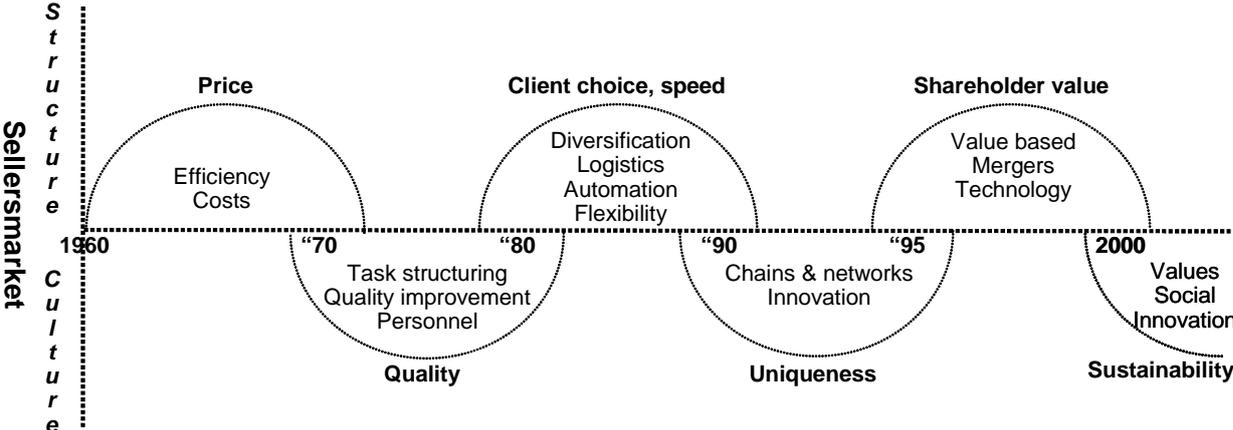
Halfway the nineties, stock market and Anglo-Saxon management became important. Nowadays 80% of the companies in Europe are governed by shareholder value. The topic of the market looks like the first market requirement 'price', but now it pays return for the shareholder. Investments in large-scale information systems like ERP must realise control for sake of delivering the promised quality and business results. Free cash flow is the measure for entrepreneurial capacity (Copeland 1990). Stock option plans are the reward for managers who realise increase in stock value (instead of running the business); a modern version of 'Modern Times'. The heavy pressure on added shareholder value causes excesses in scandals (Ahold, Enron) and top salaries. Sarbanes-Oxley and in the Netherlands the code Tabaksblat seem more to protect the shareholder, and managerial control and to compare, raise and rank individual top salaries than to fight incorrectness or to improve corporate governance.

At the start of this century, the foregoing developments lead to more interest in sustainability and corporate social responsibility (CSR). From shareholder value to stakeholder value, but how serious is it? 'When corporations control their communication and reputation it will be

the end of Corporate Social Responsibility’ (Kolk 2003). Are sustainability and CSR only political messages or is it the start for a new generation management systems? For a permanent role of CSR, it must fit in the logic of organisations and management. But management systems are directed to control and the neo-classic economical practice, with an increasing shift towards short-term focus. This seems to be on bad terms with sustainability, which is per definition long term oriented. Boards often do not recognise what sustainability is and how to shape CSR in their companies. ‘It requires a systematically rethinking what industry is, how it works, how to manage and how it fits into our world’ (Elkington 2001).

From this sketch of a historical path we may deduce that only adding a social component to innovation is insufficient. Service, knowledge and human beings are becoming increasingly important and are firmly embedded in the market development. We still organise in an industrial way, but people and their relations become the primary process of organisations.

Figure 1: A summary of how organisations adapt and fit to developments in the market place,



Elaborated from (Bolwijn and Kumpe 1989):

As a matter of fact, those developments are in line with well-known strategic choices, respectively: cost-leadership, product-leadership (or the combination of both: operational

excellence), client intimacy, innovation (Treacy and Wiersema 1995), value based management and CSR.

### ***1.3. Sustainability***

Sustainability is rather a peculiar word. It has to do with the future, but you only can say something about the past. Every management action is in fact an experiment: 'results from the past will not give any guarantee for ...'. Pezzey points to the many interpretations of the term: 'I see little point in expanding the collection of fifty sustainability definitions, which I made in 1989, to the five thousand definitions that one could readily find today ..' (Pezzey 1992). Definitions can be categorised in the following groups (Bergh and Hofkes 1998):

- Non-decreasing welfare. Future generations must have the same amount to spend. '*Discounted utilitarianism*' puts attention to efficiency and prevention of waste of resources. The problem is that long-term effects like nuclear waste or climate change cannot be measured. A solution is found with '*intergenerational equity*' where there is a more ethical point of view to take care that future generations have the same amount of well-being. The criterion is that every temporary decrease is a sign for unsustainability. Mainstream in economic literature is the Brundtland definition (Brundtland 1987): 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.
- Conservation of capital. '*Weak sustainability*' counts the collective value of natural capital and produced capital. Nature can be substituted by economic values. What is important is the conservation of options and the competence to develop (Hartwick 1977; Solow 1986). '*Strong sustainability*' proposes a minimum level of natural resources and environmental quality. Nature cannot be substituted and must be conserved; in an ascending empowerment: conservation of resources, conservation of critical functions (ozon layer), deep ecology, the conservation of all the components of nature in the most optimal shape.

In practice, strong sustainability means: protection of species, environmental restrictions and renewal of natural resources.

- Stability of systems. Based on the 2<sup>nd</sup> law of thermodynamics Daly (1977, 1991) propagates a '*steady state economy*', where materials and energy are on a balance sheet and have a constant level or are recyclable. A second point of view is the '*Holling sustainability*': the resilience of the system and the capacity to cope with stress and perturbations without a change in structure or functions. This deals with cyclic processes, multi-state equilibriums, diversity and uncertainty (Gunderson and Holling 2002).

In this study, we link in three ways of dealing with sustainability: First, the definition of Gro Harlem Brundtland of which the Global Reporting Initiative made a practical translation with guidelines on people, planet and profit. Second, strong sustainability has impact on the values of management and the protection of people, relations and environment; it is about the value of human values. Finally yet importantly, we share the Holling-sustainability: ecosystems as examples of proven sustainable patterns for organisations. So, in this study, sustainability has three layers which are mutual connected: 1. sustainability at the level of the impact of actions; 2. sustainability at the level of values and patterns of behaviour; 3. sustainability at the level of generative system structures.<sup>3</sup>

#### ***1.4.Motive, aim and research question***

This is a study on the possible enrichment of applied business science and evolutionary economic theory with ecological concepts. More often, the question of what we can learn from nature has been put forward. As a biologist, interim manager and entrepreneur, I look at organisations as ecosystems. Ecology deals with the relations between living organisms and

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<sup>3</sup> These are the same levels as in the learning organisation Senge, P. M. (1990). The Fifth Discipline: The Art & Practice of The Learning Organization. New York, Doubleday.

their environment. In this study, we do not look at the legal aspect, but we consider organisations as ecosystems. This study focuses on the ecological concept of strategic fit in order to enhance sustainable and innovative organisations. The question is how to shape sustainable, innovative and more human organisations. There is a need for a new generation business models which incorporate values as much as money. If people and their relations<sup>4</sup> are more and more the primary process, then ‘It requires a systematically rethinking what industry is, how it works, how to manage and how it fits into our world’ (Elkington 2001).

The aim of this study is to contribute to the development of theory and practice of social innovation (creating new richer relations between people and environment) in such a way that besides productivity also other values are embedded in the business model. Other values can be for example: sustainability, diversity, social justice, personal development, meaning development...

The research supposes that social innovation will not work in the same way in all types of organisations. Conditions and differences in types of organisations have to be taken into account. The central research question of this study is:

*‘How can social innovation create business models to enhance productivity as well as other values for the distinctive types of organisations?’*

Based on evolutionary economy and ecosystem theory, we research the impact of different types of organisations and management approaches on people, planet, profit and organisation development.

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<sup>4</sup> This reflects the definition of ecology: the relations between organisms and their environment.

## 2. Theory: economy and ecology

In this chapter, we describe the theoretical background and theoretical relevancy of this study.

### *2.1. System level*

A literature survey gives us several schools and concepts about the analogy between evolution or ecology and economy. Every school has its own focus and domain of research. Before we can discuss this, we need a framework for analysis. The point is that metaphors (Morgan 1986) mingle the different system levels. Sometimes an organisation is compared with an immune system and a few pages later an organisation equals gaia, mother earth (Geus 1997). A metaphor is only valid for the one aspect it is meant for. Is the comparison valid for more aspects, than we speak of an analogy. If we want to compare all the components and the way they function in ecology and economy (isomorphism), then it is necessary to compare the right system levels.

An organisation is not an organism<sup>5</sup>. For a more precise comparison, the following scheme can help. The first column describes the elements of a social system: living, non-living and functional relations (see definition of ecology). The upper half of the figure is the ecological part; the lower part deals with economy. The other columns are system levels. The only real entities are the ones at both ends of the scale: individual and earth. The other columns are artificial constructs<sup>6</sup>. In further analysis and construction of the conceptual model we distinguish these system levels consistently: Micro (individual), meso (social), meso-macro (societal or network level) and macro (climate zone with determining conditions).

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<sup>5</sup> Unless it is only used as a metaphor or you are follower of vitalism, a philosophy that the function of living entities is due to the same vital non-physical sparks. However, according to the general system theory there are several principles and mechanisms valid for all system levels. Bertalanffy, L. v. (1968). General System Theory: Foundations, Development, Applications. New York, George Braziller.

<sup>6</sup> Moreover, this Kant-Wittgenstein like issue gives an unexpected perspective on value creation and sustainability. If organisations are juridical constructs and people and the earth are real, for what do we work?

System level Perspective	<b>Individual</b>	<b>Species</b>	<b>Social</b>	<b>Societal</b>	<b>Zone</b>	<b>Earth</b>
<b>Biotic</b> Living environment	<b>Organism</b> <i>individual entity</i>	Population <i>individuals of the same species</i>	Community <i>number of populations</i>	Biome <i>major portion of living environm.</i>	Realm <i>floristic and zoölogical zone</i>	Life on earth <i>Total gene pool</i>
<b>A-biotic</b> Spatial scale	Site <i>particular place</i>	Habitat <i>typical place</i>	Biotope <i>local area uniform soil, alti</i>	Bioregion <i>territory of bio, soc.&amp;geograph.</i>	Climate zone <i>broad band same conditions</i>	<b>Earth</b> <i>blue pearl</i>
<b>Function</b> Role	Being <i>individual identity</i>	Niche <i>typical place and role</i>	Ecosystem <i>interacting as a unit</i>	Ecosystem network <i>interconnected related ecosystems</i>	Conditions <i>tolerance boundaries</i>	Biosphere <i>preconditions for life</i>
<b>Biotic</b> Living environment	<b>Co-worker</b> <i>individual entity</i>	Character <i>individuals with same qualities</i>	Workforce/team <i>Personnel CoPs,</i>	Networks <i>people (species) in the market</i>	Econ.Community <i>people entry to markets</i>	People on earth <i>Mankind</i>
<b>A-biotic</b> Spatial scale	Workplace <i>particular place</i>	Field of work <i>typical place</i>	B.U./department <i>local plant(s) internal environm</i>	(Regional) market <i>where resources are generated</i>	Economic zone <i>trade block level of treaties</i>	<b>World</b> <i>blue pearl</i>
<b>Function</b> Role	Work <i>individual identity</i>	Job <i>typical place and role</i>	Organisation <i>independent operating unit</i>	Industry <i>Business Domain typical market</i>	Conjuncture <i>technology boundaries</i>	World economy <i>preconditions for life</i>
<b>System levels compared</b>						

Figure 2: System levels compared

In this scheme, the organisation is an independent operating unit and can be compared to an ecosystem.

## ***2.2. Neoclassical versus evolutionary economy, theory of the firm versus resource based view and Taylorism versus participative democracy***

For our research there are some relevant opposite theories. On a macro level neoclassical economics (Smith, Keynes, Solow) is a mechanistic approach for lifeless processes, elaborating economy as a mathematic science, like Newton did in physics. They even talk about ‘labour force’. On the contrary, evolutionary economics takes living organisms and change as a starting point, as Darwin did in biology. Some of the contrasts are: People act independent with rational choice on the basis of a transparent market vs ‘bounded rationality’

(Simon 1957); Subjective preferences vs intrinsic values of goods; Dividing scarcity and substitution of goods vs ‘creative destruction’ and innovation (Schumpeter 1934); Maximising utility and profit vs creating new niches and places to live.

On a meso-macro level, profit maximisation lies behind the ‘theory of the firm’ (Coase 1937) and the transaction cost theory (Williamson 1979). Competition, competitors and the market as determining factor are the mechanisms (Porter 1985). In contrast, the resource based view (Wernerfelt 1984) uses the firm’s resources and competencies to create advantage (Barney 1991; Hamel and Prahalad 1994). Dynamic capabilities certify how resources are used (Teece, Pisano et al. 1997; Eisenhardt and Martin 2000); Competencies, routines, tacit knowledge and historical path are important factors.

Looking at meso level, both the Tayloristic as well as the participative democracy take co-operation as a starting point, but because of their different perspective in another way. Co-operation was a ‘mental revolution’ for both workers and owners in the words of Taylor (1912), where he forgot that the working class found this a dominating pronouncement. The second resolution was the substitution of subjectivity and opinions by scientific methods. This lead to a division of tasks, short cycled work, and a hierarchical structure with emphasis on control systems (Taylor 1911). Modern variants of this mass production design are ‘Lean production’, six sigma and strategic planning and control. A property of the modern forms is that people are involved with quality procedures, planning and policy, but in a hierarchical contest. People orientation as a purpose is not an issue; the leading mindset is Principal – agent, command – control and administration.

Opposite thoughts are found in participative democracy where stewardship, learning and processes in networks are leading. Socio-Technical system design (Trist, Higgin et al. 1963; Van Eijnatten 1993) handles principles like: self-managing groups, responsibility for the whole, a minimum of specification and minimum task division, redundancy of functions,

multiple broad skills. Control is in the design itself. Sometimes the system is an expert design (De Sitter 1981), sometimes even the design is participative (Gustavsen 1992; Emery and Emery 1993). Modern forms which are less internal and more output oriented are Business Process Reengineering (Hammer and Champy 1993) and the mini company concept (Suzaki 1993). BPR concentrates on the design of processes, the structure follows later as a result of the processes. Suzaki builds on 'Kaizen' (Imai 1986) and 'Theory of Constraints' (Goldratt and Cox 1984), both more Tayloristic, but he combines it with a strong focus on the client and empowerment of employees. He calls everyone a 'president of his own company', but he does not change real ownership. A mini-company is an element in a network of relations.

### ***2.3. More building blocks from evolutionary economics and ecology***

Founders of evolutionary economics were Veblen (1898) who took into account the variety of human behaviour and Schumpeter (1934; 1950) with the perpetually destroyed equilibrium by entrepreneurial innovations. Variety in circumstances and selections was added by Simon (1947; 1957; 1990) and replication was translated by Nelson & Winter (1982) in routines and looking behaviour for changes in technology. Several independent schools came forward.

One direction is the contingency approach (Galbraith 1932; Burns and Stalker 1961; Lawrence and Lorsch 1967; Mintzberg 1983; De Leeuw 1994) where the fit between environment and configuration, dynamism versus stability and flexibility versus coordination are issues. Always the task environment and strategic goals determine the internal structure.

The organisation ecologists make a parallel with the population ecology (Hannan and Freeman 1984; Witteloostijn 1998; Carrol and Hannan 2000) in studying populations of companies on industry level and macro level. They label a lot of ecological principles to industries like: routines, legitimacy, density dependency, path dependency, age, niche width

and resource partition. However, in ecology these concepts are valid for a species or a population of individuals. Industry is another system level.

Relatively new is the theory of complex adaptive systems (Gunderson and Holling 2002) with a connection to chaos theory and complexity theory. They focus on the development of systems as a whole in an adaptive cycle of birth, growth and maturation, death and destruction and renewal. 'Everything we learned in neoclassical economics is non-sense' says McKinsey board member Beinhocker (2006). Ecological concepts are: development stages, multi equilibriums, resilience, hysteresis, border effects, mosaic structure, cross-scale interactions and sustainability of systems.

Sustainability also is the theme of the industrial ecology (original: environmental economy). They focus on external side-effects of production (Daly 1977, 1991; Wubben 2000; Daily and Ellison 2002) and try to change production processes according to neoclassical economics. With a remarkable regularity striking publications appear: Revelle (1957) describes the greenhouse effect; Rachel Carson (1962) forecasts a 'Silent Spring' as a consequence of pesticides; the club of Rome publishes the 'Limits to Growth' (Meadows 1972); the World Committee on Environment and Development defines sustainable development (Brundtland 1987); the triple bottom line (people, planet, profit) as a measure for success (Elkington 1994); the Kyoto protocol in 1997; upcycling of materials for re-use from 'Cradle to Cradle' (McDonough and Braungart 2002) and in 2007 'An inconvenient truth' (Gore). More and more, the sustainability concepts become part of the fundamental processes of organisations.

Conclusion: Although the preceding paragraphs give a short overview (extensive survey article is in preparation), we may draw the conclusion that every school has its own focus and

system level. Mostly it is all directed to market, management, strategy, products, processes and technology; the human factor as the focal point of innovation is missing. Furthermore system levels are not compared consistently or at a correspondent level.

### **3. Concept of the Ecological System Model**

This study focuses on the ecological concept of strategic fit in order to enhance sustainable and innovative organisations. Therefore we need a conceptual model that integrates the foregoing chapters. The Ecological System Model, a model for sustainable patterns of organisation (Crielaard 2006a), meets with the foregoing theories and concepts, completed by the human factor (see figure 3).

#### ***3.1. Strategic fit***

Every strategic school deals with strategic fit in its own way (Wit and Meyer 1994; Mintzberg, Ahlstrand et al. 1998). The term ‘fit’ originates from evolution biology, where it is applied to species: fit is when species are adapted to the environment so that it survives. The definition is: ‘fitness of a species is the number of fertile offspring under given circumstances’. What matters are the properties of a species; what fits the environment in order to exist as a species?

Translated to meso level, the organisation and its environment, fit is related to a compilation of niches and conformed functionalities. What matters are the properties of the organisations’ components, is the criterion of being “well fitting” to the environment in order to survive. Fitness of an organisation is the fitness of its components replicating and renewing the organisation under given circumstances. Replication or renewal often is called self-generating systems or autopoiesis.

### 3.2. Components and typology

In the ESM macroclimate, factors are symbolised by the circle and the components of the system by the corners of the square. Every factor corresponds with foregoing theories.

Climate and meso environment have a strong emphasis in the contingency school, but differ in influence. Macro factors like conjuncture or legislation are conditions, determining the properties and tolerances an organism has to possess in order to stay alive. On a local level, the environment consists of local conditions and resources, like water, energy, light, and food. Resources are used for living, conditions set the tolerance limits (Townsend, Harper et al. 2000). In ecology the environment is characterised by exposition, dynamism and complexity; about the same notion is used in economy by Luo & Peng (1999) and Dess and Beard (1984).

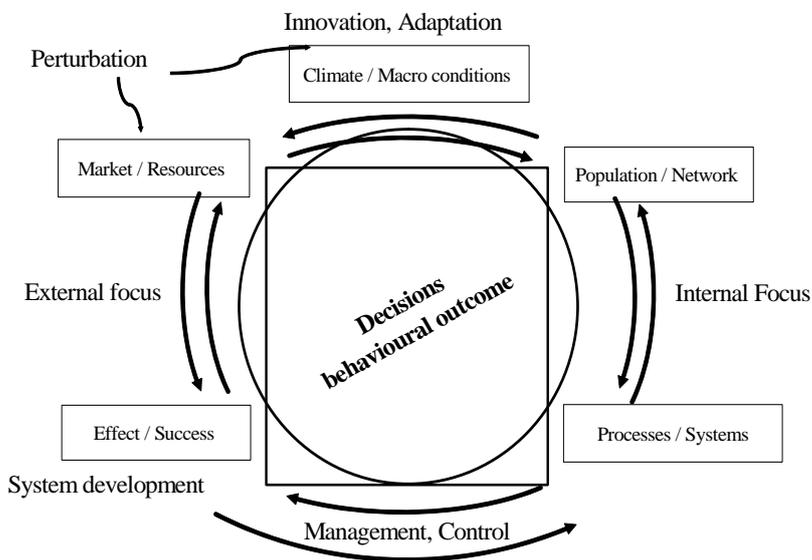


Figure 3: What is an organisation?

functionalities.

The human factor, the network or population, contains concepts like functionality, competences, role, and culture. It is based on participative democracy, psychological theories of competencies and values (Quinn, Faerman et al. 1990; Schwartz 1994; Cameron and Quinn 1999) and furthermore it is based on ecological theory about niches and

Processes and systems are found at the organisation ecologists and in the resource based view. Basic principle is efficiency multiplied by construction, or in economic terms exploitation and exploration (Volberda 2004a).

The effects of production processes are in industrial ecology measured by triple bottom line (GRI 2000, 2006). Moreover, value creation is broader than cash flow or financial measures and serves more 'owners' than shareholders. Success in nature is not only profit, but also replication. At ecosystem level, this is called succession: the development to a next stage. This system development corresponds the complex adaptive cycle. Distinctive types of organisations emerge, dependent on the environmental factors and the occurring capabilities.

A taxonomy of ecosystems starts with a classification in climate zones. Therefore, we classify the development stages of organisations in climate zones dependant on the conditions: from tundra to tropical rainforest. When the components of the system are tuned to the circumstances, the organisation has a strategic fit.

### **3.3. *Management approaches***

Classical managers structure an organisation anti clockwise: first the product market combination, then an organisation scheme, description of the processes, job descriptions and finally selection of employees for a job. Nature organises quite the other way round and starts with people-market-combinations: in a certain environment organisms live having mutual relations and processes. Effects are the outcome, which can result in succession. These sequences define two basic management approaches, which we call 'red' (anti clockwise) or 'green' (clockwise). Near and by this is in accordance with the discern between Taylorism and participative demography, or respectively power and trust (Verkerk 2004).

According to social system theory (Luhman 1984) communications tune a system together. Organisations have a typical kind of communication: decisions. And also the outcome of behaviour is decisions. Nature does not have a strategy, but decisions as an outcome of behaviour it has. Strategy often is explained backwards (Mintzberg and Waters 1985). This element is in the centre of the ESM and characterised by the management approach: Red or green.

**4. Research design**

**4.1. Research questions**

The aim of this study is to contribute from an Ecological System Model point of view to the development of theory and practice of social innovation (creating new richer relations between people and environment) in such a way that besides productivity also other values are embedded in the business model. Other values can be for example: sustainability, diversity, social justice, development, sense making ... The central research question is:

*‘How can the Ecological System Model shape social innovation in such a way, that it enhances (business models to) productivity as well as other values for the distinctive types of organisations?’*

We research the strategic fit of system components in distinctive configurations and the strategic fit or impact of different types of organisations and management approaches with people, planet, profit, and system development.

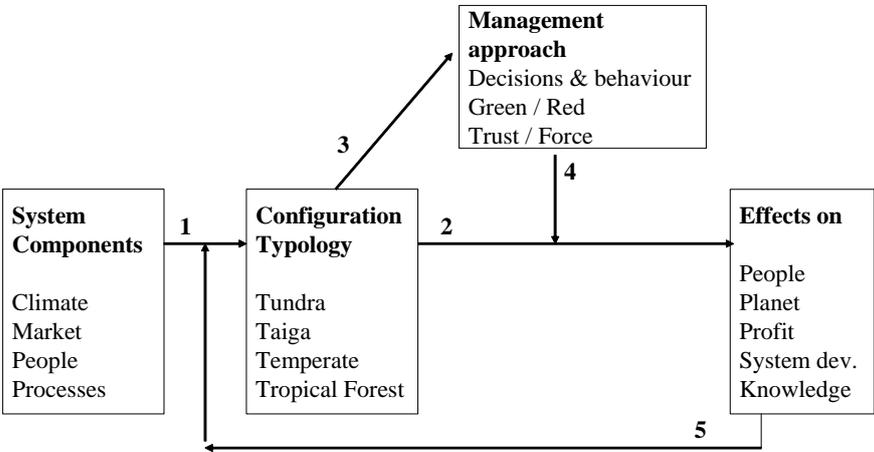


Figure 4: Research design

The central hypothesis is: *strategic fit = ecological fit*. The research is divided in several sub questions, which correspond with the numbers in figure 4.

The Ecological System Model requires to be elaborated into distinctive types of organisations and into a workable set of variables. Research questions on typology are:

1. *How can ecological concepts contribute to a taxonomy of organisations and strategic fit?*
  - 1.1. Which theories in use are applicable?
  - 1.2. What are the new supplementary principles from ecology?
  - 1.3. How can we operationalise the variables of the ESM?
  - 1.4. What types of organisations and management approaches can we discern?
  - 1.5. When is strategic fit the matter?

We can expect that distinctive types of organisations have different impacts on people, planet and profit. We may even find that system development into other types will be an outcome.

Research questions about the impact of distinctive types of organisations are:

2. *What do we expect about the relation between types of organisation and their effects?*
  - 2.1. How do distinctive types of organisations create (other) values?
  - 2.2. What are differences between types of organisation in effects on social innovation, sustainability or system development?
  - 2.3. To what degree do distinctive types of organisation achieve the different values?
  - 2.4. What is the causal mechanism beyond these differences?
  - 2.5. In what way does history of the organisation or size plays a role?

The Ecological System Model discerns two major management approaches. Research questions on these approaches are:

3. *What do we expect about the relation between types of organisation and management?*

3.1. What are differences between types of organisation in management approaches?

3.2. What is the causal mechanism beyond these differences?

3.3. In what way does history of the organisation or size plays a role?

Management approach will intermediate on the relation between types of organisation and their effects. Research questions about the effects of management approach are:

4. *How do the distinctive management approaches contribute to the strategic fit to other effects or values?*

4.1. How distinctive management approaches do influences strategic fit?

4.2. What are the differences between the distinctive management approaches in effects on social innovation, sustainability or system development?

4.3. To what degree do distinctive management approaches achieve different values?

4.4. What is the causal mechanism beyond these differences?

4.5. In what way does history of the organisation or size plays a role?

The Ecological System Model supposes that the effects will create new systems, a next or a former stage in system development. Research questions about system development are:

5. *Do the effects in the field of social innovation, sustainability and system development contribute to new markets and new resources?*

5.1. Do new markets and adaptation of the organisation come into being as a consequence of social innovation and sustainability (effects of people, planet, profit, and the system itself)?

All questions about history or size of the organisation will not be the focus of the research, but will act as control variables for a better understanding.

## ***4.2. Methodology***

The desired answers of this research are descriptive and comparative (1.1 – 1.4) or evaluative and explanatory (1.5 – 5.1). At the same time, cases will be researched longitudinal. Because of all those research functions a mixed method is required. A survey article will elaborate the Ecological System Model. A large-scale quantitative research will be the centre of the research web, from which contrast full cases will be chosen for case studies and interviews. Other cases are chosen on the request of clients. Together the cases will result in a multiple case research. Longitudinal research, on cases which we know well by participative research and an extensive amount of material will be done in a retrospective way combined with the next few years. The quantitative research is prepared and will be held spring 2008 in cooperation with some employers' federations, industry federations and unions. Simultaneously we gather qualitative remarks of the respondents as a result of the questionnaire.

On the conference on 28 – 30 May we hope to present you the first explorative numerical analysis results of this large-scale inventory. It will comprise quantitative results and a qualitative discussion on how social innovation can enhance a sustainable competitive advantage environment for an organisation.

## Literature

Barney, J. (1991). "Firm Resources and Sustained Competitive Advantage." Journal of Management **17**(1): 99-120.

Beinhocker, E. D. (2006). The Origin of Wealth: Evolution, Complexity, and the Radical Remaking of Economics. Boston, Harvard Business School Press.

Bergh, J. C. J. M. v. d. and M. W. Hofkes (1998). Theory and Implementation of Economic Models for Sustainable Development. Dordrecht, Boston, London, Kluwer Academic Publishers.

Bertalanffy, L. v. (1968). General System Theory: Foundations, Development, Applications. New York, George Braziller.

Bolwijn, P. T. and T. Kumpe (1989). "Wat komt na flexibiliteit? De industrie in de jaren negentig." M&O, Tijdschrift voor Management en Organisatie(43): 91-111.

Bolwijn, P. T. and T. Kumpe (1998). Marktgericht ondernemen, Management van continuïteit en vernieuwing. Den Haag, Van Gorcum.

Borden, N. H. (1964). "The concept of the Marketing Mix." Journal of Advertising Research(June).

Brundtland, G. H. (1987). *Our Common Future*. Oxford University Press, World Commission on Environment and Development.

Burns, T. and G. M. Stalker (1961). *The Management of Innovation*. Tavistock, London.

Cameron, K. S. and R. E. Quinn (1999). *Onderzoeken en Veranderen van organisatiecultuur*. Schoonhoven, Academic Service.

Carrol, G. R. and M. T. Hannan (2000). *The Demography of Corporations and Industries*. New Jersey, Princeton University Press.

Carson, R. L. (1962). *Silent Spring*, Houghton Mifflin.

Castells, M., Himanen, P. (2002). *The information society and the welfare state; the Finnish model*. Oxford, Oxford University Press.

Chaplin, C. (1936). *Modern Times*.

Coase, R. H. (1937). *The firm, the market and the law* Chicago [etc.], University of Chicago Press

Cohen, W. M., Levinthal, D.A. (1990). "Absorptive Capacity: A New Perspective on Learning and Innovation." *Administrative Science Quarterly* **35**(1): 128-152.

Copeland, T., Koller, T., Murrin, J. (1990). Valuation; Measuring and Managing the Value of Companies. New York, John Wiley & Sons.

Crielaard, J. P. (2006a). Duurzame organisatievormen. Models: Businessmodellen met body. M. H. Setz, Tom W. Amsterdam, Rozenberg Publishers.

Crielaard, J. P. (2006b). Ontwikkelingsfasen van organisaties. Models: Businessmodellen met body. M. H. Setz, Tom W. Amsterda, Rozenberg Publishers: 402-404.

Crielaard, J. P. (2007). Hoe mensen en organisaties veranderen. Lectorale rede lectoraat Sociale Innovatie. Ede, Christelijke Hogeschool Ede.

Daft, R. L. (1978). "A dual-core model of organizational innovation." Academy Of Management Journal(20): 193-211.

Daly, G. C. and K. Ellison (2002). The New Economy of Nature. Washinton, Island Press.

Daly, H. E. (1977, 1991). Steady State Economics. Washington D.C., Island Press.

De Leeuw, A. C. J. (1994). Besturen van veranderingsprocessen: fundamenteel en praktijkgericht management van organisatie-veranderingen, Assen: Van Gorcum.

De Sitter, L. U. (1981). Op weg naar nieuwe fabrieken en kantoren. Deventer, Kluwer.

De Sitter, L. U. (1985). "Met MANS meer mans?" economisch Statistische Berichten(20-3-1985): 271-278.

Dess, G. G. and D. W. Beard (1984). "Dimensions of Organizational Task Environments." Administrative Science Quarterly **29**(1): 52-73.

Eisenhardt, K. M. and J. A. Martin (2000). "Dynamic capabilities: what are they?" Strategic Management Journal **21**(10-11): 1105-1121.

Elkington, J. (1994). "Towards the sustainable corporation: Win-win-win business strategies for sustainable development." California Management Review **36**(2): 90-100.

Elkington, J. (2001). The Chrysalis Economy, How Citizen CEOs and Corporations can fuse Values and Value Creation. Oxford, Capstone/John Wiley.

Emery, M. and F. E. Emery (1993). Participative Design for Participative Democracy, The Australian National University.

Galbraith, J. R. (1932).

Geus, A. d. (1997). The Living Company. London, Brealy.

Goldratt, E. and J. Cox (1984). The Goal: a Process of Ongoing Improvement. Great Barrington, North River Press.

Gratton, L. (2000). Living Strategy: Putting People at the Heart of Corporate Purpose. London, Pearson Education Limited.

GRI (2000, 2006). G3 guidelines: Sustainability Reporting Guidelines. Amsterdam, Global Reporting Initiative.

Gunderson, L. H. and C. S. Holling (2002). Panarchy: understanding transformations in human and natural systems. Washington D.C., Island Press.

Gustavsen, B. (1992). Dialogue and Development. Assen, Van Gorkum.

Hamel, G. and C. K. Prahalad (1994). Competing for the Future. Boston, Harvard Business School Press.

Hammer, M. and J. Champy (1993). Reengineering the corporation: a manifesto for business revolution. New York, Harper Business.

Hannan, M. T. and J. H. Freeman (1984). "Structural inertia and organizational change." American Sociological Review **49**: 149-164.

Hartwick, J. M. (1977). "Intergenerational equity and the investing of rents from exhaustible resources." American Economic Review **67**: 972-974.

Imai, M. (1986). Kaizen: The Key to Japan's Competitive Success. New York, Random House Inc.

Jacobs, D. (2007). "Adding values. The cultural Side of Innovation." 2007.

Jongkind, R., Vaas, F., Oeij, P. (2003). Verbeteren van de nationale concurrentiepositie door vernieuwingen in organisaties. TNO-Arbeid.

Kolk, A. (2003). Het eind van maatschappelijk verantwoord ondernemen, of het begin. Amsterdam, Vossiuspers.

Kuhn, T. S. (1962, 1970). The Structure of Scientific Revolutions. Chicago, Chicago University Press.

Lawrence, P. R. and J. W. Lorsch (1967). Organization and environment: managing differentiation and integration. Boston, Harvard Univ.

Leede, J. d. and J. C. Looise (2005). "Innovatie en HRM: naar een integraal raamwerk." Tijdschrift voor HRM 2005(herfst): 5-20.

Leede, J. d., Looise, J.C., Verkerk, M. (2002). "Het 'derde contract': een nieuwe stap in de flexibilisering van arbeidsrelaties?" Tijdschrift voor HRM(2002/3): 7-22.

Leijnse, F. (2006). Centrum voor Sociale Innovatie, Flexibel organiseren, Dynamisch managen, Slimmer werken, NCSI.

Luhman, N. (1984). Soziale Systeme: Grundriss einer allgemeinen Theorie. Frankfurt am Main, Suhrkamp.

Luo, Y. and M. W. Peng (1999). "Learning to Compete in a Transition Economy: Experience, Environment, and Performance." Journal of International Business Studies **30**(2): 269-95.

Marcuse, H. (1965). "Eendimensionele Mens."

McCarthy, E. J. (1960). Basic Marketing.

McDonough, W. and M. Braungart (2002). Cradle to Cradle: Remaking the Way We Make Things, North Point Press.

Meadows, D. (1972). The Limits to Growth: a global challenge.

Mintzberg, H. (1983). Structure in Fives. Designing Effective Organizations. Englewood Cliffs NJ, Prentice Hall.

Mintzberg, H., B. Ahlstrand, et al. (1998). Strategy Safari: A Guided Tour Through the Wilds of Strategic Management.

Mintzberg, H. and J. A. Waters (1985). "Of Strategies: Deliberate and Emergent." Strategic Management Journal **6**: 257-272.

Morgan, G. (1986). Images of Organization. Newbury Park, Sage.

Nelson, R. and S. Winter (1982). An Evolutionary Theory of Economic Change. Cambridge, MA. , Belknap Press.

Pezzey, J. (1992). "Sustainability: an interdisciplinary guide." Environmental Values 1: 321-362.

Porter, M. E. (1985). Competitive advantage: Creating and sustaining superior performance. New York, Free Press.

Prahalad, C. K. (2006). The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits, Wharton School Publishing.

Quinn, R. E., S. Faerman, et al. (1990). Becoming a Master Manager: A Competency Based Framework. New York, John Wiley.

Revelle, R. and H. E. Suess (1957). "Carbon Dioxide Exchange between Atmosphere and Ocean and the Question of an Increase of Atmospheric CO<sub>2</sub> During the Past Decades." Tellus(9): 18-27.

Schumpeter, J. A. (1934). The theory of economic development. Cambridge (Mass.), Harvard University Press.

Schumpeter, J. A. (1950). Capitalism, Socialism and Democracy. New York, Harper & Row.

Schwartz, S. H. (1994). "Are there universal aspects in the structure and contents of human values?" Journal of Social Issues **50**: 19-45.

Senge, P. M. (1990). The Fifth Discipline: The Art & Practice of The Learning Organization. New York, Doubleday.

Simon, H. A. (1947). Administrative Behavior: A Study of Decision-Making Processes in Administrative Organizations. New York, MacMillan.

Simon, H. A., Ed. (1957). A Behavioral Model of Rational Choice. Models of Man, Social and Rational: Mathematical Essays on Rational Human Behavior in a Social Setting. New York, John Wiley.

Simon, H. A. (1990). "A mechanism for social selection and successful altruism." Science **250**(4948): 1665-1668.

Solow, R. M. (1986). "On the intergenerational allocation of natural resources." Scandinavian Journal of Economics **88**: 141-149.

Suzaki, K. (1993). The New Shop Floor Management: Empowering People for Continuous Improvement. New York, The Free Press.

Taylor, F. W. (1911). The principles of Scientific Management, Harper & Brothers.

Taylor, F. W. (1912). "Taylor's Testimony Before the Special House Committee."

Teece, D. J., G. Pisano, et al. (1997). "Dynamic Capabilities and Strategic Management." Strategic Management Journal **18**(7): 509-533.

Townsend, C. R., J. L. Harper, et al. (2000). Essentials of Ecology. Malden, Massachusetts, Blackwell Science Inc.

Treacy, M. and F. D. Wiersema (1995). The discipline of market leaders: choose your customers, narrow your focus, dominate your market. London, Harper Collins.

Trist, E. L., G. W. Higgin, et al. (1963). Organizational Choice. London, Tavistock Publications.

Vaas, F. (2001). "Arbeidsproductiviteit verhogen door slim organiseren." Christendemocratische verkenningen **Werk, welvaart en geluk**(7/8/9).

Van Eijnatten, F. M. (1993). The Paradigm that Changed the Work Place. Assen, Van Gorkum.

Varela, F. G., H. R. Maturana, et al. (1974). "Autopoiesis the Organization of Living Systems Its Characterization and a Model." Biosystems **5**(4): 187-196.

Veblen, T. (1898). "Why is Economics not an Evolutionary Science?" Quarterly Journal of Economics **12**(4): 373-397.

Verkerk, M. J. (2004). Trust and power on the shop floor: an ethnographical, ethical, and philosophical study on responsible behaviour in industrial organisations. Delft, Eburon Academic Publishers.

Volberda, H. W. (1992). Organizational Flexibility: Change and Preservation. Groningen, Wolters-Noordhoff.

Volberda, H. W., Van den Bosch, F.A.J. (2004a). Onderzoeksverslag. Innovatiemonitor. Rotterdam, Erasmus University.

Weick, K. E. (1995). Sensemaking in Organizations. Thousand Oaks, Sage.

Wernerfelt, B. (1984). "A resource-based view of the firm." Strategic Management Journal 5(April-June): 171-180.

Wijffels, H., Grosveld (2004). Vitalisering van de kenniseconomie. Innovatieplatform: 23.

Williamson, O. E. (1979). "Transaction-Cost Economics: the Governance of Contractual Relations." Journal of Law Economics 22(233-261).

Wit, B. d. and R. Meyer (1994). Strategy. Process, Content, Context. Minneapolis/St. Paul, West Publishing Company.

Witteloostijn, A. v. (1998). "Bridging Behavioral and Economic Theories of Decline: Organizational Inertia, Strategic Competition, and Chronic Failure." Management Science **44**(4): 501-519.

Wubben, E. F. M. (2000). The Dynamics of the Eco-efficient Economy: Environmental Regulation and Competitive Advantage. Cheltenham UK, Edward Elgar.