

Systems Thinking and Modern Green Trends

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Abstract:

Experience show that the environment protection and permanent development as a part of entrepreneur's philosophy is not carried into effect enough; this is so because of administrative workers, who were used to make decisions independently without collaboration of other experts. System thinking and multi view approaches, which are a must for a successful establishment of a sustainable business and modern green trends, are of great importance. Congenial and stimulating atmosphere, promoting relaxed free and unimpeded activities, work satisfaction and satisfaction with co-operation with others, are all elements distinguishing excellent performance. The successful development and implementation of processes innovation in an organizational system can produce a significant saving in the amount of business and environment resources and therefore a smaller environmental impact. When implementing changes, employees should be motivated adequately. The perpetual changes met within the competitive environment require changing of management processes and present a constant and continuous demand for improvements in business operations.

Key words: environment, green trends, management, sustainable business, systems thinking

1 Introduction

Leaders of successful, high-growth companies understand that innovation is what drives growth, and innovation is achieved by awesome people with a shared relentless growth attitude and shared passion for problem solving and for turning ideas into realities. Companies that continuously innovate will create and re-invent new markets, products, services, and business models – which leads to more growth. Innovation is founded on your enterprise's ability to recognize market opportunities, your internal capabilities to respond innovatively, and your knowledge base. So, the best thing to do to guarantee growth is to build a sustainable innovation organization around the following components:

1. Vision and strategy for innovation
2. Culture supporting innovation
3. Processes, practices and systems supporting innovation
4. Top management team leading innovation
5. Cross-functional teams mapping innovation road

Empowered employees driving innovation [2]. Integrated production processes innovation model which promotes production processes innovation was derived from the model of managing company policy following the interest theory and business excellence. The successful development and implementation of processes innovation in an organizational system can produce a significant saving in the amount of business and environment resources and therefore a smaller environmental impact [7]. The heightened awareness of the importance of environmental protection, and the possible impacts associated with products manufactured and consumed, has increased the interest in the development of methods to better comprehend and reduce these impacts [3].

The last three decades have witnessed a radical change in world and regional circumstances as well as in social and entrepreneurial ones. Consequently, following a holistic approach to competitiveness, it is of utmost importance to consider all the relevant factors of competitiveness. These factors could be subdivided into systemic thinking, production processes management, and business excellence. Moreover, competitiveness is the basis for successful

company performance as well as for a better quality of life. Because of this modern trends requiring systems thinking.

2 Modern Trends Requiring Systems Thinking

There are several trends in world-wide life requiring systems thinking, such as:

- United Nations are the widest organisation of humankind and exist to work for holism in detecting and solving of the world-wide problems;
- Many other international organisations exist for the same basic reason;
- Sustainable Development is an important concept, which humankind has launched through United Nations and several other international organisations in order to solve the problem of survival of humankind: we all need interdependence of both our care for economic development and for nature, because both of them together, in synergy rather than in separation, support our survival;
- Since the times of enlightenment several centuries ago, humankind has been working for its economic development, including its development of knowledge, including science and its application; this development resulted in enormous amounts of new findings, discoveries, and innovations, as well as in a more and more narrow specialisation;
- The unavoidable specialisation has become exaggerated: along with deep and crucial insights it has caused many oversights, resulting in small and huge problems, all way to world wars, many other wars, profit (as motive) killing profit (as outcome) by causing huge medical, reparation, nature renewal, etc. costs; all these trends required and require increasingly the international bodies and actions mentioned above under the motto: **Think globally, act locally**;
- Science and its application resulted, among other effects, in humankind's capacity to master more and more complex, not only complicated, issues, all the way to the most modern computer-supported tools (1) able to bring data, messages, even information from other planets that are many million kilometers away from Earth, (2) able to enter human

body, (3) cure diseases as never before, etc.

- Etc. Most of the amazing results of modern times result from combinations of
 - Deep, and hence one-sided, specialisation, and
 - Bridges for co-operation between mutually different and interdependent specialists, based on application of (informal or formal) systems thinking.
- Systems thinking, rather than systems theory, is a millennia old practice of the successful practitioners and scientists and artists, which has made and makes them different from the less successful ones. (All losers are more or less one-sided thinkers and actors.)
- The exaggerated specialisation of the modern times caused the need for systems thinking to receive support from systems theory. It can teach humans to live consciously in the way that has always made a part of humans successful without possessing a theory as their background of their success.

(For details see: Dyck et al, 1998; Mulej et al., 2000; Mulej, 2004; Rebernik et al, 2004; etc) [4].

In the 19th century, there were authors claiming the humankind's need to consider relations, interdependences, not parts of the world as independent entities only. Their background may have been consciously or subconsciously the ancient Chinese notion of interdependence called yin and yang, and/or the ancient Greek notion of interdependence called dialectics. Both mean interdependence. In the 19th century one has seen Idealistic Dialectics, Materialistic Dialectics, and several more notions and teachings about holistic thinking [31].

One can reach several centuries back. Many know that there has been, centuries ago, a certain Leonardo da Vinci. He is known as artist of the supreme quality, but he was also a great researcher. One can find in him a pioneer in the fields of creative thinking, accelerated learning, and innovative leadership [31]:

Forgetting about the *context* is very easy to do. We are all specialists in small parts of reality; all other parts of this reality make us strangers everywhere. But we saw in reality and in the cases offered as examples here, that parts of reality matter, and that they are *interdependent* with other parts of reality. This means that context matters even more than parts alone. The development of

specialization caused humans to forget about contexts of their own life, action, specialty, views, opinions, and experiences. Is it not interesting, that systems theory, as a theory of considering the wholes, has surfaced briefly after a few decades in the 20th century, in which:

Humankind's knowledge has been growing tremendously, and has been causing an increasingly narrow specialization into single parts of knowledge, with very rare and poorly developed habits of interdisciplinary co-operation;

Humankind suffered from the biggest crises ever, having the form of two world wars and a world wide economic crisis between them? [31].

7 DA VINCIAN PRINCIPLES	What is it?	Look at your own mind map from the perspective of the 7 Da Vinci principles
1 Curiosita	An insatiably curious approach to life and an unrelenting quest for continuous learning.	Am I asking right questions?
2 Dimostrazione	A commitment to test knowledge through experience, persistence, and willingness to learn from mistakes.	How can I improve my ability to learn from my mistakes and experiences? How can I develop my independence of my thought?
3 Sensazione	The continual refinement of the senses, especially sight, as the means to enliven experience.	What is my plan for sharpening my senses as I age?
4 Sfumato (Literaly "Going up in Smoke")	A willingness to embrace ambiguity, paradox, and uncertainty.	How can I strengthen my ability to hold creative tension to embrace the major paradoxes of life?
5 Arte/Scienza	The development of the balance between science and art, logic and imagination. "Whole brain" thinking.	Am I balancing Arte and Scienza at home and at work?
6 Corporalita	The cultivation of grace, ambidexterity, fitness, and poise	How can I nurture the balance of body and mind?
7 Conessione	A recognition of and appreciation for the inter-connectedness of all things and phenomena. Systems thinking.	How do all the above elements fit together? How does everything connect to everything else?

Table 1: How to Think like Leonardo da Vinci [4]

3 Interrelationships of an organization's management and operations with the condition of the environment

Everybody speaks of technological development only, although it is causing increasing unemployment around the world and other problems such as motivation and environmental degradation, including a dangerous climate change. There is also an

unchallenged supposition that in transitional economies owners and managers are equally fond of continuous innovation as are the ones in the most advanced corporations of the world [6]. In efforts for the improvement of position on the purchaser's market the companies must also consider accordance of operation with valid environment protected prescriptions in field of process consumer. The inclusion of enterprises in the international market, the care for reputation, that the enterprise profit with the environment protection and permanent development,

places the politics of environment protection to the base of the professional politics [6]. The environment protection and permanent development is so a basic component of the basic politics. Many organizations have undertaken environmental “reviews” or “audits” to assess their environmental performance [8]. Figure 1 presents interrelationship of an organization's management and operations with the condition of the environment.

It is about the important decisions about the basic goals of operating and development. It is about the acceptance of basic principles values and rules. The current position of an organization with regard to the environment can be established by means of an initial processes, environmental performance evaluation and innovative operations. Environmental performance

evaluation (EPE) is an internal management process that uses indicators to provide information comparing an organization's past and present environmental performance with its environmental performance criteria. EPE, as detailed in ISO 14031:1999(E)- Environmental management – Environmental:

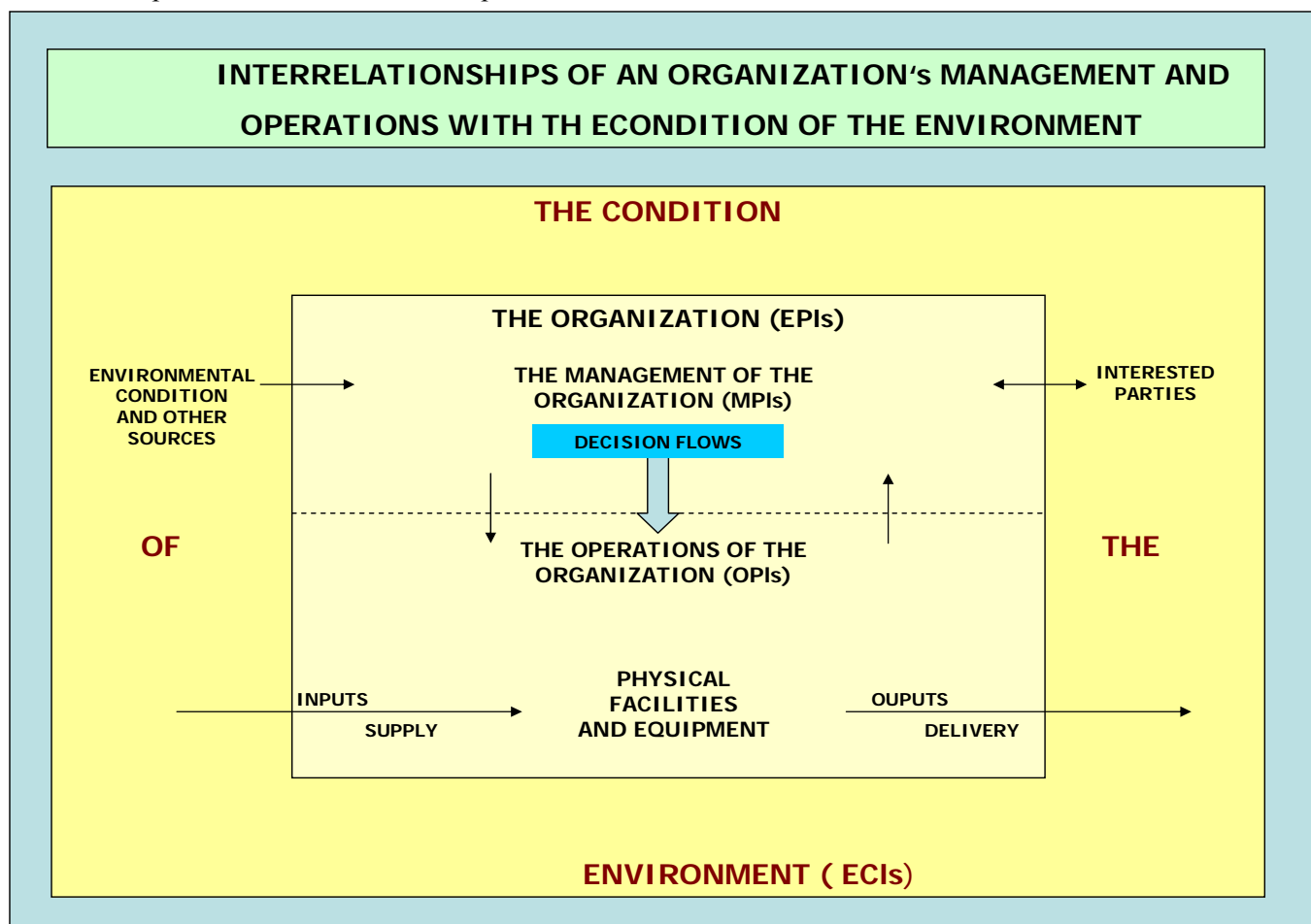


Figure 1: Interrelationships of an organization's management and operations with the condition of the environment [9].

performance evaluation – Guidelines,, follows a “Plan-Do- Check-Act” management model. The steps of this ongoing process are following:

a) Plan

- 1) planning EPE;
- 2) selecting indicators for EPE (the process of selecting indicators may include both choosing

from existing indicators and developing new indicators).

b) Do

Using data and information which includes:

- 1) collecting data relevant to the selected indicators;
- 2) analysing and converting data into information describing the organization's environmental performance;
- 3) assessing information describing the organization's environmental performance in comparison with the organization's environmental performance criteria;
- 4) reporting and communicating information describing the organization's environmental performance.

c) Check and Act

Reviewing and improving EPE [9].

The renovation of production processes results from lean organization, which is based on up-to-date technological and organizational starting points. Market need new consumers. Consumers need new products and services. Only innovative lean flexible organization could be the answer. Lean organization is market-driven; a buyer's market and innovation society prevail and acts as change generators in a company or other organization [16].

6 Organizational culture represents an ideology of the organization

Organizational culture represents an ideology of the organization as well as the forms of its manifestation. The ideology of the organization includes beliefs, values and norms. It is manifested through symbols, language, narration and other activities [21]. Organizational culture is the set of shared philosophies, assumptions, values, expectations, attitudes and norms which bind an organization together. It helps a company to implement its strategies effectively [22]. Organizational culture has been defined as patterns of shared values and beliefs over time which produces behavioral norms that are adopted in solving problems [23]. Schein [24] has also noted that organizational culture is a body of solutions to problems which have worked consistently and are

therefore taught to new members as the correct way to perceive, think about, and feel in relation to those problems. Cultures basically spring from three sources, (1) the beliefs, values, and assumptions on founders of organization; (2) the learning experiences of group members as their organization evolves; and (3) new beliefs, values, and assumptions brought in by new members and leaders [24]. In fact, these shared philosophies, assumptions, values, expectations, attitudes, and norms bind an organization together [27]. Organizational culture can therefore be used as a form of control (Wilkins & Ouchi, 1983) and as a means of increasing productivity (Denison & Mishra, 1995). In sum, organizational culture is glue that welds managers together for effective implementation of organizational strategies, and the absence of this glue would bring about disastrous effects on the organization [25].

The topic of culture and effectiveness is of central importance in organizational studies [22], but progress in the development of theory and research has been slowed by a formidable set of research problems. For example, an integrative theory must encompass a broad range of phenomena extending from core assumptions to visible artifacts, and from social structures to individual meaning. Such a theory must also address culture as a symbolic representation of past attempts at adaptation and survival as well as a set of limiting or enabling conditions for future adaptation. Several attempts at integration have been presented [20] but there is still limited consensus regarding a general theory of organizational culture, and healthy skepticism about whether culture can ever be "measured" in a way that allows one organization to be compared with another. The concept of effectiveness also presents a challenging set of problems. The multidimensional nature of the concept requires that effectiveness be defined by a complex of stakeholders, who may hold differing, incompatible, and changing criteria [28].

Studies of organizational culture have been able to shed light on the organization as an epistemological system. In addition, they have underscored the importance of such human factors as values, meanings, commitments, symbols, and beliefs, and paved the way for more elaborate research on the tacit aspect of knowledge. Furthermore, they have recognized that the organization, as a shared meaning system, can learn, change itself, and evolve over time through the social interaction among its members and between itself and the environment [29]. As Takeuchi and Nonaka [29] stress, the most important difference between an industrial-era and knowledge-era organization is a

radical conversion from an 'either/or' to an 'and' mentality. A knowledge-era organization needs to cultivate opposing traits and embrace dualities. The effectiveness of organization learning depends on how knowledge management processes are aligned with an organization's infrastructure and processes, in a manner that supports the achievement of an organization's goals. That knowledge is of fundamental importance for organizations of any sized industry is no longer a question [30]. Even if knowledge is not the sole element for an organization's survival, it is the most important one because it supports all others [30]. In the practical implementation of knowledge management in organizations, many hurdles emerge. They relate to organizational culture and its impact on knowledge transfer among co-workers as well as on a commercially advantageous application of an enterprise. The results of the study have shown that managers and professional workers employed in Slovene enterprises have an approximately equal perception regarding the organizational culture. The potential hurdles which are most frequent and prevent knowledge transfer as well as its application include above all lack of time, lack of communication skills and motivation, knowledge hiding, an organizational culture which does not consider knowledge sharing and dissemination of knowledge to be important, etc. In other words, this could be the result of an inappropriate, obsolete organizational culture which gives the character to the mentality and activities of all employees.

7 Systems Thinking in Employee Relations

In systems thinking, problems are seen as parts of an overall system, not just arbitrary results. This approach addresses the root or contextual cause of the problem, thereby not further allowing the problem to worsen. A certain framework exists in systems thinking whereby a problem is taken in relation to the whole, and not in isolation. Systems thinking may also be applied in employee relations. In systems thinking, problems are defined on social-psychological terms, interpersonal relationships, and group norms. In the study 'Empowerment and teamwork key to effective lean working,' systems thinking is also called 'lean thinking' where all elements that add no value are eliminated. The concept is central to the principles of timely management, total quality management, and supply-chain partnering [26]. Employee relations imply

the dealing with a diverse group of people coming from different backgrounds and cultures. Rich diversity in people can be an advantage if the process is based on a framework of complementarist fashion. The pluralism may just be able to create a cohesive and organic whole out of diversely conflicting perspectives. In practical terms, this is called teamwork or that which characterizes results-oriented employee relations [26].

8 Innovation of administration - the stimulation of ecological innovations

The production concept under the influence of quick and unceasing changing environment adapt to the selection of consumer's needs and wishes and first of all to response to those claims, that are supported with purchasing power. In order to explain this viewpoint, shall develop a systemic model of individual human beings, showing how our co-evolution with our environment is linked to our thoughts, emotions and actions [17]. In the coming years the relationship to the environment will be the key component of competitive ability. The informed individual will influence on the professional dynamics in collaboration with others that will claim the strategic reflection and acting. Because of mutual co independence, cognition of creative collaboration's urgency between all in the process of protection included subjects, above all responsible administration holders, the claim for the change of leading style will be of priority nature. The role of leadership is so directed to the change of starting points of professional philosophy.

One point of view of administrative measurement is substituted with many points of view, inter structural creative collaboration [18]. The environment protection and permanent development is a complex process, where the earlier events have more influence than the later one. From here it originates the sense of activity planning of these, who administrate, who define the aims, who organize and so on. The inadvertence of independence between the parts of totality, that's why also synergic characteristics of the totality, which parts do not have as an individual part, it leads to simplification, that has in case of environment protection the catastrophic experience. Experience show that the environment protection and permanent development as a part of entrepreneur's philosophy is not carried into effect enough; this is so because of administrative workers, who were used to make decisions independently without collaboration of other experts [19]. Without participation of everybody

in the chain sequence and from here resulting co dependence it is not possible to expect the good results. The partial solution gives the partial results.



Figure 2: Systems Thinking in Employee Relations [26]

9 EMS Development

In early 1980s the United Nations Environment Programme (UNEP) saw environmental management as the control of all human activities that could potentially have significant impact on the environment. The two current published environmental management system standards are the BS EN ISO 14000: 1996 family of standards, and the Eco-Management and Audit Scheme (EMAS), Council Regulation 761/2001 EC. Both of these are voluntary standards to which an organisation may choose to become accredited, both being validated by means of third party confirmation audit. There is a marked difference in the reporting philosophy of these two standards, which results in organisations having to internally identify their own organisational reasons for wishing to achieve either standard [32].

Environmental management can be described as a methodology by which organisations acting in a

structured manner assess their operations to ensure that they are functioning in an environmentally legitimate way. They define the impacts of their activities on the natural environment, subsequently proposing actions (within defined timescales) to minimise or reduce those impacts that they consider (under criteria defined by themselves) as harmful. An environmental management system is a management system that aims to encourage an organisation to control its environmental impacts and reduce such impacts continuously. It is unfortunate that the opportunity afforded to the technical standards committees responsible for the development of the two recognised environmental management systems operating within the European Union (EU) to introduce management principles and methodologies for positive pollution management was not taken. Overall environmental performance is not commented on within either standard [32]. The current position of an organization with regard to the environment can be established by means of an initial processes, innovative operations and management review. The innovative operation is

operation that, according to the production and all other its components is found on innovations. The initial review can cover the following:

- identification of legislative and regulatory requirements;
- identification of processes, innovative operations;
- identification of environmental aspects of its activities, products or services so as to determine those that have or can have significant environmental impacts and liabilities;
- evaluation of performance compared with relevant internal criteria, external standards, regulations, codes of practice and sets of principles and guidelines;
- existing business, processes, innovations, environmental management practices and procedures;
- identification of the existing policies and procedures dealing with procurement and contracting activities;
- feedback from investigation of previous incidents of non-compliance;
- opportunities for competitive advantage;
- the views of interested parties;
- functions or activities of other organizational systems that can enable or impede environmental performance [33].

The process and results of the initial environmental review should be documented and opportunities for EMS development should be identified. Such a partial approach can lead to technically and economically inappropriate solutions. The new model which promotes production processes innovation was derived from the model of managing company policy following the interest theory and business excellence. It was conceived in the frame and interdependence of both objective and subjective starting points of initial change agents as well as from process knowledge of process managers. New dimensions like business excellence, production processes innovation, companies' capacities and opportunities for continuous innovation, as well as values, knowledge, skills and feelings of change agents, will be added to the basic model [35].

Organizational systems or models need lean organization. Lean organization is first step of processes innovation and environmental protection. Possible measures, which the lean organization can

encompass, include the fields of organizational measures, reconstruction of existing processes and products, the use of modern equipment and techniques as well as the introduction of new technologies. The dimensions of business excellence, especially production excellence, of production processes renovation, a company's or other organization's capacity to innovated as well as the values, knowledge, skills and feelings of production processes innovation agents, are added to the basic model [36]. The renovation of production processes results from lean organization, which is based on up-to-date technological and organizational starting points. Market need new consumers. Consumers need new products and services. Only innovative lean flexible organization could be the answer. Lean organization is market-driven; a buyer's market and innovation society prevail and acts as change generators in a company or other organization[35]. Figure 3 presents an approach to environmental management system integrated with other management requirements.

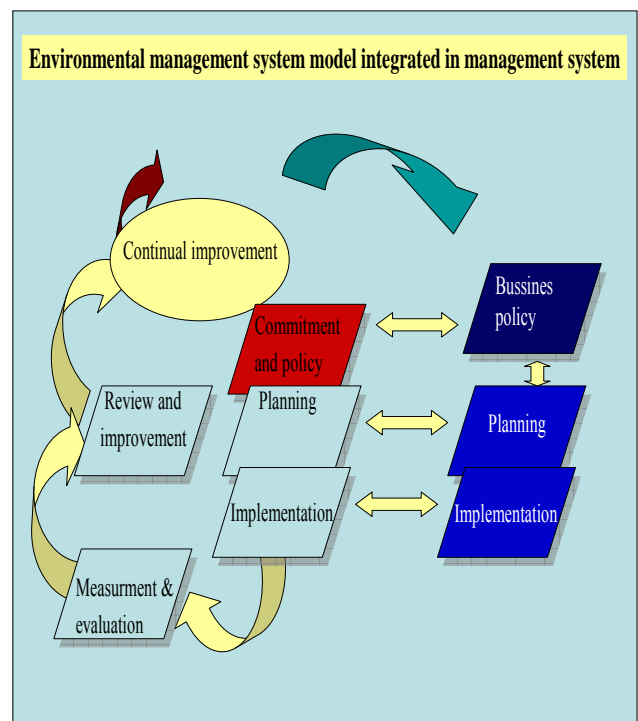


Figure 3: Environmental management system integrated with other management requirements [34].

10 Discussion

In this paper a System Thinking is presented as a requiring for processes innovation. Therefore, what we should develop is an innovation management culture. Integrated environmental management integrates the requirements of environmental legislation; the EC eco-audit regulation; learning organizations, etc. Learning organizations are, thus, (and have to be) infused with communication directed to goals; in organizations where the level of communication is not adequate, the problem is evident, management and other employees alike are aware of it. A step forward will only be possible when the management will, in view of their power and influence, assume responsibility for establishing the environment encouraging open two-way communication directed to the goals of the organization. This will result in the awareness of their own directions into the future and into better market positions. Another step toward improvement is connected with the awareness of the management as well as of other employees that even if people communicate all the time, this does not mean that they know how to communicate. If that were the case, there were not so many misunderstandings, mistakes and conflicts [14]. System thinking help us in this way.

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