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Action Research: From Concept to Model of Forming Autopoietic Building Blocks as Life Circle

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Abstract:

Research question (RQ): How - with the concept of forming autopoietic building blocks - to develop a model of organization of futurewhich will be able of self-/co-organization and self-/co-production in life circle? We are studying human potential as a natural circular process, which is characteristic of action research. Autopoiesis is a complete intertwinement of fields of continuous movement, which is consequently shown in creativity and holistic culture of a person.

Purpose: To developed a concept of forming autopoietic building blocks as life circle and a model of organization as a model of organization of future. We are interested in a human in organization, in interpersonal co-dependence andself-/co-dependence on micro and macro level. Inside this more and more virtual organization we are studying a human, humanity and human potential as a creative potential of humane organization.

Method: Direction in action research, which is supported with mixed methods for comprehensive study of autopoiesis in organization. For qualitative research we used Atlas.ti software. This research can be classified as case study.

Results: For designing autopoietic building blocks as life circle we developed a concept in 5 steps. With results of qualitative and quantitative analysis, comparison of autopoietic, modern and 4.0 organization, we developed a »Model of forming autopoietic building blocksin organization – MOGAO«. The model can be a comparative tool for perceiving processes in an organization. With results we claim that 4.0 organization is oriented mostly towards action and is getting stronger in improved communication. However, it decreases in emotions and thinking of a human.

Organization: Results can serve as a guideline and challenge to humane organizations. We present the challenge how – by knowing horizontal and vertical laws of a human – we can »control« 4.0 organization. The research contributes to awareness of a human and to transformation of allopoietic to more and more autopoietic organizationsin direction of: »Autopoietic 4.0 Human (r)evolution«.

Society: Accepting autopoiesis on all levels of society and consequently emerging organizations, as well as society as a whole. The final result is to influence by autopoiesis the cultural development of society in the sense of connecting science, art, high technologies and spirituality.

Originality: Interlacement of horizontal and vertical scientific areas by connecting natural and social sciences. Recording of autopoietic principles (building blocks of processes) from point of view of an observer and a creator as »self-/co-« principles. Completeness of studying with the developed concept and model »MOGAO«.

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Limitations/Future resesarch: We have no relevant data for a comparison of case study. Studying autopoietic organization in the direction of: »Autopoietic 4.0 Human (r)evolution«.Founding an institute for studying autopoiesis on all levels of society.

Key words:action research, autopoiesis, autopoietic organization, 4.0 organization, autopoietic building blocks, concept and model of formingautopoietic building blocks.

1 Introduction

For humans the activity according to natural life cycle is characteristic: birth, growth, maturation and death, since they are a part of nature, therefore natural laws and principles of activity apply to them. A human influences natural laws too often,but they are not successful at this since they cannot change the laws despite having modern technology,however they can be mentally active.Technological progress is in a »spasm«, it spins in the absence of a human as a conscious creator of an organization and society. Here we see the future of human activity so that they by their thinking process create organization which will be able to produce high technology in concepts of 4.0 (r)evolution. The rolemodel of open and natural action is the great mind Tesla who equated physical work with mental work and devoted his alert life to thinking (Tesla, 2013, p. 7). Lauc (2000) establishes that through philosophy, thinking of freeing a human develops and that only then we can speak about free thinking, which is a whole in a circle of circles.In the research we are studying autopoiesis from its discovery to nowaday attempts of its use in the most complex environments. We look at it through philosophical and biological frame, all with the intention to find the principles in the multifaceted phenomena, named by Maturana and Varela (1980), the pioneers of this discovery, as »autopoiesis«. They reveal it as a natural circular organization with self-organizational characteristics, and by this establish a theory about activity of livingorganism.We wish to present autopoiesis as a (co)evolution of life circle, which realises itself in self-organization. The process begins in a cell of autopoietic people and it somehow continues in an autopietic organization, society and civilisation.

We found out that we cannot speak about the progress of society if it does not allow humans their natural activity. We need to be aware that in nature there is an overall connection of everything, as well as mutual dependence, mutual activity and co-operation in natural processes on micro and macro level (Ećimović, 2016, pp. 3-4). The existing organization does not have complete understanding of human capital, which starts in justice and trust in the comprehensive chain of a metabolic process as a (r)evolutionary process in the cosmic sense (Jantsch, 1980). We learned about organic autopoietic organization and its negationwhich is being shown in allopoietic organizations. Therefore with autopoietic organization we try to implement into practice self-/co-organization of a human as creative potential. We are looking into a human in organization from organic-humane point of view, since they self-/co-work in the existent allopoietic environment. This environment becomes a challenge and motivator for us.

In a modern individual we can detect the prevalence of unconscious activity and lack of reflection which, we suppose, is one of the central problems of research. We came across reflection as conscious thinking in the model »Sine curve« (Ovsenik, 1999, p. 30). We can say that a human is able to control their activity by feedback, named reflection or thinking, and realize it up to concepts, which are in accordance with human and nature. Already Kant (1999, p. 32) was aware of this: »…an individual can consciously use mind in every moment, which enables them mental process, but unfortunately not nature.« Current overloading of networks can be felt everywhere, the consequences are shown as unsuccessful organizations and bad health of individuals who create them. We recognize that it is necessary to change the base which is built from the building blocks. Since this is a living system, it is even more significant that such changes are carried out with feeling for self-/co-person. For a human senses and is a self-/co-passionate being and at this point we will set the demanding problematics of organization. As a basis we take the fact that a man is not a »machine« as treated by the mechanistic paradigm. Therefore we can detect concepts of Industry 4.0 as concepts which in the future will be equalized with a robot or even more, the artificial intelligence will prevail. Thus it is important that organization self-/co-preserves in its autonomy and connection in the networks of action.

Our research challenge was: Can we use the method of action research (AR) through all the phases of research and in the concept and model of forming autopoietic building blocks? This means in theoretical as well as practical aspect or to use AR to intertwine the theory and practical part in the sense of self-/co-organization ofan individual, and consequently re-processing and re-structuring of organizations. Mesec (1998) explains that the feature of such studies is curiosity to know the whole and rich understanding that directs us towards practical part, which we cannot substantiate immediately. Our intention is to recognize and research the principles of autopoiesis, form them and set the building blocks of autopoiesis and with them recognize modern and developing 4.0 organization.The key purpose is to present the gained building blocks of autopoiesis in modern and 4.0 organization. We show the connections and comprehensiveness in the life circle of self-/co-organization, self-/co-actualization in the way of self-/co-realization.

2 Theoretical background

2.1 Autopoiesis as life circle and living network of human action

If biologists Maturana and Varela (1980) as pioneerrs defined autopoiesis as a natural circular process. Železnikar (2016, p. 10) uniquely defines it in cybernetic informational system as an including whole materiality and spirituality, with oscillation between growth and dying out. Kordeš (2004, pp. 91-92) is aware of his part in the creative circle, where there is constant exchange of creation and stability. He determined that ali living beings are affected by creative circle, named by Maturana and Varela(1980) as »autopoiesis«.Dalai Lama XIV (2000, p. 48) adds that inner peace is the way to genuine happiness, which includes a great deal of compassion and develops conscious care for co-people. Lasan gives a short but

meaningful definition (Lasan, 2005, p. 7): »Life is breathing, moving and thinking.« Pavuna (2017)self-confidently interprets his scientific supposition: »Life is love in action.« Self-organization is about a certain mentally determined, planned self-lawfulness which does not endure exact observation(Hlebš, 2017, pp. 10-11). Disturbances are detected ina human which show themselves as blockades or as unworking programmes because a human simply does not allow certain programmes to be activated, notes Djurdica (2011, p. 98). Are we actually not prepared for modern thinking? Feyerabend (2008, p. 132) asks himself why a person does not allow and recognize the most important motives for peace, love, compassion, sense forthe holiness of nature and natural life.

Theory about action of a living organism - autopoiesis Chilenian biologists Maturana and Varela (1980) define and reveal to scientific public in their pioneer work. They see the source of living in the cell as a basic unit which produces live matter. They realized that it is a generally closed structure of self-production and self-organization and that the order of connections between elements and processes is established, which are essential for their action on the ground of priority relations (p. x).Maturana and Varela (1980) present autopoiesis as a natural circular organization of living systems and its consequences. The authors have discovered a suitable term forthis new phenomena, which unambiguously describes dynamics and autonomy of living systems. This negation of negation points out Kordeš (2004) as well, who says that the essence of autopoietic systems is not in relations between the system components but in the processes. The esssence of autopoietic system is continuous production of abilities of producing oneself and thus maintaining your own organization (p. 176). Luhmann (1995) deines living or autopoietic systems as a specific type of systems. He establishes that they are a depiction of a life's abstraction, in which the principle of self-referencing is built; this is important in materialisation of life and in circulation of self-reproduction (pp. 1-2). Whereas Capra and Luigi determine that in last thirty years there is a tendency to introduce a new view on the concept of life as a new understanding of creating life (2014, p. xi).

Maturana and Varela (1980, p. 5) explain the autopoiesis theory by going into the cognitive process, which is of key importance so that a human knows and is aware that their ability to know depends on biologic integrity. Also Capra (1997, p. 44) points out that seeing is a basis of process of cognition which is founded on self-knowing, followed by real knowledge.This is what Lauc emphasizes as a basis of autopoietic organization that a human is the one who alone sets themselves personal goals on the way of personal development. He stresses that they have to be rational, natural, efficient and humane (Lauc, 2000, p. 133).Ovsenik sees a man as an observer and actor which are natural roles of an individual as a subject and not as an object that is equalized and treated as a machine in mechanistic paradigm. He emphasizes that it is important that each of us qualifies themselves and develops into a full-blooded and all-around personality. In the new doctrine he develops and shows a new view of organization where the phenomena of social and natural organization are equally considered (Ovsenik,

1999, pp. 25-27). Social systems are not only observed but also paradoxical systems, says Luhmann (1995).

In them self-referential activities are not carried out as a part of autopoietic process (pp. 7-9).Maturanaand Varela (1998) speak about mutual harmony so that we see a co-person and live in co-existence as accepting fellow men which includes giving love. They add that without love, as accepting others, no social processes and humanity exist (pp. 205-206). Also Lauc (2000) devoted himself to aspects of love and as a driving power of progress pointed out harmonisation of processes in free action, with presence of the highest aspect of love Agape; he addsthat Eros is still an enigma for many people,in theory as well as in practice (p. 54).Jantsch (1980) defines novelties and confirmation of information, explains that paradigm includes material as well as mental structures. He adds that this is information that creates new information and this is also the motive of conscious self-organization (pp. 50-51).Capra (2002, p. 13) explains from his point of view that autopoiesis is a continuous production of oneself and that cells have two important characteristics: membrane as a limit and network/web of metabolism as a process. Quantum physicist Pavuna (2016) reveals his findings that a holistic coherence is an un-local method of energetic resonance which is a support to unique person. Jantsch (1980) observes self-organization from another point of view as continuous micro and macro natural dynamics of processes which in their continuous movement create co-evolution, where the absolute and ultimate goal is humane aspect. He adds that a new concept of ecosystem is needed as a non-reductionist perspective of evolution's self-organization (pp. xiii- xv).

Biologists define evolution of living systems as evolution of interaction units, which are defined by self-referencing circular organization, which they call evolution of knowledge areas (Maturana & Varela, 1980, pp. 12-14).Ovsenik (1999) mentions an important category, not included in the theory of organization, which is a circular process, rotating again and again in circular-spiral process (pp. 123-125).Capra (1986) defines the transformation as unique in history ofhumankind as this is happening with extreme speed and broadness of changes which include the entire Earth hemisphere. With such a thorough transformation of spiritual organizing of Western culture, significant changes of social relations and organization forms are required (pp. 33-34).Also Capra and Luigi Luisi (2014) are in their work aware of all the aspects of human existence which represent a problem of today's human. They see the solution in fundamental changes of perception, thinking and view on world in science as well as in the entire social community. They suggets the change of existing paradigm as a vision of systematic view on life, which they see as a solution for life of further generations, so that the change is carried out on all levels in the web of co-natural living(pp. xi).

2.2 Action resarch of autopoietic human as new creation

Feyerabend (2007) says that experience is the one which directs a person and thinks that thinking in us is the base of human thinking and consequently activity. Basically, there are

three important factors: we live, learn and follow (pp. 196-197).Lauc (2000) is convinced that the modern issues ofhumanity are approached at inan allopoietic and not in autopoietic way. Morgan (2004) confirms that it is necessary to use the mental process, when we recognize that a human is the one who creates our world. Anthropologist Trstenjak(1985) would agree with this - he suggests that we should not forget to create the world. We perceive this as a characteristic of autopoiesis that we are dependent on self-organization.

Ambrož and Colarič Jakše (2015) say that post-modernism has balanced the relationship between qualitative and quantitative methods. Mesec (1998) points out that with holistic view on a human not only the entirety of human is studied but also practical problems of people from life, whereas with action research (AR) we reduce distances of involved levels. Železnikar (2011) emphasizes that the development of technology with exponent growth and entirely new concepts is inevitable. Already Tesla (2013) tried to stress this with unthinkable technological visions of the third millenium. As a connection of science, art, high technologies and spirituality, we see today a big scope of unexplored; we can say that these are unimagined possibilities of research in AR spiral as eternal research. The definition of organization of new era is put forward by Vila (2000) who says that this will be an organization without limits, internal as well as external, with limited hierarchy. As mentioned by numerous authors, interdiscplinarity will be upgraded into transdisciplinarity (Detela, 2006, Cerovec, 2013, Kukić, 2015 et al.). In the research we did a circular study and tried to close a circle of circles in the sense of AR spiral of planning, action and reflection.

2.3 Industry 4.0 as 4.0 (r)evolution in 4.0 self-organization

4.0 organization as a challenge of 4.0 (r)evolution, for which we do not find a comprehensive concept of 4.0 Industry. Bokrannz et al. (2017) carefully put forward a scenario for 4.0 Industry in the year 2030 and expect specific changes in organization of production which will be marked by extensive solutions of future production.Dombrowski and Wagner (2014) say that industrial revolution will change society with key technologies. They mention relations between 4.0 revolution and mental needs which are not sufficient and further actions will be needed before the final implementation of 4.0 industrail revolution. Schwab (2016) sees the new technological revolution as a challenge of humankind. It is a new understanding and directing, because transformation will include the entire humankind. He estimates that the fourth industrial revolution will include change in dimension, expansion and complexity as never before in human history. Oin, Liu and Grosvenor (2016) take as the base the fact that in this time numerous concepts about 4.0 Industry occur but it is necessary to look at the new industrial revolution from the higher perspective. They are trying to set the frame of the basic concept of 4.0 Industry, which stems from the existing production system. Veža et al. (2015) research control of innovative production networks. They focus on smart factories which employ smart people, talk about smart products and services, which are integrated on the highest level of co-operation in prodcution network. Albers et al. (2016) define 4.0 Industry and predict that it will be an intelligent, connected and decentralised production which connects a human, machines, products in cybernetic physical production system. 4.0 Industry

will enable integration of intelligent quality system in development directly with production as a part of a chain of added value.

Roblek, Meško and Kordež (2015)introduce a question: How important is 4.0 industry and what are the influences for creating added value of organizations and society? They also stress the positive aspects 4.0 as an effect of value efficiency, whereas technological changes will have positive as well as negative influence on employees. Salminen, Nylund and Andersson (2012) focus on evolution efficiency as an autonomous self-organizing system of production. Co-natural production is measured according to social, economical and environmental aspect. Salminen and Kovač (2012) give solutions from the perspective of life cycle. The authors ask themselves how to adjust global and local production by taking into account the system of life cycle. Neugebauer et al. (2016) describe the concept of 4.0 Industry as a technological change, formed on the »bottom up« model, based on »Fraunhofer« technologies. Cybernetic-physical system is described as an infrustructure of: interactions, reflections, transactions, internal operations, rules and communications. Waibel et al. (2017)decisively predict that the next generation of production system will act as a self-organization, included in cyber-physical network.

In the research we present the research question (RQ): How - with concept of forming autopoietic building blocks - to develop a model of organization of future, which will be able of self-/co-organization and self-/co-production in life circle?

3 Method

3.1 Qualitative methods as action research

In the centre of research we put scientific theories of fields of autopoiesis, modern organization and 4.0 industrial revolution with modern 4.0 organization. The research of autopoiesis in organizations is based on interdisciplinarity of abstract phenomena andmutual intertwinement. From the researched literature of authors Mesec (1998), Mali (2006) and Ambrož and Colarič-Jakše (2015) we establish that for research of abstract phenomena it is necessary to follow ontologic process of research, whereas for scientific validation and confirmation it is necessary to use mainly qualitative research method. Mesec (1998, pp. 27-35) says that we use qualitative research if we are interested in purpose, process and relation between research and theory. He points out that holistic perspective on human is not only studying organism as a whole but also practical problems of people in life. In this way define methodological suitability also Ambrož and Colarič-Jakše (2015, p. 50), and at the same time suggest the use of both methods (qualitative and quantitative), if possible so that the results are more comprehensive.

For research process Mesec (1998) directs us into sequential analysis which we repeat several times inside research and by making circles we strengthen and broaden knowledge on phenomena we are researching (pp. 36-39). We see this method as an autopoietic method as it in abstract meaning illustrates a model of autopoietic organization, working according to the

principle of re-processing and re-structuring of the given problem, and closing of circles (Lauc, 2000, p. 9).An organization Ovsenik (1999, p. 14) stresses: "...as self-recognizing, self-observing, self-aware observer with abstract thinking." From similar point of view Mesec (1994) explains that the roles of "researcher"and "user" can be in two holders, whereas if there is one holder, we talk about "self-research". If research is exchanged with validation, this is a special case of action research (AR). The author says that self-research is a legitimate sort of AR, where as a limitation he sees self-reflection, which usually is not broad enough frame with of research in an individual (p. 133).

Our research is about observing and connecting complex theoretical backgrounds, resulting in the base of organization, that is a human as a mentally active "machine", as an observer and at the same time actor of the processes. We suppose that on this human primal action also autopoieticorganization is based. With this purpose we examined theories to find similarities and differences of autopoietic building blocks in modern and 4.0 organization. We used methods of observation, cognition, finding relations, triangulation, gaining qualitative and quantitative data, results, deduction and synthesis, which will be used to interpret BRQ, regardless if being confirmed or rejected.The main approach and course of activities coincides with findings of Ambrož and Colarič-Jakše (2015, p. 65), who claim that this is a repetitive process of: observing, rationalization and validation.

Mesec (2009, pp. 14-22) writes that by process of cognition and changing we add to personal and common growth. He describes the course of AR as a model of spirale of processes: observation, thinking, planning and activity. Ambrož and Colarič-Jakše (2015) state the method of data mining, when we want original approaches and insight into depth of a certain phenomena (pp. 94-95). Brcar (2016) emphasizes that we should be aware that qualitative analysis is more demanding, particularly for gaining data. Even more demanding is the processing of data, and all results, as well as interpretation are subjective and the reserchers need to have more experience. He states that the most demanding is the combination of more methods and points out that the use of untested methods does not bring results, therefore he recommends method testing prior to research (pp. 8-9).

3.2 Methodology of forming autopoietic building blocks as concept of life circle

Our research question is directed towards recognizing of similarities and differences of autopoietic building blocks in modern and 4.0 organization. Before that we needed to study the principles of autopoiesis and get an entire insight. All with the purpose to recognize building blocks, find similarities and differences, and that we can present the results of differences in modern and 4.0 organization. The intention of studying natural principles is to learn and pass on the activity by the analogy method into an organization. Our supposition is that if a system works in nature, it also works in a human and organization, which are a part of it.

We considered how to arrange the autopoiesis principles and again authors show usthe way how to deal with sistematization. Maturana and Varela (1998) say that a human has the ability

of: observing, thinking, recognizing and understanding. Mesec (2009, pp. 14-22) states that with the process of recognizing and changing we contribute to personal and group growth. He describes the course of AR as a model of spiral of processes: observing, thinking, planning and acting. Lauc (2000) presents as a transformationprocess of human decision: feeling, thinking, speaking and acting. This directs us to consideration how to set the strategy of autopoietic building blocks. If we follow the authors, we can summarize that if we observe something, we feel it, create emotions, think about it, consider it, recognize it, speak about it, try to understand it and thus act. When we self-/co-operate, we can self-/co-observe ourselves, become self-/co-aware and we try to act more consciously in the spiral of actions. Kordeš (2004) describes creative circle, in which there is a circular exchange of creation and stability. Ivanko (2015) explains dialectic method as a base of organization theory with creation and changing. Železnikar (2017) says that inside cybernetic informational circle there is growth and dying. Lauc (2016) suggests that AR researcher should recognize, gain, develop and change. He mentions that this is a recognition circle, where a wave as well as particle is observed, and explains that these are quantum particles and their intertwinement. Lauc's suppositions correspond to our philosophy since we recognize with feelings, gain knowledge with self-/co-thinking and self-/co-considering, we develop in such a way that we self/co-observe, self-/co-direct and self-/co-change, so that we self-/co-operate.

We studied theoretical background where authors use life circle as a supposition of part as a whole. We look for some models of life circles as examples from nature, already established terms in work processes and science, which serve as a base for forming the concept of autopoietic building blocks. On the ground of comparison of models and self-/co-reflection we formed autopoietic building blocks as life circle. Each model was defined with four parts of one whole. Why is a human included in a circle? Lasan (2005, p. 7) answers this question: »Laws in a body are determined, but a human has to awaken them himself/herself. Without their own activity nothing happens.« On the other side an individual who works over his ability for a longer time, does not have time for thinking (Ambrož and Lotrič, 2009, p. 64). Humans can become a kind of automatism who due to external influences of environment forget that they are self-responsible for their dynamics. We are talking about dynamics that activates self-/co-feelings and continues into thinking, speaking and activity. When forming autopoietic building blocks sequence is important, as present in AR spiral.

4 Results

4.1 Focusing on autopoietic building blocks in three types of organizations

Perceiving, studying, forming autopoietic building blocks (BB) with qualitative and quantitative research of autopoietic (AO), modern (MO) and 4.0 organization (4.0O) was presented in the article: »Fundamental Autopoietic Building Blocks in 4.0 Organization as a Challenge to Humane Organization« (Balažic Peček, Brcar & Bukovec, 2017). Our thinking continued in the creative circle of autopoiesis with sequences: emotions, thinking, directing and activity. We are focused on our conceptual model, where we pointed out human as an

observer and actor. After self-/co-reflection of the observer, researcher and co-researchers, and based on the previous research and co-operation, we formed a conceptual group of four directional building blocks:BB1-Emotions, BB2-Thinking, BB3-Directing, BB4-Activity.

Table1.Autopoietic building blocks in AO, MO and 4.0O

Cover group of directional BB	**AO** (frequency ofBB)	**%** (frequency)	**MO** (frequency ofBB)	**%** (frequency)	**4.0O**(frequency of BB)	**%** frequency
BB1-Emotions	346	29,1	127	10,1	67	4,8
BB2-Thinking	244	20,5	190	15,1	170	12,2
BB3-Directing	55	4,6	379	30,0	313	22,4
BB4-Activity	544	45,8	566	44,8	846	60,6
Total	1189	100,0	1262	100,0	1396	100,0

4.2 Forming concept and model of autopoietic building blocks as life circle

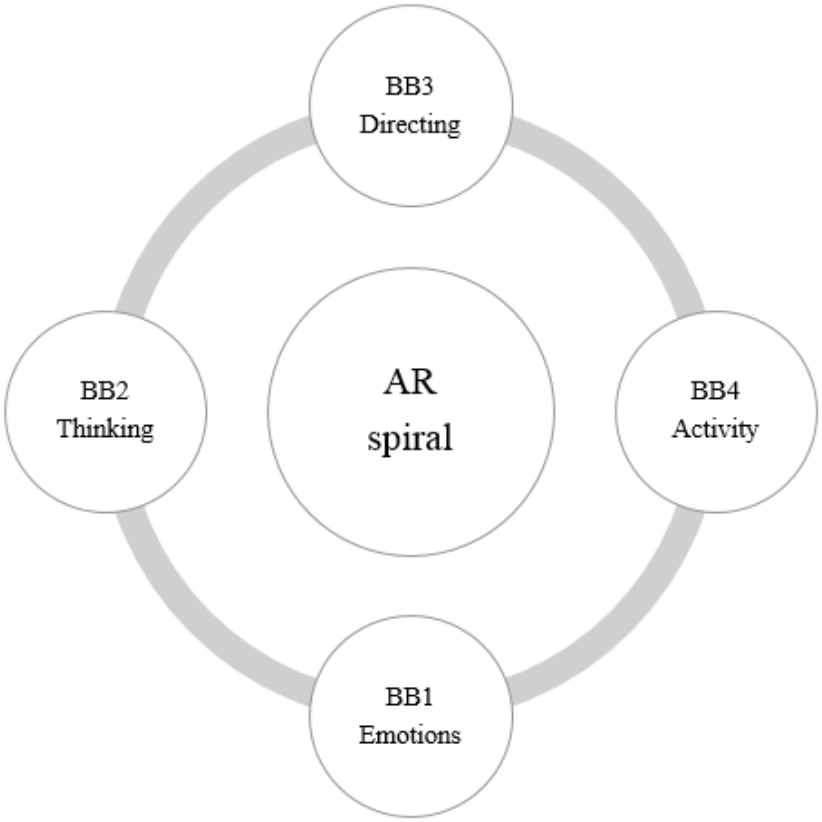
The research concept of forming autopoietic building blocks as life circle was developed as a deductive-inductive model, according to guidelines of Ambrož and Colarič-Jakše (2015), in which we inserted research with AR spiral (Mesec, 2009). Most attention in qualitative analysis was given to process building blocks; we can say that this is a demanding analysis which requires from a researcher to have a lot of experience and knowledge in the research area. Various authors point that out: Mesec (1998) stresses the courage of such research, Ambrož and Colarič-Jakše (2015) demanding systematics and depth, whereas Brcar (2016) emphasizes difficulty itself. Phases of research process are based mainly on qualitative analyses in 5 steps:

1st step: After studying theoretical background on self-/co-principles in autopoiesis, as described by Maturana and Varela (1980, 1998), Capra (1986 and 2002), Jantsch (1980), Ovsenik (1999) and Lauc (2000). We designed »Informational graph of autopoiesis - (IGA)« with A. P. Železnikar. The purpose of »IGA« is to present the comprehensive, systematic and informational view of autopoietic building blocks, as referred to in the continuation. »IGA« is the base and the research tool for central research of autopoietic building blocks in 4.0 organization, thoroughly described in the article Balažic Peček, Brcar and Bukovec (2017).

2nd step: We developed methodology for a concept of autopoietic building blocks as life circle so that we refer to Maturana and Varela (1998), who say that a man has the ability of: observing, thinking, recognizing and understanding. Lauc (2000) included in the process of decision making the transformation process of: feeling, thinking, speaking and acting. With their findings and with findings of others (Mesec, 2009 and Ambrož & Traudi Mihelič, 1998) we develop a concept. In the nature we look for models of natural laws in life circle and recognize in them that the activity of a whole is conditioned by four parts. Theoretical background is taken into account when making the concept of methodology of forming

autopoietic building blocks and validation. Kordeš (2004) helps us conclude the development of the concept as creative life circle with findings of creative circle, and Mesec (2009) with AR spiral (Picture 1).

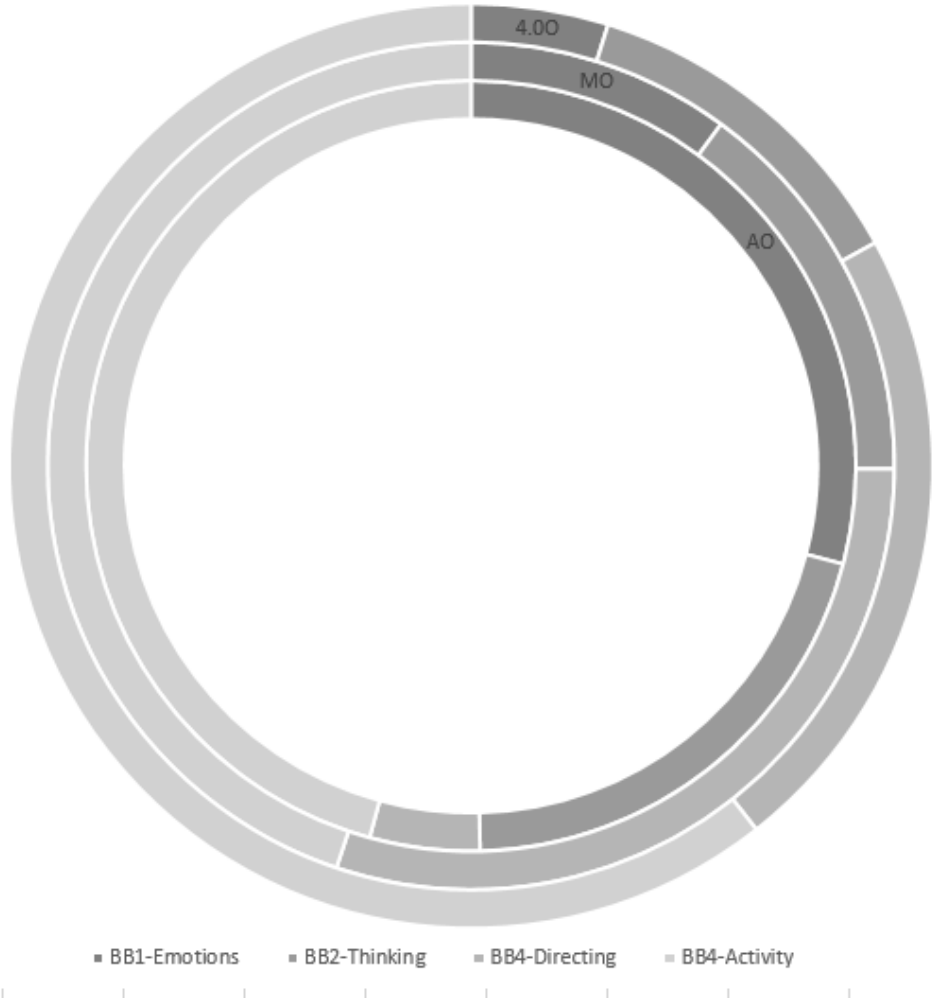
3rd step: The concept of forming autopoietic building blocks as life circle was developed with four building blocks: BB1-Emotions, BB2-Thinking, BB3-Directing, BB4-Activity, with the AR spiral in the centre, as a characteristic of autopoiesis (continuous interaction). Researching according to the concept of forming autopoietic building blocks as life circle is connected with natural laws and in such a way some natural models are set, so that we can say that the research itself is autopoietic. The originality of the concept of forming autopoietic building blocks is shown as life circle, a circle of emerging and decay. AR spiral in the centre means that we are researching, acting and developing groups and thus an individual self-/co-develops as an observer and actor in internal and external world. This duality of self-/co-operation of human was put into the basic concept of the research and served as a starting point practically in all parts of the research. We can say that with continuous self-/co-operation autopoietic activity is being implemented, which starts with self-/co-relationship, thus triggering the processes of feeling, thinking, directing and activity, as presented with directional building blocks from BB1 to BB4.



*Picture 1.*Concept of forming autopoietic building blocks as life circle

4th step: On the base of »IGA« and the concept of methodology of forming autopoietic building blocks as life circle we design autopoietic building blocks on two levels: cover group of four directional building blocks and 36 process building blocks in line with »IGA«. On the level of directional building blocks: BB1-Emotions, BB2-Thinking, BB3-Directing, BB4-Activity we present the results, on the level of process building blocks we carry out qualitative analyses.

5th step:Suitability of set autopoietic building blocks is validated with triangulation, which is made »as particle and wave«, on the level of particle with static and on the level of wave with dynamic view of triangulation. The result of triangulation is confirmation of suitability of set autopoietic building blocks. Triangulation is made also to confirm identification of autopoietic processes in the organization foundations. The starting points for performing triangulations are summaries of theoretical backgrounds of authors. The central research was carried out with mixed methods. As informational tool we used Atlas.ti. We prepared pdf forms of articles to be processed in Atlas.ti, which transformed data into excel and thus we prepared data for qualitative analysis. Qualitative analysis included an overview of texts (articles) on autopoietic, modern and 4.0 organization, where we searched for set autopoietic building blocks on the level of process building blocks. Results were presented with quantitative data, gained from qualitative data of article texts analysis in AO,MO and 4.0O. In final triangulation between AO, MO and 4.0O we establish that all four directional building blocks are present in AO, MO and 4.0O, whereas the differences are on the level of process building blocks. With the results we design a model of forming autopoietic building blocks in organization, named: »Model of forming autopoietic building blocks in organization – MOGAO« (Picture 2). In the inner circle results of AO are presented, in the central MO and in the external 4.0O. In the »MOGAO« model one can immediately notice a significantly smaller share of building blocks BB1 and BB2 in MO and 4.0O in comparison with AO. In 4.0O we see the increase in BB4 compared to AO and MO. With BB3 we can point out that in MO there exists the greatest effort, which is in 4.0O eliminated with information technology and so the share of BB3 is getting smaller if compared with MO and not with AO. We sense a paradox that the share of BB3 in AO is extremely small. We set a question: can the processes of BB1 in AO be replaced with processes of BB3, which are strongly present in 4.0O and even more in MO. We suppose that in BB1 and BB2 there is internal or vertical activity present, while in BB3 and BB4 there are mainly external processes or horizontal activity.



Legend: external circle presents 4.0O, middle circle MO and inner circle AO

Picture 2.»Model of forming autopoietic building blocks in organization-MOGAO«

5 Discussion

With results we can substantiate that process building blocks inside the »MOGAO« model form a structure of AO, MO and 4.0O. Autopoietic building blocks can be interpreted so that they bring vivacity in an organization with self-/co-principles. An individual wants to realise himself/herself in an organization as a sensory being, who feels, senses, thinks, directs himself/herself and co-workers in interdisciplinary teams and acts in the direction of self-/co-referencing (Lauc, 2000). Thus we can state that an individual is a creative potential of organization who with self-/co-organization contributes to personal and organizational power. With this we do not mean the power of prevalence and competition but we want to emphasize that human self-/co-operation is important (in the sense of self-/co-education, self-/co-culture and self-/co-organization), with which they ensure the autonomy of the environment. This does not represent isolation because without a human relationship and self-/co-operation there is no organization, proven by the authors (Ovsenik, 1999, Lauc, 2000 and others). We realized that the creative relationship shows itself in respect, trust, awareness, responsibility towards oneself and everything else. With such culture a human can be active self-/co-

operating subject, who uses emotions and thinks therefore he/she is an operator and potential of an organization. The organization of future should not allow the treatment of a human as a matter, as treated in the mechanistic patradigm. We learn that treatment of a human as an object hinders »flow of movement« and self-/co-operation in an organization, pointed out by many authors (Jantsch, 1980, Lauc, 2000 and others). Autopoiesis is »alive« and gives vivacity to a human as well as organization. Modern and 4.0 organization suppress originality of life and when a life is dying, organization is dying as well. With this we can confirm the research question that with establishing vivacity in an organization we create conditions for operation of self-/co-organization, in whicha comprehensive complex interdisciplinary intertwinement of different principles and scientific fields is present.

By intertwinement of theoretical starting points we stressed the complexity and interdisciplinarity of human life and action, in studying a human, his biological, physical (quantum physiscs) and philosophical level, as well as sociological, organizational, economical, including also law in the wider model of autopoietic organization, which presents a research for central study (Balažic Peček, Brcar & Bukovec 2017).We discover a significant difference between autopoietic building blocks in MO and 4.0O, since 4.0O does not have three process building blocks present. As already supposed considering the total value of BB1-Emotions in MO and 4.0, since there's a significant difference.We also determine that in 4.0O the directional building block BB4-Activity is getting stronger, while BB3-Directing is getting weaker, which is a consequence of good communication established by 4.0 organization. Results show that BB4-Activity is getting stronger, which in comparison with MO gained on the account of BB3-Directing, which in 4.0 is a goal so that relations machine-machine, machine-human and human-human are connected. Results prove that 4.0O excellently connects in the connection machine-machine and human-machine, but for connection human-human, seen from BB1-Emotions, this cannot be claimed made - we can relate this to a mechanistic paradigm and allopoietic activity, which is not in line with a human. It seems like a battle for survival of entrenched paradigm which does not see that constant growth of the same building blocks eliminates and thus ruins building blocks that are important for harmony and complementarity of building blocks. We suppose that creative harmony of an organization can be "awakened" with autopoiesis on all levels.

We suppose that an individual is a subject in mutual co-dependence with self-organization where people develop organization as a self-regulating process. Results confirm that the aspect of communication in 4.0 organization is improving compared to modern organization. However, in the results we see a lack of emotional aspect and self-/co-referencing in the sense of self-/co-activity so we can pereceive that communication machine-machine and man-machine is improving. Primary relations human-human seem to be forgotten and we see this as a gap of 4.0 (r)evolution and consequently 4.0 organization. In 4.0 Industry and 4.0 organization we do not detect an entire concept but only announcement of extensive changes in future production solutions. We understand that the creators of 4.0 Industry focus on efficiency as an autonomous self-organizing system of production and are aware of

bureaucratic organizations on all levels of society. We do not sensedevelopment of organization as a development of organizational thought in the concept of 4.0 (r)evolution, so we can say that according to the known concepts it is more the continuation of mechanistic paradigm. For society a 4.0 (r)evolution is a challenge so that 4.0 organization surpasses allopoetic organization and is becoming more and more autopoietic where relations are important, as well as inner balance and self-respect, creating a harmony between emloyees. That a base of organization is harmonic co-operation can be seen also with Ovsenik (1999), and competitveness is a principle of allopoetic organizations, which are becoming more dependent on external world and do not develop self-organization. It is necessary to use mental process, as confirmed by Morgan (2004), when we see that a human is the one who creates our world. Also anthropologist Trstenjak (1985) would agree with this; he suggests that we must not forget to create the world. We recognize this as an autopoietic characteristic, we are dependent on self-organization. From the biological point of view we can assume that mental process is the base of creating and independance of a human in organization.

Our vision is a moral society so that we self-/co-motivate and co-create the needs of a free Human. Schwab (2016) believes that a new technological revolution is a challenge for humanity. This is a new understanding and directing since a transformation will include the entire humankind. From this point of view the transformation of society in the direction of science, art, high technologies and spirituality is of great importance. Tesla also learned directly from nature and knew well the existing scientific theories of that time but that did not stop him. He opened all basic gained things into a surplus space, where science, art and spirituality do not have boundaries(Tesla, 2013, p. 121).

We assume that in BB1 and BB2 internal and vertical activity is present, whereas for BB3 and BB4 we suppose that there are mainly external processes or horizontal activity present. In the organization of future the emphasis should be put on the establishment of internal processes, which are based on moral values and human activity on all levels. This is what ensures the organization the ability of self-/co-operation in the sense of processes' vivacity. Modern and 4.0 organization suppress the originality of life and whena life is dying, organization is dying. Thus we can confirm the research question that by implementing vivacity in an organization, we create conditions for operation of self-/co-organization. We can say that this is a complete complex intertwinement of different principles, which need to be studied interdisciplinarily, whereas in the future transdisciplinary aspect of researching should be achieved.

6 Conclusion

We performed research mainly in qualitative way and we decided according to action research what is good practice of studying autopoiesis. We carried out horizontal research of autopoiesis and connected it with antrophology of a human, ethics, philosophy, modern organization, 4.0 organization and aspects of humane society. We did vertical research of autopoiesis and connected it with biology, quantum physics and philosophy of life, and

reasearched individual building blocks from the point of view of process activity inside autopoiesis and allopoiesis.

We established that with AR method we can form a concept of autopoietic building blocks. The concept is given balance of activity by building blocks: BB1-Emotions, BB2-Thinking, BB3-Directing, BB4-Activity, which are cover autopoietic building blocks, whereas inside there is activity of process autopoietic building blocks, which continuously re-process and re-structure organization on all levels. The result is a concept of forming autopoietic building blocks in which AR spiral is inserted, which gives self-/co-organizational abilities to organization of future as 4.0 organization. From the concept we develop by qualitative and quantitative methods a model »MOGAO«, from which it can be seen that a modern and even more 4.0 organization has moved away from autopoietic organization. We suppose that with the »MOGAO« model we can develop a model of future organization (4.0 organization) which will be able of self-/co-organization in life circle. In future organization the enmphasis must be put on the establishment of processes, based on moral values and healthy human activity on all levels. And exactly this ensures thatan organization has the ability of self-/co-operation in the sense of processes' vivacity. Modern and 4.0 organization suppress originality of life and when a life is dying, organization is dying, or as Želznikar (2017) says, this is growth and dying. With this we can cofirm the research question that with the establishment of vivacity in organizations we create the conditions for operation of self-/co-organization. We assume that this comprehensive harmonic intertwinement of autopoietic building blocks in continuous movement ensures healthy, creative and complete activity of human and organizations.We can conclude that a human and organization are losing their vivacity of natural activity, which in an organization and society show in humane relations and actions. In addition, the originality of life is being repressed in a human, and when life is dying, organization is dying as well. Now a human has a chance to consciously side with a human and civilisation with autopoietic principles as:»Autopoietic 4.0 Human (R)Evolution«.

We did not come across similar approaches of studying organization, and this is stressed as a limitation since we do not have enough data to compare results of different studies. Moreover, in our environment there is no institution which would develop such methods in the sense of creative development of a human, his/her culture on conscious level of an organization and society as a whole. The continuation of researching autopoiesis is to develop - from the set concept and model - practical models which will self-/co-confront with everyday challenges of a human and organization. In order to achieve this our purpose is to establish an institution for autopoietic organization which will be able to study and connect: science, art, high technologies and spirituality.

References

1. Albers, A., Gladysz, B., Pinner, T., Butenko, V., Stürmlinger, T. (2016). Procedure for Defining the System of Objectives in the Initial Phase of an Industry 4.0Project Focusing on Intelligent Quality Control Systems. *Science Direct*. 52, 262-267. https://doi.org/10.1016/j.procir.2016.07.067
2. Ambrož, M, & Lotrič, B. (2009). *Viharnost organizacije*. B&B.
3. Ambrož, M., & Colarič Jakše, L. M. (2015). *Pogled raziskovalca: Načela, metode in prakse*. Mednarodna založba za slovanske jezike in književnosti, Maribor.
4. Balažic Peček, T., Brcar, F., & Bukovec, B. (2017). Fundamental Autopoietic Building Blocks in 4.0 Organization as a Challenge to Human Organization. *Revija za univerzalno odličnost,* 6 (4).
5. Beck, U. (2001). *Družba tveganja: Na poti v neko drugo moderno*. Zavod za odprto družbo, Ljubljana.
6. Bokrantz, J., Skoogh, A., Berlin, C., & Stahre, J. (2017). Maintenance in digitalised manufacturing: Delphi-based scenarios for 2030. *International Journal of Production Economics*, 191, 154-169. https://doi.org/10.1016/j.ijpe.2017.06.010
7. Brcar, F. (2016). *Pisanje strokovnih in znanstvenih del*. Fakulteta za organizacijske študije, Novo mesto.
8. Capra, F. (1986). *Vrijeme preokreta: Znanost, društvo i nastupajuća kultura*. ČGP Delo, OOUR Globus, Izdavačka djelatnost, Zagreb.
9. Capra, F. (1997). *Tao fizike: Jedno istraživanje paralela između suvremene fizike i istočnjačkog misticizma*. Opus, Beograd.
10. Capra, F. (2002). *The Hidden Connections: Integrating the Biological, Cognitive, and Social Dimensions of Life into a Science of Sustainability*. Doubleday, New York.
11. Capra, F., & Luisi, P. L. (2014). *The System View of Life: A Unifying Vision*. Cambridge University Press, United Kingdom.
12. Cerovac, K. (2013). Transdisciplinaren pristup učenja i istraživanja na sveučilištu. *Metodički ogledi*, 20 (1), 15-31.
13. Dalai Lama XIV (2000). *Etika za novo tisočletje: Njegova Svetost dalajlama*. Učila, založba, d.o.o., Tržič.
14. Detela, A. (2006). Pasti v raziskovanju fenomena zavesti. *9. Mednarodna multi-konferenca: Kognitivne znanosti*, Slovenija, Ljubljana, 10. oktober 2006, str. 16-17, Ljubljana: Univerza v Ljubljani.
15. Djurdica, B. (2011). *Zdravljenje prostorov z življenjsko-kozmično energijo: Čisto okolje*. Alternativa, Ljubljana
16. Dombrowski, U., &Wagner, T. (2014). Mental Strain as Field of Action in the 4th Industrial Revolution. *Procedia CIRP*. Volume 17, 2014, 100-105. https://doi.org/10.1016/j.procir.2014.01.077
17. Ećimović, T. (2016). *Univerzalna vzgoja in izobraževanje in Filozofija trajnostne sonaravne prihodnosti Slovenk in Slovencev*. Mestna knjižnica, Izola.
18. Feyerabend, P. K. (2007). *Spoznanje za svobodne ljudi*. Založba krtina, Ljubljana.
19. Feyerabend, P. K. (2008). *Znanost kot umetnost*. Zbirka Sodobna družba/Sophia, Ljubljana.
20. Hlebš, J. (2017). *Darwin, evolucija in/ali starjenje*. Mohorjeva založba, Celovec.

21. Jantsch, E. (1980). *The Self-Organisation Universe: Scientific and Human Implications of the Emerging Paradigm of evolution*. British Library Cataloging in Publication Data, Oxford.
22. Kordeš, U. (2004). *Od resnice k zaupanju*. Studia humanitatis, Ljubljana.
23. Kordeš, U., & Smrdu, M. (2015). *Osnove kvalitativnega raziskovanja*. Založba univerze na Primorskem, Koper.
24. Kukić, S. (2015). *Metodologija znanstvenog iztraživanja*. Nacionalna i univerzitetska biblioteka Bosne i Hercegovine, Sarajevo.
25. Lauc, A. (2000). *Metodologija društvenih znanosti*. Sveučilišče J.J. Strosmayera u Osijeku, Pravni fakultet. Grafika, Osijek.
26. Lasan, M. (2005). *Stalnost je določila spremembo: Fiziologija*. Fakulteta za šport, Inštitut za šport, Ljubljana.
27. Luhmann, N. (1995). *Social Systems*. Stanford University Press, Stanford, California.
28. Maturana, H. R., & Varela, F. J. (1980). *Autopoiesis and cognition: The realization of the Living*. D. Reidel Publishing Company, London.
29. Mesec, B. (1994). Model akcijskega raziskovanja. *Socialno delo* 33, 1: 3-16.
30. Mesec, B. (1998). *Uvod v kvalitativno raziskovanje v socialnem delu*. Visoka šola za socialno delo, Ljubljana.
31. Mesec, B. (2009). Akcijsko raziskovanje. Pridobljeno (2017, 24. julij) na https://sites.google.com/site/kvalitativnametodologija/akcijsko- raziskovanje/predstavitve-1/.
32. Morgan, G. (2004). *Podobe organizacije*. Fakulteta za družbene vede, Ljubljana.
33. Neugebauer, R., Hippmann, S., Leis, M., (2016). Industrie4.0 - From the Perspective of Applied Research. *Science Direct*. 57, 2-7. https://doi.org/10.1016/j.procir.2016.07.067
34. Qin, J., Liu, Y., &Grosvenor, R. (2016). A Categorical Framework of Manufacturing for Industry 4.0 and Beyond. *Procedia CIRP*. Volume 52, 2016, 173-178https://doi.org/10.1016/j.procir.2016.08.005 Ovsenik, J. (1999). *Stebri nove doktrine organizacije, managementa in organizacijskega obnašanja*. Moderna organizacija, Kranj.
36. Ovsenik, J., & M. Ovsenik. (2017). *Nova doktrina organizacije – 2. del: Preusmeritev pozornosti*. Fakulteta za organizacijske študije, Novo mesto.
37. Pavuna, D., osebni razgovori in korespondenca z avtorjem (Karlovac, Zagreb, 2016, 2017).
38. Roblek, V. Meško, M., & Krapež, A. (2015). A complexity view of industry 4.0. *Sage Open*. 6(2). doi:10.1177/2158244016653987
39. Salminen, K., & Kovač, I. (2012). Role Basaed Self-Adaption of Reconfigurable Robotized Systems for Sustanaible Manufacturing. V: FAIM 2012, *22nd International Conference on Flexible Automation and Intelligent Manufacturing*, June 10th-13th 2012, Helsinki, Finland, Tampere, Tampere University of Technology, Department of Production Engineering, 2012, 8 str.
40. Schwab, K. (2016). *Četrta industrijska revolucija*. World Economic Forum, Ženeva.
41. Tesla, N. (2013). *Moji izumi (My inventions)*. Založba Sanje, Ljubljana.
42. Trstenjak, A. (1985). *Človek bitje prihodnosti: Okvirna antropologija*. Slovenska matica, Ljubljana.
43. Veza, I., Mladineo, M.,&Gjeldum,N. (2015). Managing Innovative Production Network of Smart Factories. *Science Direct*. 48(3) 555-560. https://doi.org/10.1016/j.ifacol.2015.06.139
44. Vila, A. (2000). *Organizacija v postmoderni družbi*. Moderna organizacija, Kranj.
45. Waibel, M. W., Steenkamp, L. P., Moloko, N., & Oosthuizen, G. A. (2017). Investigating the Effects of Smart Production Systems on Sustainability Elements. *Procedia Manufacturing*. Volume 8, 2017, Pages 731-737. https://doi.org/10.1016/j.promfg.2017.02.094

46. Železnikar, A. P. (2011). Informacijska rekurzivnost proti singularnosti. *Elektrotehniški vestnik.*78(3): 85–90.
47. Železnikar, A. P. (2017). *Filozofsko besedotvorje(Philosophical Word Formation).* Pridobljeno (2017, 06. april) na http://lea.hamradio.si/~s51em/book/Medit339slo.pdf.

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Povzetek:
Akcijsko raziskovanje: od koncepta do modela oblikovanja gradnikov avtopoieze kot življenjski krog

Raziskovalno vprašanje (RV): Kako s konceptom oblikovanja gradnikov avtopoieze razviti model organizacije bodočnosti, ki bo zmožna samo-/so-organizacije in samo-/so-produkcije v življenjskem krogu? Človekov potencial raziskujemo kot naravni krožni proces, kar je značilnost akcijskega raziskovanja. Avtopoieza je celovit preplet področij neprestanega gibanja, ki se posledično kaže v ustvarjalniin celostni kulturi človeka.
Namen: Razviti koncept za oblikovanje gradnikov avtopoieze kot življenjski in model organizacije kot model organizacije bodočnosti. Zanima nas človek v organizaciji, v medsebojni samo-/so-odvisnosti na mikro in makro ravni. Znotraj te čedalje bolj virtualne organizacije raziskujemo človeka, človečnost in človeški potencial kot ustvarjalni potencial humane organizacije.
Metoda: Usmeritev v akcijsko raziskovanje, ki jo podkrepimo mešanimi metodami, za celovitejše raziskovanje avtopoieze v organizaciji. Za kvalitativno raziskovanje uporabimo programsko orodje Atlas.ti. Raziskavo lahko umestimo kot študijo primera.
Rezultati: Razvili smo koncept v 5. korakih, za oblikovanje gradnikov avtopoieze kot življenjski krog. Z rezultati kvalitativne in kvantitativne analize, primerjav avtopoietske, sodobne in 4.0 organizacije, smo razvili model »Model oblikovanja gradnikov avtopoieze v organizaciji – MOGAO«. Model je lahko primerjalno orodje za zaznavanje procesov v organizaciji. Z rezultati utemeljujemo, da se 4.0 organizacija usmerja predvsem v delovanje in pridobiva na deležu izboljšanih komunikacij. Izgublja pa v občutenju in razmišljanju človeka v organizaciji.
Organizacija: Rezultati so lahko vodilo in izziv humanim organizacijam. Podajamo izziv, kako s poznavanjem horizontalnih in vertikalnih zakonitosti človeka »obvladovati« 4.0 organizacije. Raziskava prispeva k zavedanju človeka in preobrazbi alopoietskih k vedno bolj avtopoietskim organizacijam, za kar uporabimo vodilo »Avtopoietska 4.0 (r)evolucija človeka«.
Družba: Sprejemanje avtopoieze na vseh ravneh družbe in posledično prebujajočih se organizacij, ter družbe kot celote. Končni rezultat je, z avtopoiezo vplivati na kulturni razvoj družbe v smislu povezovanja znanosti, umetnosti, visokih tehnologij in duhovnosti.
Originalnost: Preplet horizontalnih in vertikalnih znanostvenih področij, s povezovanjem naravoslovja in družboslovja.Zapisovanje avtopoietskih principov (gradnikov/procesov) iz vidika opazovalca in akterja kot samo-/so- principi. Celovitost proučevanja z razvitim konceptom in postavitev modela »MOGAO«.
Omejitve/nadaljnje raziskovanje: Ni relevantnih podatkov za primerjavo študije primera. Proučevanje avtopoietske organizacije v smeri »Avtopoietska 4.0 (r)evolucija človeka«. Ustanovitev inštituta za proučevanje avtopoieze na vseh ravneh družbe.

Ključne besede: akcijsko raziskovanje,avtopoieza, avtopoietska organizacija, 4.0 organizacija, gradniki avtopoieze, koncept in model oblikovanja gradnikov avtopoieze.

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