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CREATIVE ECOLOGIES: DEVELOPING AND MANAGING NEW CONCEPTS OF CREATIVE ECONOMY

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Abstract. The idea of creativity is becoming more and more relevant and is observed in various fields, such as contemporary economics, technology and science. This article is based on the creative ecology theory which has emerged from the creative economy theory developed by economist John Howkins. According to him, it is fundamental to understand the current crisis in the natural environment and economy, and the balance of creativity and control required in our response. The article is based on three research questions: 1) what are the fundamental principles of creativity and the process of sustainable creation; 2) how can one develop high quality ideas and turn them into reality; 3) is it possible for the reckless consuming society to share sustainable creative products and how could this be achieved. Creative economy is a rapidly growing sector of world market. Howkins (2010) uses the creative ecologies theory to analyse human creativity and abilities to create. Creative ecology is presented as "a niche where diverse individuals express themselves in a systemic and adaptive way, using ideas to produce new ideas; and where others support this endeavour even if they don't understand it". Four aspects (diversity, change, learning, adaptation) of ecological thinking are presented as directly related to creativity and innovations, thus extremely important to any contemporary organisation seeking leadership in the creative economy. Looking into the new concept of creativity, authors of the article came to the conclusion that a sustainable relationship between creativity and science is a necessary tool for change, development and management of new concepts of creative economy. The article is based on the project *Creative Ecologies: Creating, Developing and Sharing Sustainable Ideas* presented by the authors in the *Euroweek 2011* conference *Water4World. The project* received two awards – the 1st prize in the project section and The Best Project of the *Euroweek 2011*.

Keywords: creative ecologies, creative economy, new concepts.

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1. Introduction

The concept of creativity is present everywhere and can be observed in various fields, such as contemporary economics, technology and science. Surpassing mere technological creation, one should note the creative ecology theory, which is based on creative economy theory developed by John Howkins (2007). According to Howkins (2010), it is fundamental to understand the current crisis in the natural environment and economy, and the balance of creativity and control required in our response. According to Levickaitė and Reimeris (2011: 90), creative economy is based on complex of five constituents: Creative Industries (Howkins 2007), Creative Class (Florida 2002), Economic Values (Caves 2002), Creative Identities (Hartley 2008), and Creative Cities (Landry 2006). In this paper, three research questions are put forward: 1) what are the fundamental principles of creativity and the process of sustainable creation; 2) how can one develop high quality ideas and turn them into reality; 3) is it possible for the reckless consuming society to share sustainable creative products and how could this be achieved. According to Augustinaitis (2010: 189), the concept of creativity in globalized society is essentially changing. Creativity can hardly be taught, although it can be learned. It cannot be separated from talent that gives birth to something out of nothing or adds new features to that something. Happily, most of products of the creative industries are ecology-minded, however, very few ideas are proposed on this issue. Thus, the theory of creative ecologies is a pioneering attempt.

2. Creativity: a brief overview on a postmodern approach

As traditional raw materials are being swapped for intellectual resources, individuals, organisations, countries and even the world are becoming more and more dependent on creativity . Most researchers of creativity describe this concept as the ability to generate something new. Charles Leadbeater, the expert of creativity and innovation (2005: 7) sees the creativity as a sublime activity within the reach of understanding and explains it as "novel combinations among diverse ingredients: a new interpretation of an existing work, the use of new materials, style or perspective". John Howkins (2010: 8), another leading authority of creativity, innovation and media, uses a very simple definition, saying that "creativity is the use of ideas to produce new ideas". However, he adds that creativity "can be described but not defined and indeed has always been conditional" (Howkins 2010: 9).

As most of the times the resources are aligned to corporate goals through structures by managers, Leadbeater (2005: 7) highlights that "creativity, in contrast, often emerges unplanned, from unlikely sources, and from people who feel their role is to be non-aligned". Howkins (2007: 9) underlines the importance of three essential conditions for creative ideas and inventions, which are: personality, originality and meaning. Based on these three prerequisites of creativity, we can contemplate whether our idea is creative or not, i.e. think if it was created by a person (Howkins (2007: 6) explained this condi-

tion as the presence of an individual person because it is people, not things, that are creative), consider its originality and reflect on its meaning for everybody. In Howkins' (2007: 9) words, creativity "occurs whenever a person says, does or makes something that is new, either in the sense of something from nothing or in the sense of giving a new character to something. Creativity occurs whether or not this process leads anywhere; it is present both in the thought and in the action". Leadbeater (2005: 7) points to this elusory idea as the reason why creativity is so valuable.

Howkins (2007: 9) remarks that creative ideas can be produced not only by one person, but by a group of people as well. Being creative is not only a personal experience. Despite of the fact that creativity is "a talent and aptitude" (Howkins 2007: 9), which is considered to be a personal rather than a group quality, "some kinds of creativity <…> require and flourish in a group" (Howkins 2007: 7). However, some kinds of creativity still tend to be exercised privately or even in solitude. According to Howkins (2007: 7), "both situations can be equally creative".

However, it is important to keep in mind that every individual comprehends creativity differently and depending on many aspects. Experience, education, the level of socialisation, entrepreneurship, even the age can be the criteria. Howkins (2007: 8) represents the ideas on distinguishing the creativity as psychological and historical, developed by psychologist Margaret Boden (2003), of the University of Sussex. The first, which she calls "P–creativity" (psychological creativity), is related "only to the mind of the individual concern (Howkins 2007: 8). The second kind of creativity, which according to Boden (2003) is called "H-creativity" (historical creativity), means that an idea is "novel to the whole of the human history" (Howkins 2007: 8).

As creativity becomes a tangible product, one approaches the borderline between creativity and innovations. Is one the part of the other? Or is creativity equal to innovations? According to Levickaitė (2010: 205), although creativity is mostly thought to be related to the arts and literature, the contemporary science more frequently acknowledges creativity as the essential condition for innovations and inventions. Although Howkins (2010: 10) concurs, he underlines that "creativity is not the same as innovation". He explains that "creativity is internal, personal and subjective, whereas innovation is external and objective. Creativity often leads to innovation, but innovation seldom leads to creativity. <…> Where success depends on personal expression, people want to be creative; if it depends on calculation and implementation they aim for innovation" (Howkins 2010: 10). To summarize these propositions, one can infer that creativity is a precondition for innovations. At this stage of creativity, an idea turns into a creative product. When does it happen? When an idea becomes a creative product? Howkins (2007: 10) explains that it happens "whenever an idea is identified, named and made practicable and may, as a result, be owned or traded". It means that it is the process of an idea taking a tangible form.

As Parrish (2007: 7) said, "creativity is in and around us all". Creativity is a tool that helps reaching the most varied aims.

3. Basic principles of creative economy

For a long time the conundrum of economy was claimed to be the question of how to satisfy ones infinite or at least indefinitely extensive desires and needs with limited resources. This tension between what people want and what they can get was presented by economist John Stuart Mill (1806–1873) (Stanford Encyclopedia of Philosophy 2011) and approached by economics and business for the past fifty years as a focus on one-off innovation implemented in mass production with ever lower costs and prices (Howkins 2010: 10). This is what Howkins (2010: 10) called the repetitive economy. It is today that we are observing a shift to the creative economy, which, as Flew (2004) mentions, has been proposed by Charles Leadbeater (2008), John Howkins (2007, 2010) and Richard Florida (2002). This process is based on the change of creative and repetitive systems which, according to Howkins (2010: 5), have the following characteristics:

Creativity	**Repetition**
Diverse/variegated	Unified
Implicit	Explicit
Unstable (challenges/questions)	Stable (safety/answers)
Fluid/emerging	Rigid/settled
Feedback	Little feedback
Learning	Education
Networks	Hierarchies
Desired beauty	Desired order
Access	Control
High autonomy/low dependence	High dependence/low autonomy
Complex	Simple
Self-organising	Closed, shielded
Quality	Quantity
Systemic/whole	Fragmented/parts
Analogue	Digital (especially binary)
Cyclical	Linear
Process/collaboration	Event/competition
Mind	Body

The majority of people still perceive a creative product as a work of art. However, Leadbeater (2005) claims that "working creatively is no longer the preserve of artists. We live in an economy in which imagination and innovation are increasingly critical, across many walks of life". Creative economy is penetrating into different domains of economics, not only into the world of culture or art, to which many people would attribute the word *creation* according to its current perception. However, the concept "*creation*" carries a much broader meaning that includes industries managing intellectual property – media, telecommunications, software, biology, medicine, education, industrial production, and even agriculture. Every individual is creative, although only few can transform this quality into a personal or – moreover – a commercial activity (Levickaitė 2010: 203).

Parrish (2007: 7), while attending conferences on the topic of creativity, claims he is both a published poet and an MBA, which usually alarms some people for a moment. He says that "his best creativity is not his poetry but his inventiveness within the business world, adapting ideas and methods to new circumstances across the boundaries of industries, sectors and cultures internationally". This is a great example of how an individual consciously perceives the quality one possesses and uses it in practice.

As Howkins (2007: 17) explains, "creativity on its own has no economic value. It needs to take shape, to be embodied in a tradable product, if it is to accrue commercial value". According to Levickaitė (2010: 209), inherently, ideas are completely different from tangible products that are made from those ideas; therefore, plenty of ideas are not as limited as the tangible products. Creativity becomes an economic activity when an idea is transformed into substance, i.e. something that is abstract receives a practical guise.

The result of creativity is a creative product, which can be both a good and a service. Nowadays, it is difficult to distinguish the difference between a good and a service as a greater part of a product's value depends on such intangible assets as an idea, a design, and the trademark value. Howkins (2010: 11) noticed, that "the value of what I create is what it means to me and, possibly, what it means to others; and meanings are unstable".

Most of creative products qualify as intellectual property, which, as Howkins (2007: 11) notices, "has the same defining characteristic as physical property: it belongs to someone". However, Howkins (2007: 11) also highlights some differences between intellectual and physical properties: intellectual property is intangible as it is an artificial construct that did not exist until governments invented it. Therefore, intellectual property is not some idea or any bit of knowledge that we may happen to have; it is solely something that we know or have, which fits the definition provided in the law.

Organisations are changing somewhat rapidly – competition can get ruthless, technologies continue developing, and the Internet penetrates into every day-to-day aspect of organisations demanding them to be smart and watchful. Leadbeater (2005: 11) points out the consumer trends to be forcing all organisations to rethink their ways. As "manufacturers are increasingly focused on rapid product development, branding and mass customisation to add value" and "new sales and distribution channels over the telephone, digital television and online give people more flexible access to services" these are the reasons for novel models of organisations to appear and take the lead (e.g. eBay with advantages of being low cost, easy to use, self-service, built around communities of interest) (Leadbeater 2005: 11). According to Howkins (2007: 11), "creativity is possible in every organisation where novelty and inventions are possible".

In the end of the 20th century, both the concept of working and the attitude towards enterprises changed. Strazdas and Zabielavičienė (2006: 89) accentuate the fact that the present period is the time of major changes taking part all over the world. According to Karnitis (2006: 96), economy becomes based on innovation and the creativity in jobs, on new labour methods and relations. Development of the society is becoming dependent on knowledge, which, according to Melnikas (2010: 524), is the society that

is characterised by values of the predominance of creativity and creative activity, and the key issues that require strategic decisions are to be considered as issues of creation of the knowledge-based economy (Melnikas 2005: 87).

Levickaitė (2010: 210), referring to Howkins, claims that there are four the most popular forms of intellectual property: copyright, patents, trademarks and designs. Howkins (2007: 13) names these four elements creative industries and the creative economy, and considers this definition as a contentious one. The biggest disagreement on the term occurs when some countries restrict creative industries to the arts and cultural industries, excluding science. As Howkins (2007: 13) notes, "this is regrettable extension of the historical tendency to keep arts and science too far apart". Authors will return to this issue later in this article.

The fundament of the creative economy is the economic value. Howkins (2007: 14) defines the creative equation as $CE = CP \times T$, where creative economy (CE) is equivalent to the value of creative products (CP) multiplied by the number of transactions (T). Each transaction may have two complementary values: the value of the intangible intellectual property and the value of the physical carrier or platform (Howkins 2007: 14). Which value is higher depends on industries (e.g. software – the intellectual property value is higher, art – a unit of cost of a physical object is higher).

Creative economy is conformation of the 21st century economy development, based not on simple, utilitarian consumption driven by satisfaction of needs, but on complicated use of symbolic values and fulfilment of higher social needs. Manufacturing was automated; the demand of human resources in service industries was decreasing and finally the 21st century generation is becoming fully-fledged participants of creative industries, which means – consumers, suppliers and observers of the creative economy.

4. Creative ecologies: a deep and a shallow pattern

The author of the term "deep/shallow ecology" is Norwegian philosopher Arne Naess (1973) (Kumar 2011). He developed his theory on the basis of environmental thoughts of early 1970s, but, to tell the truth, the main topic has not lost its relevance ever since. The underlying assumption of the concept is that humanity cannot be separated from its environment and nature.

Since Naess, many authors have written and talked on this subject, which finally lead to Warwick Fox, who named all of that intellectual work the "deep ecology movement" (Fox 2003: 252).

Now, deep ecology has turned into a very ultimate movement, basically opposing the contemporary political, economic and social systems. Surely, authors of this article do not want to campaign for such opposition; however, some aspects of this radical movement concerning waste of resources and lack of creativity could be considered. Besides, on the one hand, the roots of deep ecology gave rise to the present theory of creative ecologies.

Deep ecology supporters first of all turn to societies of the Orient, which live in great respect for the environment because of deep cultural and religious traditions. Philosopher Naess was also influenced by India, Gandhi and Spinoza.

In Naess' words (1973), shallow ecology fights against pollution and resource depletion, but it has one object – the convenience and health of people. "Shallow ecology views humans as separate from their environment. Figure/ground boundaries are sharply drawn such that humans are perceived as the significant figures against a ground that only assumes significance in so far as it enhances humans' images of themselves *qua* important figures" (Fox 2003: 252). In other words, when people say they want to reduce water pollution not for the sake of the environment but rather because of the value of clean water, we deal with a shallow, anthropocentric thinking.

Deep ecology, on the other hand, rejects "the human-in-environment image in favour of the relation, total-field image" and organisms are seen "as knots in the biospherical net or field of intrinsic relations" (Naess 1973: 95). Deep ecology is anti-anthropocentric thinking, where the human race doesn't have any right to be "above" the environment. Activists of the deep ecology movement would say that a river has its own right to be clean and unpolluted, and that this issue is important not just because polluted water is dangerous to the human race. In this way, human beings should stop thinking what is best for them and turn to nature.

The second very important difference noted by Fox is the approach to the dominant ideology (political and economical). Shallow ecology partly adapts to economical growth and rising consumption by simply trying to control it. Thus, according to Fox (2003: 253), it is often referred to as the Resource Management or Resource Conservation and Development approach. Deep ecology, in contrast, tries to change the dominant ideology and position ecological sustainability in the first place.

This way, economical and political values must be generally reconsidered to reach not a 'fake green peace', but rather a very important aim, namely societies living voluntarily and consciously in the ecologically sustainable world.

5. Creative ecologies: a human as an eco-system

The German biologist Ernst Haeckel was the first person to use the term ecology "oekologie", which he has created from the Greek language root "*oikos*" to refer to the relationship between an animal and its organic and inorganic environment (Hindes 2004: 1). Howkins (2010: 11) defines ecology as "the study of relationships between organisms and their environment, which probably includes other organisms". We can analyse biological evolution which, in Howkins' (2010: 46) opinion, is a testable and proven theory; we can study ecosystems which are about ecology of several different species living together; we can explore habitats or niches; but we have to remember that human ecologies exist in parallel. They are analogous to biological eco-systems and serve as the background to Howkins' (2010: 11) proposition that "cultivated eco-systems are the best model for human ecologies".

According to Howkins (2010: 11), "a creative ecology is a niche where diverse individuals express themselves in a systemic and adaptive way, using ideas to produce new ideas; and where others support this endeavour even if they don't understand it". We can evaluate an importance of 'using ideas to produce new ideas' from this definition and presume creativity to be indistinguishable from human ecologies. There are relationships between individuals in creative ecology which are characterised by Howkins (2010: 11) as energy-expressive and claimed to be found in both physical places and intangible communities. Also, Howkins (2010: 11) notices that in these relationships it is not the infrastructure but relationships and actions that count. We can measure the strength of a creative ecology; dimensions, which are needed, are described by Howkins (2010: 11) as flows of energy and the continuous learning and creation of meaning.

Howkins (2010: 45) proposed four aspects of ecological thinking that are relevant to creativity and innovation: diversity, change, learning and adaptation. Elements of this quartet mutually enhance each other and apply to human behaviour and still more to human belief. Howkins (2010: 46) claims that "evolution of ideas is a social construct that works best as a metaphor" and asks to tread carefully: most of modern science is considered as a metaphor whereas sometimes – e.g. for artists – abstraction is reality. Here some ideas on proposed four elements (see Fig. 1).

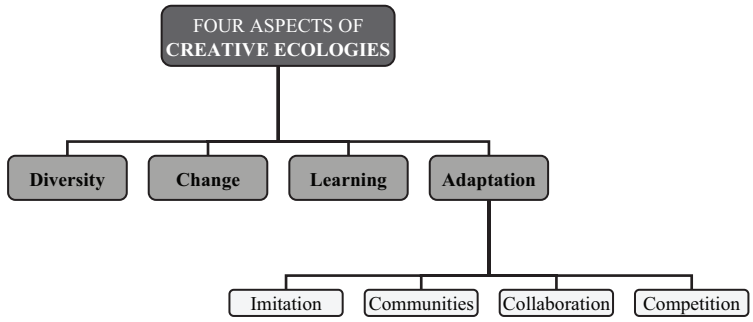

Fig. 1. Four aspects of Creative Ecologies (according to Howkins 2010)

5.1. Diversity

When discovering and learning about the world, the diversity of species, genera, organisms and environments in nature is the reason for excitement and joy. As Howkins (2010: 46) says, "variety is the spice of our life". Also – as inspired by ecologists – he reminds us that "we measure diversity by taking into account not only the number of species but the variety of their relationships with others above and below them in the energy chain" (Howkins 2010: 46).

The eminent biologist Julian Huxley believed that cultural diversity plays the same role for humans as variations do for other species. Every day, cultural diversity opens our eyes to the fact of difference, and stimulates us to imagine possible and even impos-

sible features (Howkins 2010: 48). If we consider ourselves (human society) as our own species, we can then think of a range of diverse cultures. At the broadest level, Howkins (2010: 47) pointed out such categories as races, nationalities, tribes and ethnic groups.

Most of the time, diversity is the reason for odds in different levels: from an individual to states, from a family to nations. Diversity of values, attitudes or ideas means that "we are not distinctive only because of our brains and other evolved physical attributes, most of which are more fully developed in other organisms. We are chiefly distinctive for our minds, our inner life" (Howkins 2010: 51). The baseline is a tolerant society which, as Howkins (2010: 48) puts it, "welcomes (or at least tolerates) different histories, cultures, perspectives, beliefs, styles and languages, and accepts different ways of thinking and imagining". Leadbeater (2005: 7) agrees with this attitude claiming that "were a climate of fear and racism to make people less open and more defensive that might damage our creative culture". Also, he takes a stand that major influences on the creative environment has a public policy, for example, laws that encourage freedom of expression or tolerance of diversity and promote the international flow of ideas and people (Leadbeater 2005: 7).

Diversity is claimed by Howkins (2010: 48) to be "the source of change and one of the chief regulators of how fast change happens".

5.2. Change

To begin with, there is a very good case about the need of change given by Leadbeater (2005: 15). He analyses situation of arts organisations in UK showing that cultural experience is still hugely unequal: "employment in cultural and creative industries is heavily concentrated in London and the south-east and amongst white graduates" (e.g. there are very few black performers in ballet. When the arts agency Push staged a black ballet at Sadler's Wells Theatre, it had to recruit dancers from Portugal) (Leadbeater 2005: 15). However, "successful leading black arts organisations point towards the kind of changes that are needed", like "building up minority ethnic performers" and "audiences for their work", "creating a cluster of successful minority ethnic arts organisations that can sustain themselves", etc.

When Howkins (2010) talks about biological change, he references to the theory of evolution proposed by Charles Darwin (1859), Alfred Russel Wallace (1860) and evolutionary biologist Richard Dawkins, a professor at Oxford University.

Howkins (2010: 49) marks several important achievements made by Darwin and Wallace: they had independently observed nature's profligate variety (by seeing that children born to the same parents have different characteristics), they also saw that more offspring were born than survived (the struggle for existence) and finally deduced that an organism that is more fit for a task is more likely to survive. These observations bring us to the statement that "by being inherited, this non-random selection of random change would lead to new varieties and even new species" (Howkins 2010: 49).

Another theory of change considered to be important by Howkins was one promoted by Dawkins who claimed that "the gene, not the organism, is the motor of evolution; that the gene (the replicator) uses the organism (the vehicle) rather than the other way around" (Howkins 2010: 49). This right away brings us to a natural question: is there a gene for creativity? Howkins' (2010: 50) answer to this is simple: "'no' in the sense of a single gene causing a single characteristic that we would call creativity, because of the complexity of the process".

One more interesting point of view was explained by Wilson (1998), who suggested that evolution takes place at the population level and affects social position (e.g. human generosity cannot be explained by Darwin's principle of "survival of the fittest") (Howkins 2010:50). As Howkins (2010: 51) said, "what we do best is culture: creating it and expressing it", but we have to appreciate that culture is learned. Learned characteristics do not affect our genes and cannot be genetically inherited, but learned ability to create and understand visual images changes rapidly and within individual lives (Howkins 2010: 51). However, what Howkins (2010: 51) reminded us of, is a bit shocking yet absolutely normal: "in evolutionary terms we were in the savannah only yesterday".

Darwinian evolution gave us large brains in relation to our bodies and a capacity for speech, probably both at about the same time, which are fundamental to our ability to think for ourselves, and to create and invent (Howkins 2010: 50). Processes of creation and invention are both in progress, generating better adaptive fitness to a particular way of life. What we can do is to manage this while attempting to progress constantly and learning is the tool to seek it.

5.3. Learning

The greatest truth about human creativity, according to Howkins (2010: 53), is that "it doesn't matter where we get ideas from; it matters what we do with them". The toughest task is to learn how to handle ideas, information and knowledge. It includes both us and other people. This can be achieved through education, training and learning.

Howkins (2010: 53) clarifies that there are some differences between education, training and learning. According to him, education is the government-led system for teaching children and young people up to college levels. All education systems teach some creativity, but after primary school, most restrict to art and story-telling (Howkins 2010: 53). However, Leadbeater (2005: 7) disagrees while saying that a major influence on the creative environment has a public policy, for example, the way education promotes creativity. Another form is training that teaches specific skills, usually vocational and ranging from language to life skills and professional qualifications (Howkins 2010: 54). Only then there is learning and it is what Howkins (2010: 54) characterises as "personal, diverse and endless, <…> self-motivated, self-managed and often self-financed" process.

People generally agree that most of their knowledge was gained in full-time academics. But if we frankly think of how we discover what we are good at, we would agree that we gain this knowledge from experience, friends and colleagues, and from reading, talking and doing. This is what Howkins (2010: 54) calls "the real learning"; people need to learn, not to be taught. The process of learning has to be permanent. We can change in bursts, like American biologist Stephen Jay Gould (1941–2002) suggested that evolution happens not in a continual development but in bursts of punctuated equilibrium (Howkins 2010: 49), but learning has to be continuous. According to Howkins (2010: 54), "the creative mind that does not learn from others or from itself will wither away as certainly as an animal will die without food or an engine without fuel will stop".

There is a need for some change in people's attitude to the process of working with others. Most of people want to work with less creative and less successful people as they see it as an opportunity to win a competition. Howkins (2010: 6) highlighted this struggle and explained that "with some activities, you want other people to be less talented or successful so you can get ahead; in the creative ecology, you want to work with people who are better than you so you get ahead". Through conversation and dialogue we need to share our knowledge with as many people as we are able to. As Howkins (2010: 56) predicts, "group's learning capacity will increase as it has a wider variety of people to learn from".

5.4. Adaptation

In human ecologies, people are interconnected with each other and their environment at all times just as organisms in eco-systems. It is a very rare to find a neutral relationship with others; individuals set a series of relations and this reveals the process of how they adapt. They improve both themselves and the environment they are a part of. According to Howkins (2010: 59), relationship spectrums can vary from conscious to unconscious or from friendly to unfriendly, but they all are attributable to one of four kinds: imitation, communities, collaboration and competition.

1. Imitation: Howkins (2010: 59) describes imitation as one of the easiest and quickest forms of adaptation. Imitation is more like copying: as Howkins (2010: 59) notices, people imitate how to do or not to do something, copying their family members (e.g. children from parents), colleagues, rivals and indeed anyone with a high status in their peer group.

2. Communities: we are more likely to imitate if we feel we belong to the same community as the person we are copying (Howkins 2010: 61). It means that our belonging to some communities is a presumption of adaptation. Individual benefits from being in a community – it is a result of mutualism or symbiosis (which are also relevant to nature eco-systems). As Howkins (2010: 61) claims, "large populations can satisfy more of an individual's needs on a more regular basis".

There is a great variety of examples how individuals adapt through being a part of communities. An impressive example could be a community of termites. As Howkins (2010: 61) puts it "when a few (termites) gather together they are literally useless and soon dye. But when thousands gather they make wonderful nests with air-conditioning systems more efficient and ecologically sound than any human has yet achieved".

Another great example is given by Leadbeater and Miller (2004: 10) with Linux, the computer operating system. It started life in 1991, when Linus Torvalds, then a student, "posted the source code for his new operating system on the internet and asked his fellow software enthusiasts to make criticisms, propose improvements, take it away and tamper with it <…>. By 2004, about 20 million people around the world were using a version of Linux. There were 430 user communities in more than 72 countries and more than 120 000 registered Linux users, many of whom helped with its development" (Leadbeater, Miller 2004: 10).

Howkins (2010: 61) calls these processes in examples "acting unconsciously as one". People, like animals, are not only adapting while belonging to communities, but also can make exclusive achievements and create something surpassing separate individual's potential.

3. Collaboration: Howkins (2010: 64) defines the term collaboration in a creative ecology as a relationship "when two or more organisms or species deliberately cohabit and share for a specific, known benefit". It is noteworthy that collaboration is learned and explicit and the participants are conscious of the deal (Howkins 2010: 65). However, Howkins (2010: 65) claims there is something more interesting (and it seems, something more opposite): "people born in the last twenty years are <…> instinctively collaborative".

People's achievements through collaboration could be much more amazing than ones produced in the competitive environment. In Leadbeater's (2005: 17) opinion, "partnerships between public sector organisations are commonplace as public service organisations explore new, more collaborative models. In education, for example, federations, clusters and networks are increasingly common as a route to school improvement". People need to work together to produce ideas and nourish them; more people means more attitudes, opinions, views, to sum up, – more ideas. When Leadbeater (2008) argues for collaboration, he claims that "most creativity is collaborative. It combines different views, disciplines and insights in new ways <…>. The number of people who could be participants in the creative conversations is going up <…>. We are developing new ways to be innovative and creative at mass scale. We can be organised without having an organisation" (Howkins 2010: 66).

While sifting arts organisations, Leadbeater (2005: 18) found several various aspects of networking, which should be encouraged and which also are relevant to any physical subject in human eco-systems: collaboration to share facilities, back office infrastructure and even aspects of creative production, such as set design and production; using networks to access a variety of talents as sources of creativity; developing partnerships to access global markets, pursuing education and outreach programs via partnerships, etc.

Collaborating does not mean losing individuality. As Howkins (2010: 66) assures, "collaboration doesn't obviate individual talent or ignore the light bulb' moment". Collaboration also means a personal bonanza.

4. Competition: we now that today's world is in a battle for limited natural resources. As Darwin (1859) indicates in his book *On the Origin of Species*, there is competition, struggles, enemies, battles and even wars (Howkins 2010: 66); everyone who can is engaged in a fight: people, companies and even countries.

Howkins (2010: 67) wants to point out that "ecology's understanding of competition is more subtle and more interesting". As he explains, in a creative ecology "two organisms might compete for the same resource but the competition might be peaceful and might occur without the participants knowing they are competitors, which takes the edge off any real sense of conflict" (Howkins 2010: 67).

Parrish (2007) is an upholder of a different attitude to competition suggested by Brandenburger and Nalebuff (1996) as he prefers the word "co-opetiton". Parrish (2007: 48) claims the "co-opetition to be the result of bringing together competition and co-operation to form <...> a new partnership". This kind of "co-opetition" is possible when specialties, strengths and other characteristics of several competing objects are not exactly the same – they are different in their competitive positioning. No-one fails for others to succeed and each gets more than it had before (Parrish 2007: 48).

In creative ecology, Howkins (2010: 67) distinguishes two levels of competition: the internal and the external. An individual experiences internal competition when striving to launch the best idea of all possible ones; the idea needs to meet internal standards of aesthetics and style that are particular to that individual. Howkins (2010: 67) suggests this is time "to find people collaborating at this stage in order to enable them to compete with their own notion". External requirements for our idea are novelty, meaning and utility; an idea has to fight for itself in the marketplace, i.e. "creative freedom needs markets if it is to develop" (Howkins 2010: 68).

6. Science splits the monopoly on creativity – ideas can be developed and managed into new concepts of creative economy

For many years science was kept a separate sector of human activity, probably least connected to creativity, which gratuitously belonged only to artists. According to Howkins (2007: 10), it happened because creative products were seen most publicly and obviously in the arts. It made a wrong impression that only art can be creative (arts and creativity were treated as synonyms).

It was only in the beginning of the twentieth century that first ideas on a possible relationship between creativity and science emerged. However, the main conceptions of creativity were borrowed from the arts. Scientists who were the first to analyse the meaning of creativity to science, were representatives of natural sciences and formal disciplines (Helmholtz, Atkinson 1885; Poincaré 1902, 1905, 1908; Wallas 1926; Wertheimer 1924).

New theories on the concept of creativity proved that "artists have no monopoly on creativity, nor are they only workers in the creative economy" (Howkins 2007: 10). Howkins claims that "difference between creativity in the arts and elsewhere is not that artists are more creative, or more successfully creative, but that because they deal in a specific range of ideas and aesthetics, they create specific kinds of works and work according to identifiable business models with their own patters of supply, demand, values and pricing" (Howkins 2007: 10).

Nowadays, it is agreed that creativity is a big part of scientific work, especially research and development (R&D). According to Levickaitė (2010: 205), scientists use a specific method for creating new scientific theories: first of all ideas are generated, and then they are filtered refusing the wrong ones. This way, creativity becomes the process of accepting or denying assumptions. Levickaitė (2010) claims that creativity, because of its multiplicity, penetrates into various industries, where, starting with new ideas, scientific research is developed. Another new scientific tendency based on creative ideas is Communication and Development scientific research. We must admit that all technological innovations belong to creative science as well. Actually, contemporary science increasingly agrees that creativity is the essence of inventions and innovations.

However Howkins (2010) does not forget that there is some difference between the creativity of a scientist and that of an artist. Historian of science Colin Ronan says "to engage in science requires a vivid creative imagination, tampered by firm discipline based on a hard core of observational experience" (Ronan 1983: 85). Biologist Wilson, the inventor of "consilience", which he described as the "interlocking of causal explanations across different intellectual disciplines", says creativity is "the ability of the brain to generate novel scenarios and settle on the most effective" (Wilson 1998: 124).

On the other hand, while talking about science, we must mention another relevant question. John Howkins, in his book *Creative Ecologies: Where Thinking Is a Proper Job* shares the idea that as nowadays science has advanced more than ever and scientific developments in knowledge and technologies are countless, there are other aspects to be taken into consideration. With this tremendous development of last centuries "mainstream science shaped by Galileo, Bacon, Descartes and Newton is too reductionist and too much in love with facts and quantities" (Howkins 2010: 68). Here Howkins gives an assumption that eco-creativity is, probably, the new Renaissance.

Human beings have already wasted too much of what they had discovered through the years with the help of science. Now it is the time to use eco-creativity and start treating all natural resources differently: not mechanically consuming, but creatively saving. Howkins (2010: 70) emphasizes that "creative ecology does not have to be sustainable in the sense of operating at a minimal level of energy or work <…>. Rather, sustainability is using today's potential to the maximum without limiting future generations from doing the same <…>. In creative ecology resources are infinite".

Here we come to the conclusion that creative science (with the reference to creative ecologies) is not a possible option but the obligatory choice for contemporary scientists.

Creative solutions can replace the tradition of "facts and quantities", mentioned by John Howkins (2010: 68) and help human beings to start saving our natural resources. Otherwise science will turn into overkill instead of a stimulus for future development.

7. Conclusions

Summarising theories on creative ecologies and development and management of new concepts of creative economy, the following conclusions are made:

1. As creativity is the use of ideas to produce new ideas, it works for different fields: from arts to science, from philosophy to economics or politics. Although ideas as such are not limited, such are creative products that are tangible and have a form. Every individual is creative and can use its creativity to make a profit.
2. Creative Economy is the most rapidly growing sector in the market. Priorities changed during the previous decade: there is a shift from the physical to the intellectual property, which in general has the same characteristics but is suitably unlimited. Creativity is possible in every organisation and tends to lead to innovations, which are to satisfy changing and complicated human needs.
3. Creative ecologies stem from the roots of deep ecology. Though creative ecologies contemplate human ecosystems, they are generally based on ecosystems in natural environment. This way, participants of the contemporary creative economy cannot distance themselves from the idea that the welfare of the human race is inseparable from the welfare of nature.
4. Every organisation is an eco-system, for which the best examples can be borrowed from nature. In these organisational eco-systems, the four aspects of creative ecologies thinking can ensure their proper functioning. Diversity, Change, Learning and Adaptation (that includes imitation, communities, collaboration and competition) can help an organisation to take the lead in the creative economy.
5. Looking into the new concept of creativity, authors of the article came to the conclusion that a sustainable relationship between creativity and science is a necessary tool for change. The aim of creative science is to leave an opportunity for future generations to be able to lead a proper life.
6. With the help of the new attitude to science, creative ecologies are turning into the modern form of sustainability; development and management of new concepts of creative economy lays a path to the world of the future.

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KŪRYBOS EKOLOGIJOS: NAUJŲ KŪRYBOS EKONOMIKOS KONCEPCIJŲ PLĖTOJIMAS IR VALDYMAS

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Santrauka

Kūrybingumo sąvoką šiandien aptinkame pačiose įvairiausiose srityse, įskaitant šiuolaikinę ekonomiką, naujausias technologijas ir mokslą. Svarbu atkreipti dėmesį ne tik į naujų technologijų kūrimą, bet ir suvokti kūrybos ekologijų (Howkinsas 2010) esmę, kuri remiasi Johno Howkinso (2007) išplėtota kūrybos ekonomikos teorija. Anot Howkinso (2010), nūdienos ekologinės ir ekonominės krizės gilumo suvokimas reikalauja iš mūsų adekvačių veiksmų – kūrybingumo ir kontrolės balanso. Šio straipsnio autorės savo darbe kelia tris pagrindinius klausimus: 1) kokie yra fundamentalūs kūrybingumo ir nuoseklaus kūrybos proceso elementai; 2) kokiu būdu žmogus gali plėtoti aukštos kokybės idėjas ir paversti jas realybe; 3) ar įmanoma ir kaip įmanoma dalytis tvariais kūrybiniais produktais nūdienos nerūpestingai vartojančioje visuomenėje.

Individai, organizacijos, šalys ir visas pasaulis šiandien tampa vis labiau priklausomas nuo kūrybingumo – tradicinės žaliavos vis dažniau yra keičiamos intelektualiniais ištekliais. Pačių idėjų skaičius neturi ribų, tačiau apčiuopiamų kūrybos produktų skaičius yra limituotas. Todėl kiekvienas individas, būdamas kūrybingas, turi galimybę savo idėjas paversti kūrybos produktu ir siekti pelno. Tuomet toks individas tampa kūrybos ekonomikos dalimi.

Kūrybos ekonomika yra sparčiausiai augantis pasaulinės rinkos sektorius. XXI a. ekonomikos plėtra grindžiama jau nebe paprastu vartojimu praktiškiems poreikiams tenkinti, bet sudėtingu simbolinių vertybių ir aukštesnių socialinių poreikių tenkinimu. Paskutinis dešimtmetis pakeitė prioritetus žmonių sąmonėje: nuo fizinės nuosavybės pereinama prie intelektualiosios, kuri, turėdama daugumą tų pačių charakteristikų, turi ir vieną išskirtinę – yra neribota. Šiais laikais vis sunkiau atskirti prekę nuo paslaugos, nes, anot Howkinso (2010), didesnė produkto vertės dalis priklauso nuo tokių neapčiuopiamų dalykų kaip idėja, dizainas ar prekės ženklas. Visi išvardyti elementai priklauso ir nuo žmogaus suvokimo, o tai nėra pastovu.

Per kūrybos ekologijų teoriją (Howkinsas 2010) nagrinėjamos aplinkai ir bendruomenei atsakingo žmogaus kūrybinės galimybės. Kūrybos ekologijų teorija kilo iš vadinamosios giliosios ekologijos (Naessas 1973) šaknų, kuri, priešingai nei seklioji ekologija, neišskiria žmogaus iš jį supančios gamtos. Taigi, kūrybos ekologijos, nagrinėdamos žmonių ekosistemas, iš esmės remiasi natūralios gamtos ekosistemų pavyzdžiu. Šis požiūris skatina visuomenes savanoriškai, sąmoningai ir kūrybiškai spręsti

tiek globalias, tiek ir vietinio pobūdžio problemas. Todėl šiandieninės kūrybos ekonomikos dalyviai negali nutolti nuo minties, kad žmonijos gerovė neatskiriama nuo natūralios gamtos gerovės. Howkinsas (2010) kūrybos ekologiją įvardija kaip „nišą, kurioje skirtingi individai išreiškia save sisteminiu ir pritaikomu būdu, senas idėjas naudodami naujoms kurti; o kiti individai šias pastangas palaiko, net jei ir nevisiškai jas supranta“. Keturi Howkinso (2010) pasiūlyti ekologinio mąstymo principai (įvairovė, kaita, mokymasis, adaptacija), tiesiogiai susiję su kūrybingumu ir inovacijomis, yra neįkainojamai vertingi bet kuriai organizacijai, siekiančiai kūrybos ekonomikoje lyderystės.

Remiantis nauju pastarajame dešimtmetyje išplėtotu požiūriu į kūrybingumą, straipsnyje prieita prie išvados, kad tvarus ryšys tarp kūrybingumo ir mokslo yra viena svarbiausių šiandienos priemonių, siekiant pasaulyje esminių pokyčių. Kūrybingo mokslo esmė – palikti galimybę ateities kartoms gyventi visavertį gyvenimą. Pasikeitęs požiūris į mokslą lemia tai, kad kūrybos ekologijos tampa modernia išliekamumo forma – naujų kūrybos ekonomikos koncepcijų plėtojimas ir valdymas nutiesia kelią į kitokį, socialiai atsakingą ateities pasaulį.

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Reikšminiai žodžiai: kūrybos ekologija, kūrybos ekonomika, naujų koncepcijų valdymas.

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