18. Creation in science, art and everyday life: ideas on creativity and its varying conceptions

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Abstract

A basic condition for 'measuring' creativity directly is the theoretical clarity of the concept, and that creativity as a facet of human activity is clearly separable from its cultural, historical and collaboratory context. The essay discusses theories of praxis and sociocultural context of behaviour, such as the work on the habitus, the field and human practices by Bourdieu, the thesis of creativity as an intrinsic part of action by Joas, revising the ideas of American pragmatists Dewey and Mead, and recent interpretations of the cultural historical theory of L. S. Vygotsky (e.g. Tulviste, Moran & John-Steiner, Clot). Creative action is seen as situation-bound, where the actor, the situation, and the activity milieu form an integrated whole. In new situations creative reactions of the actor emerge, based on accumulated and often pre-symbolic experiences of people and on the formation of the actor in a social field and its network of tacit rules. New knowledge is generated when internalising cultural commodities, the previous products of creativity, and transforming them in the inner work of the actor to new cultural products (Yaroshevskii, Lotman); a process stressing at least the role of broad general education in promoting shared creativity in a nation. The end chapters evaluate the sense of cross-national research on creativity in the European scope. A cultural comparison of creativity in miscellaneous European populations cannot simply be made with available test scales and without an adequate theoretical notion of what creativity is in the

context of national civilizations. Thus, a study of European civil society could start with examining representations and experiences of creativity in its different subcultures. One phase could be analysis of how students and teachers rate the capacity of teaching in inspiring creativity. In general, creativity emerges to be a component related intrinsically to the actor, the milieu, the collaboratory networks, and a specific situation, in which it cannot be measured as a set of previously selected indicators. A qualitative approach toward cultural comparison looks more reasonable than a quantitative presentation of 'national degrees of creativity.'

Introduction

This essay asks whether creativity is actually a measurable entity or a 'simple dimension', in the light of newest theoretical discourse. It discusses in the first part some 'praxis theories' of creativity, such as the French sociologist Pierre Bourdieu's eminent work on the habitus (the collection of the characteristic dispositions of the actor) and the social field resembling these dispositions, then the thesis of creativity of human action by the German researcher Hans Joas, revising the ideas of American pragmatists, and as as a third moment, some newest approaches of the famous semiotic and sociocultural theory of Vygotsky and the formation of human creative ability through activities (Tulviste, Lotman, Moran & John-Steiner, and Sawyer). Creative action is seen here as situation-bound, where preparedness for action and the milieu form an integrated whole in each period. In new situations creative reactions of the actors work as based one, accumulated experiences of people; new knowledge and new habits are generated when internalising cultural commodities and transforming them in the inner work of the actor. People create the social system with their 'habitus' but are results of this unfinished creation at the same time, which is a basic autoproductive, 'autopoietic' process of self-organising entities (Christian Fuchs). The conceptions on what creativity is and whether it can be taught in school have varied since the ideas of Plato, who explained creativity, in his dialog 'Phaidros', a charismatic phenomenon, coming to a cultivated citizen as an inspiration from Gods.

The end chapters evaluate purposiveness of cross-national research on creativity and its possible gains and negative sides. Instead of a direct use of the test scales for creativity that are already available it would be better to construct instruments that best correspond to the notion of cultural creativity, relevant in an international comparison of different European nations and their variable subcultures. Also, a qualitative type of analysis of results should be considered as an alternative of heavy statistical procedures. The risk is that otherwise 'pre-given images' of what 'creativity' is are readily embedded in the standard methods selected for a cross-cultural investigation.

The study of European civil society could start with examining social representations and experiences of creativity in different cultures, using the methods and ideas presented by Moscovici, Mugny and Carugati. A conclusion is that as creativity is a many dimensional construct, a system in which different elements — the actor, the milieu, the period — tightly cooperate, it cannot be studied as a bundle of separate indicators or variables (cf. Danziger 1996, on creativity as a historically changing whole). Instead, a qualitative comparison of several cultures appears quite possible. The primary task of the educational system is to increase people's sensitivity to their genuine experiences and offer general education in which all will adopt the earlier products of creativity that lead to creation of the new.

Prologue: naissance of psyche and creativity

It is not possible to reach the borders of psyche, even if you follow every possible road: so deep is its Logos (Heraclites).

The Russian psychologist F. T. Mikhailov, a sharp thinker of the sociocultural school of thought, has written a book *The Riddle of the Self* (1980), in which he analyses how human self-hood arises as culture enters the brain and connects the individual with an enormous potential to work and with different historical and current resources of thinking. He concludes this inspiring treatise with a description of how four severely handicapped people could gradually *develop self-hood* and *become participants* in our common cultural history. This study concerned the hardest possible experiment of nature with humans: people born deaf-blind. Four natively deaf-blind people were first taught to *use* objects functionally in a special Moscow clinic (spoons, toys, bowls, showers, keys, etc.), and then to *name* these objects by means of a spelling system using the faculty of their sense of touch. The teaching followed the Vygotskian principles of *sign-mediated activities,* through which children learn in the everyday life to control things, symbols, and instruments, and become persons of their community. The idea was that cultural sign-mediation and participation in the social discourse generates in people self-hood and makes them able to discuss, create, and produce new. Olga Skorokhodova, one of the rehabilitated native deaf-blind, later earned a Master's Degree in Psychology at Moscow University. She illustrates vividly how this 'second birth' of her person was achieved: *Now even in the most complex situations I am able to be my own critic because a sum total of historically completed actions live in me, unfolded in the language of my people. Besides my friends and teachers I have had interlocutors — in those who through many centuries have dealt with the most difficult riddles of existence. Together with them, I take part in the discovery of new ideas. Their thoughts are born again in my mind. Different voices of different periods and cultures come to life in my own existence* (Skorokhodova cit. by Mikhailov, 1980, 264–66).

This passage is a splendid example of the power of *commonly owned cultural selfhood*, where culture literally enters the neural system of humans and starts to work through their brains and bodies; culture becomes an inner creative activity of the individual (cf. also Vygotski 2002, 61, Yves Clot 2002, 59). As Clot interprets the Vygotskian thinking, this culturally produced consciousness can be conceived as a liaison of people's personal experiences forming their identity and leading to *psychic labour of civilisation*, mediated through the individual's objectified (analysed), conscious and joint experiences. Psychologist Olga Skorokhodova accents in her text the '*interplay of different voices of different periods and cultures,*' coming to life in her own self; in her awakened consciousness. This interplay between living and virtual personalities of different periods and cultures forms — to use a statement of Bourdieu — a truly *selfish, social gene* or *the DNA* of the tissue of collective creativity, repeating and changing the social patterns and even material nature, and using people as if they were its mediating tools. This social and cultural DNA is not necessarily tied to certain period or to a definite place, but is an overall generator of change and patterns the new environment

Creativity — an inbuilt element of action

The idea to study creativity in the European scope and as a macro-structure, including the cultures of about 20 million immigrants and tens of minority populations, is really a brave enterprise, whoever invented it. But conditions of this kind of study, especially if it is conceived of as a large-scale measurement or comparison, are naturally rather hard. One task is to build a more comprehensive picture of creativity as an overall human potential. From this angle, it is possible to understand creativity as *people's shared inventive movement*, using the cooperative potential of language as well as of prelinguistic communication, and the respective modes of thinking. The utmost tendency of creativity is changing the circumstances in which people live, using their accumulated experiences and the varying situations of their milieu as elements of creative activity. It does not seem reasonable to divide human actions unconditionally into the creative and the non-creative; nor to estimate creativity of individuals and cultures as a plain dimension, when all people anyway possess a capacity for continuous creation in their specific environment. Creativity could be seen an intrinsic part of human action, a condition of the survival or individuals and cultures, and not any issue of an extraordinary activity with its own specific 'laws' as the German sociologist Hans Joas (1996/2001) emphasises in his recent study of creative action and its European metaphors.

A paradoxical fact is that not only individuals but also the *products of creativity* take part in the joint processes of creativity. An eternal problem of the psychology of

creativity is, thus, to comprehend that the *universal products of human creation* have their own right of existence and they are no longer psychological or individualistic. This is the point of view that the Russian historian of psychology M. G. Yaroshevskii (1985) underscores in his works on creativity. An artistic creation, such as the sculpture of *David* by Michelangelo, the *Jupiter* Symphony of Mozart, or *Hamlet* by William Shakespeare, is like an arrow in time or a cultural missile, producing in every period *new meanings*, when it passes through different historical eras and meets new generations and new populations. So, prior works of creativity generate permanently new ideas and ways of life, on the basis of their complex historical existence. What is more, Yaroshevskii suggests that the products of creative action no longer reflect the particular individual traits of their creators (or do so in a 'coded form' alone), as they are assimilated into universal culture and to common social praxis. One understands easily that a nuclear reactor does not reflect the mentality or the subconscious images of its inventor, but is more liable to figure out that this kind of personal features, images, and emotions could be present in the artistic creations, music, the fine art, and poetry, disregarding how much they reflect their period and the collectively invented styles, may these be 'academic' or 'revolutionary'. However this may be, an attempt to correlate the facets of different works of art, e.g. the styles of painting or composing during the epoch of Baroque, with the personality traits of individual creators, disregarding the historical field and context in which they live and in which they are connectedly intermingled, remains inevitably an hopeless enterprise. To understand the whole collective field and the growth of its creativity one may examine Bourdieu's (1992) vast analysis of historical genesis and maintenance of the 'field of literature', which was the great achievement of the French writers of the nineteenth century, especially Gustave Flaubert and all other 'agents' building and inventing this new entity with its own rules and new definitions of creativity. Yaroshevskii refers to S. L. Rubinstein's definition of creativity (1976), which underlines creation of new knowledge, not only within an individual life-course but also as a contribution to the universal *phylogeny of knowledge*.

A macro-psychological point of view

This essay examines creativeness as connected with social macro-structures and cultural phenomena, a point of view that I defined in a 1972 editorial of the Finnish *Journal of Psychology* as the new *macro-psychological approach*. The idea of this approach was investigating how psychic phenomena are intrinsically tied to social formations and are inherent parts of these formations. Some ideas of macro-psychology are tightly related to philosophical psychology, a branch concerned with the return to thinking and explanation of eternal psychological problems. Another familiar ingredi-

ent of macro-psychology is the historically oriented psychology and sociology, which still is located in the periphery of human studies. But how to define creativity, this important component of future social change? Can that be done with measuring sticks, as guided by some everyday conceptions or tautological designations of 'creativity'? Imagination has been about 2 500 years, a cherished but debatable construct among scholars, but the notion of imagination has nevertheless opened the space for the current notion of human creativity. However, the idea of creativity or imagination as producing *something new* dates only back to the epoch of Renaissance, before which the scholastic thought and gothic architecture tried to produce everything on the rule, permitting variations only in micro-structures depending on the skill and handicraft of the artisans of mental or physical work.

Thus, in this essay into creativity, the starting point is that creativity forms an inherent part of human action and history, and is not a specific 'ingenious activity', allotted only to few (see also Joas 1996/2002 below). It is the leading principle here that the notion of creativity cannot be measured if there is something unclear in that concept, or if it happens to be a 'systemic notion', containing the actor, the field and the period as inseparable elements, as an integrated whole another leading principle in this examination is that creativity is basically a shared and collaboratory social and psychological phenomenon. The works of Vygotsky (2002), John-Steiner (2000), and Sawyer (2003) all illuminate the emergence of the new in collaboratory processes, in conversation, cooperative efforts, in creative interaction of intellectual actors, or — in the mother-child communication. This collaboratory facet of creativity, understanding it as an auto-productive activity, displays a chance for developing creativity in pedagogic and group activities and in other types of joint practical projects. Vera John-Steiner (2000) has insightfully analysed the interactions and discussions between creative personalities such as Albert Einstein and Niels Bohr, Marie and Pierre Curie, Pablo Picasso and Georges Braque, or Igor Stravinsky and George Balanchine, showing how this social interaction in itself produces significant insights. David Henry Feldman writes in the foreword of this book that 'even when considering achievements typically believed to be individually created such as Einstein's theory of relativity or Darwin's theory of evolution, John-Steiner shows unmistakable signs of collaboration, joint effort, and social support necessary to worthwhile human endeavours' (Feldman 2002, xi). If the purpose is to analyse whether 'creativity' is measurable with methods that are already there, I believe that a careful theoretic analysis of the concept and its genesis is necessary, even before pilot attempts of a cross-cultural study.

The inseparable dynamic of field and creative project

Pierre Bourdieu (1966) refers to the painter Vassili Kandinski who said that 'it is the inner necessity which drives the artist to create the new' and, sometimes, to transform the existing 'rules of creativity' (as was actually done during the Impressionist Revolution in France in the 19th century). The *creative project of an artist* or *scholar* is a compromise between the his/her inner necessity or 'creative obsession', as it is also sometimes called, and the demands of administrative authorities, commercial institutions, or the public opinion, which all demand a higher or lesser conformity, resembling the conventional taste and the mode of harmless description of things and people (Bourdieu op. cit.). Bourdieu refers to the French poet Paul Valéry, who said that it is the immunity toward these outer demands that leads authors to write as they think and feel, instead of writing what the audience claims. In any rate, outer social pressures are always mirrored in the inner dynamics of creative work. The result may be *shared defences* of thinking in an intellectual community, defence mechanisms that restrict elaboration and infiltration of new unpopular ideas (see also Häyrynen, 1980). These *collective constraints of creativity* can be visible even in the academic world. In question might be a defensive attitude toward competitive new ideas that are declared not fulfilling the norms of the academic field, an exaggerated formalism, a naïve desire for defining everything logically and with tautology, resentment, or heightened control of what younger researchers do. *Creative projects are always loaded with social, moral, and intellectual tensions and their agents or actors have to decide, in the final analysis, to what causes they are committed.*

It is important to see that our own cultural consciousness and its fundamental dynamics depend drastically on how we in point of fact conceive of the *other cultures*, or other creative projects, and in which way we employ the social presence of a strange Other in our intellectual enterprises. It is relevant to mention what the excellent social psychologist G. H. Mead says about the s*ocial* and *shared nature* of creative experiences, not permitting a reduction of the dynamics of creativity to an abstract system of 'universal and timeless laws':

> '— I shall claim that the analysis of experimental science, including experimental psychology, never operates in a mind or an experience that is not social, and by the term 'social' I imply that in the thought of the scientist the supposition of his mind and his self always involves other minds and selves as presuppositions — the dividend that I wish to see declared on this social nature of mind and the self is the equal immediacy that may attach to the assimilation of others' experience with that of our own …' *(*Mead, 1938, 53).

Mead claims that in all scientific work we inevitably utilise the attitude of the other, which is involved in addressing ourselves and in attending to the other social actors. 'Our World' indeed means the assimilated experience of all people, it is established in the early phases when people are contacting each others. This common experience unmistakably comes before the 'individualised versions' of reality, so that even our emotions appear to be first shared and collective, and individualised only afterwards (the Finnish physiological psychologist Timo Järvilehto launched this proposition about emotions in 1996). Thus, in creativity we use a mass of experiences caused by earlier creativity and the attitudes of our co-citizens, as communicated verbally and non-verbally.

To recapitulate: creativity occurs in the context of social and cultural macrostructures, and people are not only 'related' to these structures and do not merely 'interact' with them but are intrinsic components of these social and cultural structures. Creativity is a continuous discovery of new ways in which humans examine and utilise their symbolic and physical environment. The environment is structured for our perception on the basis of the practical values and utility of things and matters, as the German philosopher Martin Heidegger presents (cf. Dreyfus & Dreyfus, 1986). In our society the function of a wide general education would evidently be transmitting the creative cultural potential to the cohorts of new people, so it is one of the most important inventions of the collective creative movement.

European metaphors and American solutions of creativity

The German expert of pragmatist sociology and psychology Hans Joas opens a significant way to the analysis of creativity of action in his work *Kreativität des Handels* (1996, available also in French and English, Joas 2001). Joas starts with an inclusive study of metaphors of creativity in the European thought. The main metaphors and their inventors have been, from the 18th century. They comprise e*xpression* **as** defined by Johann Gottfried von Herder (1744–1808), who underlined the emotional functions of language, *revolution* and *production* in the works of the young Karl Marx (1818–83), the *life* in itself by Friedrich Nietzsche (1841–1900) and other romantic philosophers, and *élan vital* by Henri Bergson (1859–1941); all figures in the European history who have dealt with human creativeness in one way or the other. Yet, it should be mentioned that Nietzsche's programme for creativity did not count on good problem-solving, but rather on *creating the problems* and *destructing* habitual practices, a project that still has its capacity to generate movement. The only aspect of the central metaphors of creativity Joas seems to omit is *imagination,* which James Engell describes, in his outstanding work, as the key concept of the thinkers of Enlightenment and Romanticism. In fact, 'Imagination' corresponded to the idea of creativity before creativity was discovered (Engell, 1981*)*.

After a wide discussion on various concepts of creativity in action, Hans Joas decides that the best working idea of creativity can be found amongst the American Pragmatism: thinkers such as John Dewey (1858–1952) and G. H. Mead (1863–1931), prominent scholars both in the educational, philosophical and psychological domains. He found in the thoughts of these scholars an explanation of human action that is fundamentally creative, in the sense that it is continuously oriented towards different problems. The pragmatic philosophers represented no metaphor for creativity since seeing it basically as problem-solving. Still they stressed the aesthetic, motional and social aspects of comprehension more than its rational elements. People act with routines, adopted habits, mostly without conscious reflection, as long as these routines work. In a totally new situation a process of contemplation is needed, which some scholars identify as *objectifying of the situation of action*. Dewey assumed that people are driven toward experiencing, touching objects, smelling, designing, listening, and talking to other people by a *sympathetic interest, a bodily scheme*, connecting the social and the aesthetic, and stronger than a mere intellectual need:

> 'All persons have a natural desire — akin to curiosity — for a widening of their range of acquaintance with persons and things … this sympathetic interest provides the medium for carrying and binding together what would otherwise be a multitude of items, diverse, disconnected, and of no intellectual use' (Dewey, 1910, p. 189).

This does not mean that all people are at all times 'creative', but a continuous habit of exploration and a social and aesthetic orientation gives all people the potential to create and survive every time when the *outer situation* asks for it. It is the *situation,* not primarily habits or impulses, or even the personal properties, which is the strong centre of creative action. Creativity is, first of all, composed of active responses toward the challenges of time, and an opposite of an apathetic attitude toward the world. As Vygotsky said: 'The most important property of creativity is courage.'

A room full of angels — truth of pre-symbolic and practical knowledge in creation

> **'**What are the demands of scientific imagination? Is it any different from trying to imagine that the room is full of invisible angels? No, it is not like imagining invisible angels … whatever we are allowed to imagine in science must be consistent with everything else we know … the problem of creating something which is new, but which is consistent with everything which has been seen before, is one of extreme difficulty,' Physicist Richard Feynman (cit. R. D. Tweney, 1996, p. 164).

Many aspects of scientific, artistic and technological creativity are related to pre-symbolic and non-spoken meanings, sometimes to everyday life experiences, which are not usually comprehended as elements of High Creativity. Tweney says on this: 'In particular, I suggest that any account that tries to bridge the gap between the physical world (reality) and the finished conceptual world of scientific thought (imagined reality) can do so only if attention is paid to the nature of the pre-symbolic events that mediate the relation between the two', (1996, 163).

When interpreting a new phenomenon, scientists and artists utilise everything they have learned in their life, from childhood memories to experiences with lifts, social situations in one's laboratory, or recollections of an exceptional phenomenon of light. Faraday's diary, which Tweney screened carefully, is in its loose descriptions of the scientist's impressions and sensorimotor experiences an example of non-conceptual processes, which guide the early phases of analysis, *if* placed in a new context. Tweney suggests that these pre-symbolic and practical processes are constituents of the products of imagination (cf. also Stehr, 2001). Another conclusion is that scientific knowledge is often produced with non-scientific rhetoric or thinking. If creativity is psychologically intermingled with several codes of thinking and expression, and utilises both conceptual and pre-symbolic elements learned in the early childhood, it seems useless to try to measure it as only one and clearly arranged dimension.

Is measuring creativity conceivable and what is its gain?

Research on creativity with comparative methods and on a European scale is surely an impressive project in which a new application of statistical methods may offer interesting possibilities. However, it may be difficult to observe the tacit hypotheses that guide the use of statistics in various research enterprises outside of the original problem sphere, as Sally Stares noted when discussing the problems of the world poverty statistics (2009). The scientific theories are always in play with some outer social factors of research. whether overtly or tacitly; '— researchers cannot escape drawing on the socially constructed knowledge about the world, which comprises scripts, schemes and heuristics that they use every day to navigate a path through it' (Stares 2009, 42). She concludes that the use of statistics is always a more or less political matter.

Gigerenzer applies the idea of socially constructed preconceptions to psychology, indicating that universal technological and logical changes offer new models for psychology, even if they do not have a theoretical connection with the phenomena we study (Gigerenzer, 2001); thus, available methods and tools shape the theoretical concepts tacitly. Gigerenzer remarks that despite prayers that were backed up by

statistics, some 90 years of factor analysing and correlating IQ tests has not noticeably increased our understanding of the mechanisms of human intelligence: 'I fear that the proposal to look for correlations between some tests for social complexity, social skill, and individual intelligence will be doomed to the same failure' (Gigerenzer op. cit.). The main argument is that available techniques and tools cannot compensate a lack of conceptual sharpness in empirical investigations, including the study of creativity. Despite many interesting findings the conclusion appears to be that no direct approach of measuring creativity or increasing it with training programmes has proved unambiguous (e. g. J. Baer, 1993; R. K. Sawyer 2008, 44–45, 54–55, 300–301). One problem is that justifying something as creativity belongs in our society to the relatively autonomous fields of cultural and scientific production, and cannot be defined as a mere psychological variable by psychologists. A comparative study of different forms of creativity among different European countries is not only a psychological but also a cultural sociological, if not a philosophical question.

The sociocultural theory and creative appropriation of culture

'Behaviour is never a combat which will calm down' (L. S. Vygotski).

The early Russian psychologist L. S. Vygotski saw human consciousness as an instrument of the *cultural labour* of the individual (Vygotski, 2002): culture enters the brain of the individual and starts to work in the human body. Various aspects of the sociocultural theory of Lev Vygotsky, as related to research into creativity, have been recently discussed by Peeter Tulviste (2001), Yves Clot (2002), Seana Moran and Vera John-Steiner (2003), and Keith Sawyer (2008), who all have fresh ideas about the sociocultural and collaboratory basis of creativity. These approaches draw attention to the *notion of goal-directed activity* in explaining people being connected with formative cultural influences. In using and naming the cultural and social instruments people internalise the key meanings embedded in their cultural *and* physical environment. When coping with their milieu, transforming it, and perceiving it from different points of view people actually 'learn creativity'.

Seana Moran and Vera John-Steiner quote a passage of Vygotsky's work *The Problem Age*: 'Development never ends its creative work.' They stress the basically creative nature of *internalisation* or appropriation of cultural tools, the process that we already considered in discussing the effect of the earlier products of creativity on the creative process: 'Internationalisation is not just coping but rather a transformation or reorganisation of incoming information and mental structures based on the individual's characteristics and existing knowledge' (Moran & John-Steiner, 2003, p. 63). I suggest that the most important factor in persuading people to learn 'large-scale creativity'

would be to support the processes, in which the new generations of people acquire civilisation and internalise the earlier products of creativity of the mankind. This may simply mean an activating, rich and broad general education to all, as a basis of professional training and experience.

Tulviste (2001), in particular, stresses that it is *activity* that mediates the relationship between people and culture. As a result, his basic formula is the triad *subject → activity → culture,* which can equally be read in the opposite direction: *culture → activity → individual*. The cognitive strategies people use in resolving their actual problems are not inherent potentials of the brain nor universal features of human mind, but their thinking corresponds to the array of activities that their culture exposes and demands. Tulviste refers to Vygotsky's statement that as *words* are related to language, the *meanings* behind the words are anchored in practice that means in all human activities. He discusses thoroughly the difference between 'modern' and 'traditional cultures', a separation that he does not see very clear and justifiable though. 'Modernity' usually refers to cultures in which thinking is based on theoretical notions and linear logic, as mediated by the school teaching. A decisive factor is, nevertheless, *the range of new activities* that science-based, urbanised and technical cultures offer, as compared to 'traditional' cultures with collecting or agrarian economy. 'Hunting people think about the moon differently from people in a culture that has invented astronomy', Tulviste notifies. What is more, he concludes that thinking in 'modern' cultures is still more diverse, more heterogeneous, than we usually think. *In addition to scientific thinking it* (the modern culture) *includes other types of verbal thinking, whose study and purposeful development have received too little attention thus far* (Tulviste, op, cit., 183).

What makes thinking in problem situations so diverse, even among modern cultures, is that, in addition to conceptual thinking, people in these cultures — even the scientific experts — use a variety of verbal and non-verbal codes, vernaculars, and even pre-symbolic patterns learned in their childhood, as Tweney stressed above. These codes or 'languages' of situational thinking are not determined in advance, but they are selected on the basis of the character of the dilemma or the predicament in question. Tulviste refers to the absorbing idea of the influential Russian expert of semiotic Juri Lotman, from the University of Tartu in Estonia, who suggests that in creative thinking people always use several codes to achieve the ends, and it is exactly the *incompatibility* of these codes of thinking that permits a new thinking to emerge:

> '… Creativity, the production of something new in culture and the individual, is possible only because there is a translation of knowledge from one language

> of representation to another. Due to existing differences between languages, the translation cannot in principle be completely adequate, and due to this, in the process of translation new knowledge is generated. No thinking apparatus can have only a single structure and be monolingual; it must necessarily include in it semiotic formations which make use of different languages and are mutually not translatable' (B. A. Uspenskij & Yu. M. Lotman in 1973, cit. by Tulviste, 2002, p. 80).

Furthermore, Lotman emphasises that metaphors and other modes of analogous thinking and expression are not only applied in artistic but also in scientific thinking, in which a less conventional 'rhetoric' and a more modest logic always alternate (cf. also Gruber, 1996):

> 'Rhetoric is proper to scientific consciousness to the same extent as to the artistic. In the area of scientific consciousness, two spheres can be distinguished. The first, the rhetorical, is the area of approximation, analogy and simulation. This is the sphere promoting new ideas, establishing new postulates — that formerly seemed absurd. The second is the logical. Here the new ideas are subjected to confirmation, the conclusions for owing from them are analysed and internal contradictions in evidence and arguments are eliminated. The first, the 'Faustian' sphere of scientific thinking comprises an integral part of investigation' (Juri Lotman in *The phenomenon of culture*, University of Tartu 1978 (in Russian), cit. by Tulviste, p. 81).

This exploration illuminates vividly the processes *generating new knowledge* and explains why the practical activities are not translatable to formal 'academic' language, or even resist this translation analysis similarly supports to the ideas of Howard Gruber (1996), who has carefully studied how the eminent researcher of intelligence, Jean Piaget, utilised a lot of various metaphors in developing his theoretical ideas: writing, a circle of sciences, toys, songs, an adolescent boy, etc. Bourdieu remarks: 'it is just this incompatibility of different languages that creates novel wisdom.' Another corollary concerns the *social representations* of creativity and their possible heterogeneity: it is not expectable that in all countries which represent a 'modern culture' the representations of creativity would be homogeneous and refer to the same meanings. But one may ask if current university and school teaching omits totally the 'Faustian' aspect of thinking, which means that the process of teaching is repeating and arranging available knowledge but not inspiring new ideas, passions, or questions.

The social representations of creativity

I shall now turn to discuss some research initiatives, which may permit the study of certain aspects of creativity among different European subcultures. First of all, has the multitude of the population the luck to utilise the full spectrum of cultural commodities, which have been created since the first Paleolithic people, invented fire, tools, decorations, and shelter against the weather and animals (see Steiner, 2001, who submits a similar question)? How people interpret creativity in different European countries, have they biased conceptions of each other's creativeness, and do they believe that school or university stimulate a capacity for creativity?

Research on social representations has been initiated by Serge Moscovici and his collectively oriented social psychology in France (2001). Moscovici suggests that the subjects do not perceive a social object directly and individually, but are reflecting first the official and unofficial discussion around that matter, for instance 'creativity' as it emerges in everyday discussion, in different media, or in the scientific discourse. They can decide, then, from which part of this cauldron of discussion they will search their personal opinion. Moscovici defines a triadic model of *subject–collective discourse–object*, instead of the standard dyadic model of psychology, the standard subject–object scheme. Many concepts such as 'creativity' or 'intelligence' shuttle between the everyday talk and scholarly discussion, and bear traces of the former discussion when entering, for example, from everyday public treatment into scientific articulation. Nonetheless, these conceptions affect fundamentally the aims of educational or cultural policy, as concerns producing of the general preparedness for creativity.

If one wishes to analyse the patterns of creativity in present European countries, the first step could be to discover what teachers and students actually understand by 'creativity' in different university and school systems, vocational or general. Someone on the web log of the EU conference on *Measurement of Creativity* suggested that we should not only analyse how people in certain cultures rate their own creativity, but also how they interpret each other's 'creativity': the expressions of creativity of their Other (cf. G. H. Mead, above). This is a sound proposal. It could result in *an exploratory study of social representations of creativity* in different European cultures; or *what personal experiences people genuinely consider creative*. In the background of social representations are the public discourse of creativity and the scope of social meanings in which the discourse of creativity moves. As Michel Foucault has stated the historical period determines the architecture and the sediments of knowledge people dwell in and how they lance the problems on which they disagree or agree (cf. Dreyfus & Rabinow, 1983). Individual experiences of creativity may include sensorimotor impressions, emotional

states of mind, and activities that have been fulfilled and have resulted in new experiences. In our life-course study (reported later) we asked academic people to freely describe in which past activities they feel to have been 'creative'. It may be symptomatic that only two thirds of them responded to this open-ended question, and a still smaller proportion were able to describe a concrete activity, such as presenting a doctoral dissertation, building one's own house, preparing a sermon for a service, meeting foreign cultures, or artistic painting or publishing fine literature.

Hannu Räty and his Finnish research group studied thoroughly what 'intelligence' means to students and school teachers. Later, the researcher studied the conception of academic ability, how it arranges the hierarchy of students in the school and how malleable students describe this property (Kärkkäinen & al., 2008). The method has been developed by Gabriel Mugny and Felice Carugati (1989) to cover dimensions of discourse around the conception of intelligence. Ruey-Yun Horng (1990), from National Chiao Tung University in Taiwan, has presented one of the earliest empirical studies of conceptions of creativity. In a collaborative project with the French psychologists we have recently collected a material on how the students of these countries describe 'the intellectual', and whom they nominate as 'intellectuals' of their national culture in Finland or France. S. B. F. Paletz & K. Peng (2008) reports a study of cross-cultural differences in the *implicit theories of creativity*, comparing American, Chinese and Japanese college students. They attach importance to biases that exist as the stereotypical notions on 'western' and 'non-western' creativity: culture is in this case is suggested as a factor in explaining the 'economic backwardness' of some countries. Their study is not directly concerned with the theory of social representation but stresses the importance of having a wider theory on cross-cultural factors of creativity. C. Chen et al. (2003) have done research on the differences between European American and Chinese children in drawing and evaluating geometric shapes. This study did not reinforce the conception about wide cultural variation in evaluating non-verbal creativity but is significant as indicating that representations can be also studied through pictorial codes.

It can be expected that if all semantic dimensions of 'creativity' or 'creative person' are scanned, the variation would be unmistakably visible among different ethnic groups and professional communities. Notions such as 'creativity' or 'intelligence' shuttle between the everyday talk and scholarly discussion, and bear traces of the former discussion when entering, for example, from everyday public treatment into scientific articulation. A consequence may be that 'creativity' or 'intelligence' are not pure scholarly concepts after all. None the less, these conceptions — though not justified scientifically — affect interpretations of the aims of educational or cultural policy in various

nations. The problem is that the 'implicit theories of intelligence' or of 'creativity' often attribute success and failure of students not necessarily to the teaching they receive but to the students themselves, their lacking 'motivation' or 'talent' factors of failure or their deficient cultivation. The matter seems to be similar with 'creativity" — students who are described as creative have the strongest cultural capital, meaning they come from highly educated homes, and speak the 'same language' as the professors in the elite classes (Bourdieu & Passeron, 1964). This model holds good in those European countries that still cherish upper-class traditions. Anyway, the study of the social representations of creativity should cover all important key groups of the educational range in various nations. The ongoing study of what 'giftedness' means in various national types of education in different EU member countries might support this kind of novel project (EURYDICE).

If the social representations of creativity are analysed among the university students, one should acknowledge that the *field of students* is composed differently as compared to the field's artistic or scientific production or the commercial field. The field of students is made up of hidden rules of competitiveness, success and failure in examinations, gaining entrance to the desired institutions, and the social aspects of student life. This does not mean that students are indifferent towards a problem-oriented and effervescent teaching, but their main activity is still to gain entrance and achieve a diploma and professional competence. This may also be the context of their representations of creativity; people never conserve a static array of adopted concepts but these mirror both their motivations and the circumstances in which they find themselves. Hence, the ideas about 'creativity' among currently unemployed workers or immigrants who find themselves in a strange environment are surely different from university professors or students of an elite school.

Conclusions: creation, discovery and the MP's of innovation

Creativity is a process, just as history and evolution are; it is not basically a dimension of performances or a shop that offers new commodities to a sophisticated audience. The empirical approach to creativity could resemble a historical analysis in some respects, as a study of how creative action is developed in communicative processes (cf. Sawyer, 2003, his experimentation on student actors who improvise in a dyadic discourse, leading to new and unexpected creative responses), It may be, however, that the sociological forms of creativity are not equally important in different subcultures of the member countries of European Union.

The fact is that habitants of current European nations display fairly numerous subcultures, dissimilar in religion, language, political past and their historical roots. The huge proportion of immigrant population in western Europe adds to the diversity of these subcultures. In addition to the western model of modernisation, the cultures of present Europe represent traditions of Muslim and east-European multinational cultures, having probably their own interpretations of what creativity is and how it should be cultivated (cf. N. Göle, 2000). One should not imagine that the western model of modernisation is the only one, or the only valuable, or that its explanation of the development of the Self and creative consciousness is exceptional among all world cultures. In these circumstances, a qualitative cultural comparison of representations or experiences of creativity would be a wise solution of research in the European scope, at least as a pilot enterprise. I fear that a comparison of the 'means' or 'degrees' of national creativity along merely one scale would not offer much wisdom for making pedagogical or cultural political conclusions. These political arenas suffer from obvious 'everydayness' and confusion of the concept of 'creativity', and a result of an attractive discourse on creativity might be a more distinct and unbiased notion of creativity in these practical domains.

In practice, different workable concepts of innovativeness and creativity exist. George Steiner submits in his salient work on 'grammars of creation' (2001) the idea that the task of science is invention and discovery but not creation, since the things it discovers are already there, I suppose that chances of testing and evaluating what is totally new do locate outside the standard psychological or sociological sphere. Quite interesting is A. H. Maslow's division into two different kinds of creativity (Maslow 2000, Part III: Creativity and Innovation). These modes of creativity comprehend (i) generating something totally new and (ii) discovering new combinations of elements that already exist in the social sphere (or the *Noosphere*, as the Russian physicist Vernadski calls it). The French philosopher Cornelis Castoriadis defined a process of radical imagination, which is the process creating new institutions, ideas and modes of speech, and historically new models of society, being in itself a part of history (Castoriadis, 1996).

The idea of imagination was already present in the philosophy of Aristotle and the way in which he defined the function of imagination (Aristotle, trans. 1986, 196–203, and see explanations by Lawson-Tancred 1986, 83–87). Castoriadis, himself a Greek by birth, suggests that the society of Athens — comprising its institutions, philosophy, political order, and the people of Athens — was created in its time in this way, through radical collective imagination, the thinkers inventing new language and new significations as well (the non-computable linguistic meanings that Castoriadis

calls as the 'magma' of each civilisation, its tacit reservoir of new meanings). He believes that Aristotle was actually defining imagination as a procedure of gaining new knowledge, though this idea was not fully followed in the philosopher's later texts. The elements of the Greek society — its citizens, language, architecture, and social institutions — constructed a new totality in history, consequently imagined first by citizens and thinkers of the early Greek city-society.

An important factor of global creativity would be *sufficient* diversity *of* regional subcultures, which perhaps would propel radical imagination in the European sphere. If people in different subcultures are persuaded to think in similar categories, which the modern administrative body favours, it is unlikely that new insights would emerge in the mutual discourse. The works of Pierre Bourdieu open a more diverse picture, though as the Austrian scientist C. Fuchs (2003) reads them *the habitus is a means of self-creation or* 'autopoiesis' *of social systems, in terms of human beings who are permanent creators of society and permanent results of this creation.*

Maslow calls the *avant-garde creators* 'pioneers' or 'commandos', and the secondary creativity that follows 'settlers' or 'military police behind the lines' (Maslow, op. cit., p. 30). It is likely that with testing and surveying it is possible to merely catch this latter type of creativity, since it is improbable that in laboratory tests or competitions something totally new in history does surface. Yet one problem remains: how to evaluate the products of the primary or pioneer creativity; since the truth is that even 10 psychologists representing different nationalities and domains cannot consensually evaluate what the next new phase or order of art, human sciences, society will be, or the expanding universe. A consensual definition of creativity probably has not much value in this case, but it is useful in the reconnaissance type of creativity type Two. Maslow actually suggests the existence of a third type of creativity that incorporates the two earlier types: an *integrated model* of creative process. This seems not to be very different from the interplay of 'rhetoric' and 'logical' components of scientific thinking that Juri Lotman suggests, though the vocabularies of these theories are dissimilar.

The integrated model is that which Maslow believes all historical creative persons have applied. It is the type of creativity that is situated in the semi-autonomous fields of cultural production, each having its own dynamics and own history of battles. A sociological solution of the problem of evaluation might be to leave the definition and evaluation of creativity to the fields of art, science, philosophy, and invention, which deal daily with this question and battle about different ways to achieve creativity and ride into history. The degree of 'creativity' of the music of Pierre Boulez, texts of Virginia

Woolf, or paintings of Paul Klee is by no means a psychological question, though we should be aware of how they inspire further waves of creativity in people.

Creativity was handled in this essay as an inherent element of action, a part of an integrated whole, in which all components form a kind 'unified theory' together, and not dealing with a list of isolated concepts. In American psychology the systemic layouts suggested by Feldman, Czikszentmihalyi and Gardner (1994), Czikszentmihalyi (1996) or Sawyer (2008) may be closest to this idea of unified theory of creativity, though no intrinsic relationships are presented in these compositions to *integrate* the theory of persons, period, and the social field as a dynamic whole, that which is present, for instance, in the comprehensive theories of Bourdieu, Joas, or the Vygotskian school. It seems that creativity can best be explained as a part of a more general theory of culture, society and people, in which its total significance in history and human life is explained. A working explanation of creativity is offered by different variations of the theory of praxis, in particular, and the notion of activity, underscoring the practical content of creative action and the situation-bound nature of creativity. It is the reservoir of assimilated experiences that is mobilised in creative action, both the individual memory and the memory of humankind (see Järvilehto, 2000). A considerable part of these experiences are embedded in earlier products of creativity, and an extensive number are embodied in people's pre-symbolic and non-spoken experiences, which are still important factors in their creative activity. It is the mass of cultural experiences people produce during very long historical periods, comprising all aspects of their everyday life as well, even the micro-structures of their life (cf. Braudel, 1976). This history remains in the brains of people, in some form or other — and it also explains the often unexpected patterns of creativity in crowds. This thesis of pre-symbolic part of memory does not prevent, however, the researchers studying personal experiences of creativity, for example as they emerge from current education, or the interpretations of creativity among different nations and their key groups.

Finally, we should seriously consider the ways in which the flat higher teaching — I am speaking of my own experience as student, professor and researcher into higher education (cf. Häyrynen, 1987, and 1999, and see Y.-P. & Liisa Häyrynen, 1996) — could be turned into an intellectual adventure: for it to be *effervescent* and *passionate,* not only faithfully repeating what is found in hundreds of textbooks and endless auxiliary figures of lecturers. Teaching should be interaction as Vera John-Steiner describes it in her book on collaborative creativity (2000). What should be kept in mind, though, is that all processes of creativity include a reminder of tacit elements of practical noesis (*le savoir faire*) and pre-symbolic practices, which cannot

be re-described as formal models of creativity, as logical definitions, or as criterions of educational or cultural policy. These pre-symbolic processes and products of creativity that have been already fabricated — the world of drama, music, ballet, dance, philosophy, exact sciences, engineering, painting, literature, speech, and sports — actually form a bypassed but immense reservoir of creativity today. What the continent still lacks appears to be an incentive for radical imagination, returning the passion to the spirit of scholarship and science.

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